

Client:
Aukera Project Company Delta SRL

Report Title:
ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

Date:
February 2026

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Environmental and Social impact assessment – „ Development of battery energy storage capacity” - Gura Ialomitei

**Environmental and Social impact
assessment
February 2026**

Project name **"Development of battery energy storage capacity" – Gura Ialomiței**
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Date **February 2026**

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Contents

1. Introduction	6
1.1 Background	7
1.2 Project developer	7
1.3 Purpose of the ESIA	7
1.4 ESIA objectives	8
1.5 Assumptions and limitations of the ESIA	8
1.6 ESIA report structure	10
1.7 Administrative framework	10
1.7.1 National regulations	11
1.7.2 International standards and donor requirements	23
2. Project Description	24
2.1 Project location	25
2.2 Project components	26
2.3 Access to the project sites	28
2.4 Profile and production capacities	28
2.5 Project stages	28
2.5.1 Pre-construction stage	28
2.5.2 construction phase	30
2.5.3 Operational phase	31
2.5.4 Decommissioning phase	31
2.6 Project schedule	32
2.7 Resources required	33
2.7.1 Land requirements	33
2.7.2 Raw materials	34
2.7.3 Utilities	35
2.7.4 Personnel	35
2.8 Project alternatives	36
2.9 Relationship with other existing or planned projects	38
3. Basic conditions	43
3.1 Environmental conditions	44
3.1.1 Topography	44
3.1.2 Soil and subsoil	45
3.1.3 Hydrogeology	53
3.1.4 Hydrology	56
3.1.5 Air	59
3.1.6 Noise	64
3.1.7 Biodiversity	66
3.1.8 Cultural heritage	75
3.1.9 Landscape	78
3.1.10 Climate and climate change	81
3.2 Social and economic conditions	82
3.2.1 Administrative organization	82
3.2.2 Population	82
3.2.3 Economic aspects	83
3.2.4 Working conditions	86
3.2.5 Education	87

3.2.6 Population health	88	
3.2.7 Local infrastructure and access to services	90	
3.2.8 Vulnerable groups	92	
3.2.9 General assessment of basic social data	94	
4. ESIA approach and methodology	95	
4.1 Scoping stage	96	
4.2 Definition of the area of influence (Aoi)	97	
4.3 Environmental impact assessment methodology	99	
4.4 Severity of impact	101	
4.5 Receptor sensitivity	101	
4.6 Impact mitigation measures	102	
4.7 Cumulative, unplanned, and transboundary impacts	103	
4.8 Determining the significance of the impact	104	
4.9 Management plan	104	
4.10 Risk identification	105	
4.11 Climate Change Assessment Methodology	107	
5. Environmental and social impact assessment	122	
5.1 Environmental impact assessment	123	
5.1.1 Definition of the area of influence	123	
5.1.2 Results of the environmental impact assessment	128	
5.2 Climate Change Assessment	176	
5.2.1 Climate change mitigation (climate neutrality)	176	
5.2.2 Examination for adaptation to climate change (STAGE 1 analysis)	176	
5.2.3 Detailed analysis for adaptation to climate change (STAGE 2 analysis)	216	
5.3 Biodiversity impact assessment	219	
5.3.1 Definition of the area of influence	219	
5.4 Social impact assessment	246	
5.4.1 Definition of the area of influence	246	
5.4.2 Results of the social impact assessment	251	
6. Environmental and social management plan	295	
6.1 Objective of the plan	296	
6.2 Responsibilities in impact management	296	
6.3 Impact mitigation measures and monitoring plan	296	
6.4 Training and capacity building	297	
6.5 Complaints resolution mechanism	297	
6.6 Reporting and review	297	
7. Stakeholder Involvement	298	
7.1 Stakeholder identification	299	
7.2 Stakeholder involvement to date	300	
7.3 ESIA involvement	301	
7.3.1 Results of public debates	302	
8. Conclusions	305	
9. Annex	310	

List of acronym and abbreviations

Category	Acronym	Meaning (English)
Institutions	ANRE	National Energy Regulatory Authority
	ANRM	National Agency for Mineral Resources
	APM	Environmental Protection Agency
	EBRD (BERD)	European Bank for Reconstruction and Development
	CFR	Romanian Railways
	NCCD (CNCD)	National Council for Combating Discrimination
	EEA	European Environment Agency
	IFC	International Finance Corporation
	ISU	Inspectorate for Emergency Situations
	ITM	Territorial Labour Inspectorate
	MAI	Ministry of Internal Affairs
	OMMGA	Order of the Minister of Environment and Water Management
	OMSP	Order of the Minister of Public Health
Technical/Project	Transelectrica	National Power Grid Company
	AC/DC	Alternating Current / Direct Current
	BAT	Best Available Techniques
	BESS	Battery Energy Storage System
	BMS	Battery Management System
	CAEN	Classification of Activities in the National Economy
	CAPEX	Capital Expenditure
	CCTV	Closed-Circuit Television
	CfD	Contract for Difference
	EMS	Energy Management System
	EPC	Engineering, Procurement, and Construction
	HVAC	Heating, Ventilation, and Air Conditioning
	ITP	Inspection and Test Plans
	LED	Light Emitting Diode
	OHL (LEA)	Overhead Line
UPL (LES)	Underground Power Line	

Category	Acronym	Meaning (English)
	LFP	Lithium Iron Phosphate (Battery Tech)
	MW / MWh	Megawatt / Megawatt-hour
	NCA	Nickel-Cobalt-Aluminum
	NMC	Nickel-Manganese-Cobalt
	NZEB	Net Zero Energy Building
	OPEX	Operating Expenditure
	RES (SRE)	Renewable Energy Sources
	SCADA	Supervisory Control and Data Acquisition
	NES (SEN)	National Energy System
	SoH	State of Health (Battery)
Env/Social/Safety	AEP	Annual Exceedance Probability
	AMAT	Annual Mean Air Temperature
	NPAI (ANPIC)	Natural Protected Areas of Inter-community Interest
	AQI	Air Quality Index
	CO / CO2	Carbon Monoxide / Carbon Dioxide
	LUR (CUT)	Land Use Ratio
	EIA (EIM)	Environmental Impact Assessment
	ESIA (EIMS)	Environmental and Social Impact Assessment
	EMF	Electromagnetic Fields
	FWI	Fire Weather Index
	GHG	Greenhouse Gas
	GRM	Grievance Redress Mechanism
	HSE	Health, Safety, and Environment
	IBA	Important Bird Area
	LHDI (IDUL)	Local Human Development Index
	IPCC	Intergovernmental Panel on Climate Change
	KBA	Key Biodiversity Area
	NOx / SO2	Nitrogen Oxides / Sulfur Dioxide
	ILO (OIM)	International Labour Organization
	PM10 / PM2.5	Particulate Matter
	ESMP (PMMS)	Environmental and Social Management Plan
	LPC (POT)	Land Plot Coverage
	PPE (EIP)	Personal Protective Equipment
PS	Performance Standard (IFC)	

Category	Acronym	Meaning (English)
	FPE (PSI)	Fire Prevention and Extinguishing
	RCP / SSP	Climate Change Scenarios (RCP/SSP)
	ROSCI / ROSPA	Natura 2000 Sites (SCI / SPA)
	SEP	Stakeholder Engagement Plan
	SPEI	Standardised Precipitation Evapotranspiration Index
	OSH (SSM)	Occupational Safety and Health
	VOC	Volatile Organic Compounds
Admin/Legal	GD (HG)	Government Decision
	GO (OG)	Government Ordinance
	GEO (OUG)	Government Emergency Ordinance
	PNIESC	Nat. Integrated Plan for Energy & Climate Change
	NRRP (PNRR)	National Recovery and Resilience Plan
	ZUP (PUZ)	Zonal Urban Plan
	TAU (UAT)	Territorial Administrative Unit



1. Introduction

The project "Development of a battery energy storage capacity" , developed by AUKERA PROIECT COMPANY DELTA SRL, in the south of Gura Ialomiței, Ialomița County, on a total area of 38,756 m2. In order to implement the future facility, the investment will receive approximately €9.89 million in funding through the National Recovery and Resilience Plan (PNRR) - Support for investments in the development of electricity storage capacity (batteries).

1.1 Background

The proposed investment will consist of developing battery energy storage capacity using a lithium-ion (LFP) battery structure. The project will feed into the national electricity grid by connecting to the Dobrogea SA/CNTEE Transelectrica SA electricity network.

The project is proposed to be carried out in two phases:

- in the first phase, the investment objective is to develop an electricity storage capacity in batteries, with an installed capacity of 300 MWh, which will have a minimum charge-discharge cycle efficiency of 90.50%, at a charge/discharge rate of 0.5C, a standard temperature of 25 degrees Celsius, and a SoH of 50%. The installed power will be 150 MW. This stage will be financed through the PNRR.
- in Phase II, the investment objective is to develop a battery-based electricity storage facility using lithium-ion (LFP) technology, with an installed energy capacity of 200 MWh and an installed power of 100 MW. The system is designed to achieve a minimum charge–discharge cycle efficiency of 90.50%, at a 0.5C charge/discharge rate and a standard temperature of 25°C, delivered as a modular, containerized solution (battery containers, bidirectional inverters, and 33/0.69 kV transformer stations).

In total, the storage facility will have a capacity of 250 MW/500 MWh.

The objective of the ESIA is to assess the potential social and environmental impacts (both positive and negative) associated with the planning, construction, and operation of the project. The client wishes to supplement the project financing with international loans, and the ESIA report has been prepared specifically for potential project lenders who could provide funds/financial support.

At its current stage of development, the project falls under "Category B" in accordance with the environmental and social (E&S) policies of major international financial institutions (IFC, EBRD), commercial banks, and lending agencies. Category B projects are characterized by a limited number of potentially adverse environmental and social impacts, which are generally site-specific, largely reversible, and easily addressed through mitigation measures. Such projects are subject to a full environmental impact assessment or an assessment focused on specific environmental and/or social risks and the identification of impacts.

1.2 Project developer

Project name: "Development of a battery energy storage capacity" (BESS)

Project owner: Aukera Project Company Delta SRL.

1.3 Purpose of the ESIA

The main purpose of an ESIA study is to identify, assess, and manage the potential impacts of a proposed project on the environment and social factors prior to its implementation.

More specifically, the objectives of an ESIA are:

1. To assess the environmental and social impacts (positive and negative) associated with the project in all its phases: planning, construction, operation, and decommissioning.
2. Preventing or reducing negative impacts through mitigation measures.

3. Ensuring public participation and consultation with relevant stakeholders.
4. Supporting informed decision-making by authorities, financiers, and communities.
5. Compliance with national legislation and the requirements of international financial institutions (e.g., IFC, Equator, etc.).

1.4 ESIA objectives

The purpose of the ESIA study was to assess all impacts, including differentiated impacts, on the population and community and to propose specific (and, if necessary, separate) measures, in consultation with them, to ensure that potential impacts and risks are avoided, mitigated, or adequately compensated.

General objectives of the ESIA



- Identify and assess the severity of potential impacts on identified receptors and resources.
- Develop and describe mitigation measures that will be taken to prevent or minimize any potential negative effects and maximize potential benefits; and communicate the severity of residual impacts that will remain after mitigation is applied.

Specific ESIA objectives



- Identify potential positive social and environmental impacts and propose mechanisms to amplify them.
- To identify potential negative social and environmental impacts and propose equivalent mitigation measures.
- To ensure that the health and environmental effects of the proposed activities are adequately addressed before decisions are made to approve the project.
- Propose possible alternatives for improving the environment and society.
- Inform the community about the proposed project and integrate their views into the design and implementation of the project.

1.5 Assumptions and limitations of the ESIA

The social and environmental impact assessment for the BESS project was carried out taking into account the IFC Performance Standards and the Equator Principles, internationally recognized as benchmarks for identifying and managing environmental and social risks in infrastructure projects. At the same time, national legal requirements were also complied with – from waste management to stakeholder communication and emergency preparedness. All of this contributed to the development of an assessment methodology that meets both legal obligations and the requirements of financiers.

IFC performance standards provide a clear framework for projects to responsibly manage social and environmental risks, covering the following areas:

- environmental and social risk assessment;
- labor rights and conditions;
- efficient use of resources and pollution reduction;
- safety and health of local communities;
- land acquisition;
- protection of biodiversity and natural resources;
- respect for the rights of vulnerable populations;
- preservation of cultural heritage.

The Equator Principles are applied in particular to large investment projects, such as those in the energy sector. They require a rigorous assessment of impacts, the active involvement of communities, the establishment of clear plans to reduce negative effects, and transparent mechanisms for managing complaints or reports.

In this context, the methodology used in the assessment was adapted to the technical and social specifics of the project, using standardized data collection and analysis tools, but also flexible solutions where available data was limited.

The principles on which the assessment was based:

- The assessment was based on the info available in the Feasibility Study and the studies behind the regulatory acts issued, which were in an intermediate phase at the time of writing the report. Where technical info was not yet finalized, publicly available alternative data was used (county management plans, environmental reports, National Institute of Statistics).
- Information on existing environmental and social conditions was collected from official sources (statistics, local documents), supplemented by direct observations made during site visits.
- For the social analysis, existing statistical data was analyzed and a public consultation was organized to gather the perspectives of the local community and integrate them into the assessment process.
- The project also envisages an expansion of storage capacity up to changes, which will be located in addition to the already planned capacity of 300 MWh. If the project undergoes major changes that have a significant impact greater than that analyzed, the ESIA report will need to be updated in line with the new conditions. The project owner is also required to notify APM Ialomița in writing of any changes or extensions to the project occurring before/after the issuance of the scoping decision, before the change occurs, in accordance with Chapter V, Article 34, paragraph 1 of Law No. 292/2018 on the environmental impact assessment of certain public and private projects.

1.6 ESIA report structure

Table 1 : Structure of the ESIA report

Chapter	Description
Introduction	This chapter provides an overview of the project, including its context and rationale, stakeholders, purpose and objectives of the ESIA report, as well as limitations identified during the preparation process. It also presents the general structure of the report and the administrative framework relevant to the project implementation.
Project description	Describes in detail the project site, technical components, access to the site, storage capacities, and project stages (from pre-construction to decommissioning). It includes resource requirements (land, materials, utilities, labor), as well as alternatives analyzed and possible interactions with other existing or planned projects.
Baseline conditions	Presents the existing environmental and social conditions in the project's area of influence, which form the basis for the impact assessment. Aspects such as topography, soil quality, hydrology, air, biodiversity, but also socio-economic data such as population, local economy, public health, infrastructure, and vulnerable groups are analyzed.
ESIA Approach and methodology	Details the methodology used to conduct the assessment, including activities in the scoping phase, delimitation of the area of influence, collection of baseline data, stakeholder engagement, and the methodological approach for assessing and mitigating impacts.
Environmental and social impact assessment	Presents the analysis of anticipated environmental and social impacts caused by the implementation of the project. The assessment is structured in two subsections: impact on environmental components (air, soil, water, biodiversity, etc.) and social impact (living conditions, health, infrastructure). Proposed mitigation measures to reduce the identified negative effects are included.
Environmental and Social Management Plan	Includes a detailed plan for managing environmental and social impacts, identifying measures to prevent, reduce, and monitor effects, institutional responsibilities, necessary resources, and performance indicators throughout the project's lifetime.
Stakeholder Engagement	Describes the stakeholder engagement process, including their identification, consultation activities carried out to date, and plans for the continued engagement of communities and authorities in the ESIA process.
Conclusions	The chapter concludes the main findings of the report, highlighting the significant impacts identified, the effectiveness of the proposed mitigation measures, and the overall compliance of the project with legal and regulatory requirements.
Appendices	Contains the appendices to the ESIA study: <ul style="list-style-type: none"> • ESP, ESMP, NTS, and other relevant documents.

1.7 Administrative framework

In Romania, there is no uniform methodology for assessing the social impacts associated with project implementation. These aspects are generally integrated into the assessments required to obtain environmental agreements and authorizations, in the dedicated chapters of the environmental studies required for their issuance, as well as in individual assessments of compliance with applicable legislation, such as that relating to Occupational Health and Safety (OHS), for example.

Thus, the methodology used in the ESIA report takes into account both individual regulations at the national level and best practices in IFC standards.

The following sections describe the legal framework relevant to the environmental impact assessment and social impact assessment applicable to this project and how the project integrates legal and funder requirements.

1.7.1 National regulations

Table 2 : Applicable national legislation

Legislation	Description	Approach within the project
Environmental impact assessment		
Law No. 292/2018 on the environmental impact assessment of public and private projects	<p>Regulates the environmental impact assessment for public and private projects that may have significant effects on the environment.</p> <p>The projects mentioned in Annex No. 1 and Annex No. 2 of this law, which may have significant effects on the environment due to, among other things, their nature, size, or location, require a development approval application and an environmental impact assessment before the approval is issued.</p> <p>Development approval is the decision of the competent authority that allows the holder to continue the project. By going through the environmental impact assessment procedure, the Environmental Protection Authority will issue an administrative act establishing the conditions and environmental protection measures to be complied with in the implementation of the project (the environmental agreement or the scoping decision, as the case may be).</p> <p>The environmental impact assessment (EIA) procedure is carried out in the following stages: a) the stage of classifying the project in the environmental impact assessment procedure; b) the stage of defining the scope of the assessment and preparing the environmental impact report; c) the stage of analyzing the quality of the environmental impact report.</p> <p>The environmental impact assessment procedure is preceded by an initial assessment stage, during which the location of the project in relation to protected natural areas is established and it is verified whether the proposed project falls under the provisions of Articles 48 and 54 of Law No. 107/1996, as amended and supplemented, as applicable.</p>	<p>The project is proposed to be carried out in two phases:</p> <ul style="list-style-type: none"> in the first phase, the investment objective is to develop an electricity storage capacity in batteries, with an installed capacity of 300 MWh. in the second phase, the investment is proposed to be expanded to achieve an installed capacity of 500 MWh. <p>For the first phase, the project was subject to an environmental impact assessment, falling under Law 292/2018, classified in Annex No. 2, point 10 a) Projects for the development of industrial units/areas, according to the initial assessment stage decision No. 30/02.08.2023.</p> <p>The classification stage decision no. 272/28.10.2024 concluded, following the impact analysis, that the project is not subject to environmental impact assessment, is not subject to appropriate assessment, and is not subject to assessment of the impact on water bodies:</p> <ul style="list-style-type: none"> the criteria set out in Annex No. 3 to Law No. 292/2018 on the environmental impact assessment of public and private projects that may have significant effects on the environment were taken into account in the assessment of the project the proposed investment does not combine with other projects in terms of amplifying the environmental impact; the implementation and use of the proposed investment does not involve the use of toxic or hazardous substances; the solutions adopted lead to the protection of environmental factors; the implementation of the project provides for the proper management of waste generated and collected during the project implementation period the project implementation has a short time frame; the objective of the investment is to develop a battery storage capacity for electricity, with an installed capacity of 201,749.5 MWh/year. <p>Upon completion of the works, the owner shall notify APM Ialomița for verification of compliance with the provisions of this act by representatives of the Ialomița Environmental Protection Agency.</p> <p>For the 33kV/110kV transformer station component, notification No. 2987/11.04.2025 was issued because:</p> <ul style="list-style-type: none"> following the analysis of the submitted documentation, the location of the site in the urban plan and in relation to its position in relation to protected natural areas, buffer

Legislation	Description	Approach within the project
		<p>zones, historical or archaeological monuments, areas subject to building restrictions (), and the coastal area, it was established that:</p> <ul style="list-style-type: none"> ○ the proposed project does not fall under the scope of Law No. 292 of 03.12.2018 on the assessment of the impact of certain public and private projects on the environment; ○ the proposed project does not fall under the scope of Article 28 of Government Emergency Ordinance No. 57/2007 on the regime of protected areas, the conservation of natural habitats, wild flora and fauna, approved with amendments and additions by Law No. 49/2011, with subsequent amendments and additions; ○ the proposed project does not fall under the scope of Articles 48 and 54 of Water Law No. 107/1996, with subsequent amendments and additions <p>For the cable route - electrical connection, Notification No. 2988/11.04.2025 was issued because:</p> <ul style="list-style-type: none"> • the proposed project does not fall under the scope of Law No. 292/03.12.2018 on the assessment of the impact of certain public and private projects on the environment; • the proposed project does not fall under the scope of Article 28 of Government Emergency Ordinance No. 57/2007 on the regime of protected areas, the conservation of natural habitats, wild flora and fauna, approved with amendments and additions by Law No. 49/2011, with subsequent amendments and additions; • The proposed project does not fall under the scope of Articles 48 and 54 of Water Law No. 107/1996, as amended and supplemented. <p>For de second phase, it was issued Notification Classification No. 5542/15.07.2025 because:</p> <ul style="list-style-type: none"> • the proposed project is not subject to Law No 292 / 03.12.2018, on the environmental impact assessment of certain public and private projects; • the proposed project is not subject to Article 28 of GEO no. 57 / 2007 on the regime of protected areas, conservation of natural habitats, wild flora and fauna, approved with amendments and additions by Law no. 49 / 2011, as amended and supplemented; • the proposed project is not covered by Art. 48 and Art. 54 of the Water Law No. 107/1996, as amended and supplemented.
<p>HGR No. 210/2007 and GEO No. 12/2007 amending and supplementing certain legislative acts transposing the Community acquis in</p>	<p>Transposes EU directives on air quality, noise, waste management, and hazardous substances. It also requires monitoring and reporting of emissions for potentially polluting installations.</p>	<p>The project requires measures to mitigate the impact on the environment, which are included in the ESMP Plan. At the same time, the sensor system included for continuous measurement of noise and possible leaks of electrolytic substances will generate alerts in exceptional cases.</p>

Legislation	Description	Approach within the project
the field of environmental protection		
Emergency Ordinance No. 195 of December 22, 2005, on environmental protection	Regulates the legal framework in the field of environmental protection in order to set out the directions for regulating economic activities with a view to achieving sustainable development objectives and establishing a unified legislative framework.	From the concept and development stage of the project, in addition to technical and economic requirements, the project's capacity for development under conditions that are safe for the environment was also taken into account. The project has identified mitigation measures that address all the environmental factors and aspects mentioned in the legislative text, which can be consulted in the Environmental Assessment chapter of this ESIA report and in the ESMP Plan.
Order 1798/2007 approving the Procedure for issuing environmental permits	Regulates the conditions for applying for, issuing, and reviewing environmental permits. Environmental permits are issued for the activities listed in Annex 1 to this order (according to CAEN codes).	Depending on the CAEN code under which BESS will operate. BESS will be used for electricity storage. The CAEN code for this activity is 3516. This code is not found in the list of CAEN codes listed in Annex 1 to Order 1798/2007.
Law No. 544/2001 on free access to information of public interest and Government Decision No. 123/2002 approving the methodological rules for its application	<p>The law outlines the principles of transparency in public administration, providing citizens with free and unrestricted access to information of public interest, as defined by this law; it constitutes one of the fundamental principles of the relationship between individuals and public authorities, in accordance with the Romanian Constitution and international treaties ratified by the Romanian Parliament and Government.</p> <p>The law establishes the right of every citizen to request and receive information of public interest from public authorities, including specific environmental information. Authorities are required to respond in writing to requests for information of public interest within 10 days or, where appropriate, within a maximum of 30 days from the registration of the request, depending on the complexity of the data requested.</p> <p>According to Article 21, the explicit or tacit refusal of the authority gives the citizen the right to file an administrative complaint with the head of the institution.</p> <p>According to Article 34 of GD 123/2002, a reasoned response to the complaint shall be sent to the person who made it within 15 days of the date of registration.</p>	<p>Publication on the website of relevant documentation and impact data.</p> <p>Informing the public about the stages and decisions taken throughout the environmental impact assessment procedure</p> <p>Single point of contact and complaint management flow with prompt resolution (complaint resolution mechanism).</p> <p>All these actions are described in the SEP Plan, including during the environmental impact assessment stage.</p>
Water		
Water Law No. 107/1996, as amended and supplemented	The purpose of this law is to establish a set of legal regulations on the conservation, development, and protection of water resources; the prevention and control of pollution or changes in the characteristics of these resources, the achievement of environmental objectives for surface and groundwater bodies, the conservation and protection of aquatic ecosystems, sustainable water management and rational and balanced distribution of this resource, maintaining and improving the quality and natural regeneration of waters, preventing further deterioration, as well as protecting and improving the condition of aquatic ecosystems and terrestrial ecosystems and wetlands that depend directly on them.	<p>According to the initial assessment decision no. 30/02.08.2023, the project does not fall under the provisions of Articles 48 and 54 of Law 107/1996.</p> <p>The project is not located in a flood zone according to the flood study.</p>

Legislation	Description	Approach within the project
Air		
MAPPM Order No. 462/1993 approving the Technical Conditions for the Protection of the Atmosphere and the Methodological Norms for Determining Atmospheric Pollutant Emissions, as subsequently amended and supplemented by Law No. 104/2011 on Ambient Air Quality	<ul style="list-style-type: none"> • Defines methods for measuring and calculating pollutant emissions from various sources • Provides technical requirements for laboratories and measuring equipment. 	<p>The following measures have been provided for:</p> <ul style="list-style-type: none"> • No major demolition work is planned that would cause significant dust emissions. • Vehicles will travel at low speed on the roads to avoid raising dust and producing additional noise; work involving dust emissions will be avoided during periods of strong wind, heavy traffic, and unfavorable weather conditions.
HGR No. 124/2003 on the prevention, reduction, and control of environmental pollution with asbestos, supplemented by HGR No. 210/2007 and amended by HGR No. 734/2006	<ul style="list-style-type: none"> • Regulates the procedure for inventorying, dismantling, and disposing of materials containing asbestos • Requires an asbestos management plan for demolition or rehabilitation works • Requires the use of protective equipment and specialized transport and disposal. 	
Law No. 104/2011 on ambient air quality	<p>Regulates the measures necessary to ensure optimal air quality. The main purpose of the law is to protect human health and the environment by monitoring and assessing air pollution, setting target values for pollutants, and implementing measures to prevent and reduce emissions. The law sets out obligations for public authorities and economic operators regarding pollution control, air quality data reporting, and public information. It also includes specific measures for areas where quality standards are exceeded.</p> <p>In the case of industrial installations falling under the provisions of Government Emergency Ordinance No. 152/2005 on the prevention and integrated control of pollution, approved with amendments and additions by Law No. 84/2006, with subsequent amendments and additions, the target values achieved by applying the best available techniques provided for in Article 2(1)(c) of the Emergency Ordinance.</p>	
Biodiversity		
Government Emergency Ordinance No. 57/2007 on the regime of protected natural areas, the conservation of natural habitats, wild flora and fauna, approved with amendments and additions by Law No. 49/2011 with all subsequent amendments	<p>The law regulates several aspects of major importance for the protection of biodiversity (ensuring biological diversity, conservation, maintenance or restoration of natural habitats, the management regime for natural areas, identification of natural heritage assets, and others).</p>	<p>The proposed project does not fall under the scope of Article 28 of Government Emergency Ordinance No. 57/2007 on the regime of protected natural areas, the conservation of natural habitats, wild flora and fauna, with subsequent amendments and additions, approved with amendments and additions by Law No. 49/2011, with subsequent amendments and additions, the project site is not located in/does not impact a protected natural area, namely the Natura 2000 site, Ialomița County.</p>

Legislation	Description	Approach within the project
Noise		
HGR 1756/2006 on the limitation of noise emissions in the environment produced by equipment intended for use outside buildings	Government Decision No. 1756/2006 regulates the limitation of noise emissions in the environment produced by equipment intended for use outside buildings. It establishes standards for noise emissions, conformity assessment procedures, equipment marking, and the necessary technical documentation. The decision also defines the equipment covered and the exceptions to its applicability.	During construction work, equipment in good working order and complying with health and comfort requirements shall be used. During the execution and operation stages, measures shall be taken to avoid, prevent, or reduce the harmful effects, including discomfort, caused by the population's exposure to ambient noise.
Law 121/2019 on the assessment and management of ambient noise	Regulates the prevention and reduction of noise pollution in the environment. This law requires authorities and economic operators to assess the noise levels produced by various activities and sources (such as road, rail, airport, or industrial traffic) and to develop action plans to reduce noise in areas where permissible limits are exceeded.	
Waste		
HGR 856/2002 on waste management records and for the approval of the list of waste, including hazardous waste	Establishes the method of record keeping, traceability, and annual reporting of waste generated by operators and the obligation to submit environmental declarations.	Special areas shall be set up for the collection/temporary storage of construction and demolition waste generated during the execution of the project; the waste shall be disposed of/recycled by authorized and specialized companies, on a contractual basis.
OMMGA No. 757/2004 approving the Technical Standard on Waste Storage waste, as amended and supplemented by Order no. 1,230/2005 and Order no. 415/2018;	Details the technical requirements for the design of waste storage platforms, including waterproofing, leachate management, and environmental protection.	Selective collection of waste will be carried out and disposal will be based on the nature of the waste, for storage or recovery by sanitation services, on a contractual basis, taking into account the provisions of GEO 92/2021 on waste management, as amended and supplemented; No construction materials or waste will be stored outside the perimeter owned by the project owner.
Law No. 249/2015 on the management of packaging and packaging waste, with amendments and additions made by GEO No. 38/2016 and Law No. 87/2018;	It sets out the responsibilities of producers and users for the selective collection, recycling, and recovery of packaging, as well as guarantee-liability systems.	
Government Emergency Ordinance No. 92/2021 on waste management;	The GEO regulates several objectives: a) prevention and reduction of waste generation and efficient waste management, b) reduction of the adverse effects caused by waste generation and management; c) reducing the overall effects of resource use and increasing the efficiency of resource use as essential elements for ensuring the transition to a circular economy d) on the transport and traceability of waste.	
HGR No. 235/2007 - Management of waste oils	Provides for the obligation to collect, store, and deliver waste oils (insulating, hydraulic) to approved recycling facilities, as well as packaging and transport conditions.	
Soil		
Law No. 246/2020 on the use, conservation, and protection of soil	Regulates activities related to the use, conservation, improvement, assessment of bioproductive capacity, protection of soil, and integrated monitoring of soil quality, in the context of sectoral policies to ensure the sustainable use of this non-renewable natural resource.	When determining the location of the project, consideration was given to ensuring that it was not located on land that was severely degraded or subject to major degradation risks.
Cultural heritage		

Legislation	Description	Approach within the project
Ordinance No. 43/2000 on the protection of archaeological heritage and the declaration of archaeological sites as areas of national interest	Establishes procedures for the assessment and authorisation of works in areas with archaeological sites and historical monuments, as well as the obligation to carry out preliminary studies and take measures to protect or rescue the remains.	To achieve this objective, an archaeological diagnostic study was carried out, which showed that "the land affected by this investment project, as well as the area outside it, are devoid of cultural heritage remains (stratigraphy, complexes, artifacts)". According to letter no. 1241/2025, the Ialomița County Department of Culture concluded that the institution's approval was not necessary. At the same time, according to the normative acts in force, the owner is obliged to notify the institution if archaeological remains or movable archaeological goods are discovered during future afforestation works.
Law No. 422/2001 on the protection of historical monuments		
Landscape		
Law No. 451/2002 ratifying the European Landscape Convention, adopted in Florence on October 20, 2000	Requires land use plans to include landscape impact assessments, the preservation of visual values, and public consultation on major changes.	Upon completion of the project, areas temporarily affected by the works shall be restored to their original condition.
Quality of construction		
Law No. 50/1991 on the authorization of construction works, with all amendments and additions	Regulates the conditions necessary for obtaining building and demolition permits, the procedures and documentation required for the execution of construction works. It ensures compliance with urban planning and environmental protection regulations and provides for penalties for building without a permit or in violation of it. The law aims to provide a clear legal framework for urban development.	Before work begins, a building permit must be obtained from the city hall, with all the necessary approvals (urban planning, environment, fire department, ANRE). The technical documentation will be verified by an authorized designer and handed over to the contractor specializing in metal structures and BESS containers. <i>The Gura Ialomiței town hall has issued all the urban planning certificates required for the project, which can be found in the project documentation.</i>
Law No. 10/1995 on quality in construction	<ul style="list-style-type: none"> Establishes quality requirements for design, execution, materials, and execution: technical standards, quality control, and responsibilities; The obligation to create a quality file for each objective (technical data sheets, control and acceptance reports). 	The implementation of specific plans is envisaged: <ul style="list-style-type: none"> Quality management and assurance plan (PAC) Quality control, verification, and inspection plans (PCCVI) and/or inspection and testing plans (ITP) Quality manager appointed to verify materials (metal structures, insulation) and perform tests (watertightness, mechanical strength).
HG 343/2017 Regulation on the acceptance of constructions	<ul style="list-style-type: none"> Establishes the stages of acceptance at the end of each phase: acceptance at the end of the phase, acceptance upon completion of the works, final acceptance; Lists the necessary documents (minutes, test reports, proof of testing) 	Upon completion of the BESS installation and infrastructure works, acceptance shall be organized in phases (foundation, structure, electrical installations, and BESS). The following shall be taken into account: <ul style="list-style-type: none"> compliance with the provisions of the building permit, as well as the approvals and conditions of execution imposed by the competent authorities; execution of the works in accordance with the provisions of the contract, the execution documentation, and specific regulations, in compliance with the essential requirements, according to the law; the presentation report prepared by the designer on how the work was executed. The investor shall ensure that this activity is included in the design contract;

Legislation	Description	Approach within the project
		<ul style="list-style-type: none"> • completion of all works provided for in the contract concluded between the investor and the contractor and in the documentation annexed to the contract. • in cases where there are doubts about the entries in the technical construction documents, the works acceptance committee may request expert opinions, other documents, additional tests, samples, and other tests; • - the declared value of the investment
HGR No. 766/1997 - Decision approving regulations on quality in construction;	<ul style="list-style-type: none"> • Approves specific regulations (technical control of execution, documentation for the organization of execution) • Provides for periodic technical checks and inspections on site. 	<ul style="list-style-type: none"> • Control flows and checks by the site engineer, • Periodic technical inspections carried out by a certified authorized engineer.
MAI Order No. 1435/18.09.2006 for the approval of the Methodological Norms for the implementation and authorization regarding fire prevention and extinguishing	<ul style="list-style-type: none"> • Design and equipment standards for fire extinguishing means at industrial sites • Requirements for access by emergency vehicles and indoor/outdoor hydrants • Minimum equipment: detectors, hydrants, fire extinguishers, signaling. 	<ul style="list-style-type: none"> • The BESS project includes a fire detection system with temperature and smoke sensors in each container • Access points and intervention platforms comply with the minimum route for fire trucks. • Firefighting will be carried out using portable CO₂, powder, or foam extinguishers, depending on the specific equipment (oil, electricity). In the event of a fire, the affected part of the installation and adjacent parts will be de-energized.
General fire protection regulations of 28.02.2007	<ul style="list-style-type: none"> • Specifies the principles of passive and active fire protection in buildings (escape routes, compartmentalization, fire-resistant materials); • Establishes markings, safety lighting, and evacuation procedures. 	<ul style="list-style-type: none"> • A PSI officer will be appointed on site and training will be organized at the start of work.
Regulation C 300/1994 – for fire prevention and extinguishing during construction	<ul style="list-style-type: none"> • Rules for the organisation of construction sites for fire prevention (material storage, equipment parking, supervision during welding and metal cutting); • Temporary firefighting equipment and worker training. 	<ul style="list-style-type: none"> • Storage areas for combustible materials (packaging, pallets) shall be kept at least 10 m away from the work area. • The fire detection and warning system will be configured by zone, with addressable smoke and temperature detectors for indoors and temperature detectors for outdoors. The system will be integrated into the station's SCADA and will send alarms to both the internal dispatcher and the ISU.
P118/99 – Fire safety standard for buildings	<ul style="list-style-type: none"> • Requirements for establishing the fire resistance class of construction and execution elements • Determines mandatory tests and classifications (resistance, stability, fire tightness). 	<ul style="list-style-type: none"> • The station will be equipped with a PSI picket, and a fire safety scenario will be developed in accordance with standard PE 118-3/2015 and Law No. 307/2006 on fire protection.
ANRE Order No. 239/2019 and ANRE Order No. 225/2020 – Technical standard on the delimitation protection and safety zones related to energy capacities	<ul style="list-style-type: none"> • Definition of protection zones (immediate and external) around energy installations • Minimum distances from buildings/land depending on voltage and capacity; • Electrical safety requirements and access restrictions. 	<p>The BESS facility is located in accordance with the regulations on minimum protection distances:</p> <ul style="list-style-type: none"> • For energy capacities (PT+LES), Article 19, (1), (2), (3) – protection zones and safety zones in accordance with Law No. 13/2007 (with all subsequent amendments and additions) shall be complied with. The areas are determined in accordance with ANRE Order No. 239/2019 on the delimitation of protection and safety areas related to energy capacities.
Quality of equipment		
Law No. 265/2006 approving GEO No. 195/2005 on environmental protection, with subsequent amendments and additions applicable	<ul style="list-style-type: none"> • Transposes into Law 195/2005 the principles of sustainable development for the production and use of equipment. • Provides for the obligation to apply BAT and control emissions from industrial and equipment manufacturing processes. 	<p>The equipment specifications include the requirement for the supplier to take out environmental liability insurance (producer's environmental liability policy).</p> <p>A contractual guarantee has been provided for the remediation of any environmental incident caused by equipment defects during operation.</p>

Legislation	Description	Approach within the project
Government Emergency Ordinance No. 68/2007 on environmental liability with reference to the prevention and remedying damage to the environment, with subsequent amendments and additions applicable;	Establishes legal and financial responsibility for the prevention and repair of environmental damage caused by equipment: obligation to remedy, insurance, guarantees, penalties.	
Technical regulation for the construction of overhead power lines with voltages above 1000 V - NTE 003/04/01	<ul style="list-style-type: none"> Specifies the design, material, and execution conditions for poles, conductors, insulators, and support equipment for high-voltage overhead lines Requirements for mechanical strength, electrical strength, and durability under weather conditions and vibrations. 	<ul style="list-style-type: none"> The project does not provide for the construction of overhead electrical networks. For the BESS connection to the HT network, insulators and brackets compliant with NTE 003/04/01 with certified mechanical load tests were selected.
Hazardous substances		
Law No. 59/2016 - on the control of major accident hazards involving dangerous substances	<ul style="list-style-type: none"> Transposes the Seveso III Directive on the prevention and limitation of the effects of major accidents involving dangerous substances Defines requirements for identifying major accident scenarios, probabilistic assessment, internal and external emergency plans Requires notification of authorities and the public regarding locations and quantities stored. 	No analysis of the applicability of this Directive has been carried out for this project. After selecting the battery supplier, it is recommended to carry out a complete quantitative assessment of the hazardous substances contained (in particular flammable liquids in category P5b – according to GD 59/2023) and to verify compliance with the SEVESO thresholds. If applicable, a SEVESO Notification and Accident Prevention Policy shall be submitted in accordance with the applicable requirements for lower or upper levels
HGR No. 1061/2008 on the transport of hazardous and non-hazardous waste on the territory of Romania Establishes rules for the classification, packaging, labeling, and authorization of waste transporte	<ul style="list-style-type: none"> Establishes rules for the classification, packaging, labeling, and authorization of waste transporters Obligation to hold permits and Environmental Authorization for transport 	<ul style="list-style-type: none"> Waste generated during the construction/operation and decommissioning stages will be temporarily collected on site and transported for recovery and disposal by authorized economic operators Waste transport will only be carried out by ADR-authorized waste transporters Non-hazardous waste will be transported only on the basis of the loading-unloading form Hazardous waste will be transported based on the shipping/transport form.
Occupational health and safety		
Law 319/2006 on occupational health and safety, as amended and supplemented	The purpose of the law is to improve the safety and health of workers by establishing general principles regarding the prevention of occupational risks, the protection of workers' health and safety, the elimination of risk and accident factors, information, consultation, balanced participation in accordance with the law, training of workers and their representatives, as well as general guidelines for the implementation of these principles.	The project envisages the implementation of strict measures regarding OSH conditions at all stages (construction, operation, decommissioning) based on thorough training and the provision of the necessary equipment and facilities. The social impact analysis and the supporting studies contain an analysis of OSH risks and mitigation measures. <i>Chapter 5.2.2.6 contains such an analysis.</i>
GD 1425/2006 - methodological rules for the application of the provisions of Law No. 319/2006 on occupational health and safety, as amended and supplemented;	Establishes the minimum requirements for occupational risk prevention activities in the enterprise and the protection of workers at work, minimum training requirements in the field of occupational safety and health, the organization of prevention and protection activities within the enterprise, as well as the regulation of the status of workers' representatives with specific responsibilities in the field of occupational safety and health.	The project envisages the implementation of strict measures regarding OSH conditions at all stages (construction, operation, decommissioning) based on thorough training and the provision of the necessary equipment and facilities. The social impact analysis and the supporting studies contain an analysis of OSH risks and mitigation measures.

Legislation	Description	Approach within the project
Government Decision 300/2006 on minimum safety and health requirements for temporary or mobile construction sites, as amended and supplemented	Establishes measures for the protection of workers on temporary or mobile construction sites. This requires the proper organization of construction sites, the identification of hazards, and the assessment of risks to prevent accidents at work. The Government Decision requires the use of personal protective equipment, the training of workers, and the implementation of appropriate safety measures.	According to the legislation, a <i>Health and Safety Plan</i> will be developed to prevent accidents and minimize risks during the organization of the construction site. The health and safety coordinator will have specific responsibilities in managing the processes.
Government Decision 1091/2006 on minimum safety and health requirements for the workplace	Establishes minimum safety and health requirements for the workplace, such as: accessibility of traffic routes and emergency exits, the working environment must be adequate, including ventilation, lighting, temperature, and noise levels in accordance with health standards. Hygiene conditions are also provided for, such as the provision of sanitary facilities, changing rooms, and rest areas adapted to the needs of workers.	Working conditions (accessibility, lighting, sanitary facilities, and others) will be organized in accordance with the law. These aspects can be consulted in the chapter dedicated to the Assessment of Social Conditions.
Government Decision 1048/2006 on minimum safety and health requirements for the use of personal protective equipment by workers at work	Establishes minimum safety and health requirements for the use of personal protective equipment at work, ensuring the protection of workers against risks.	As part of the analysis of social conditions, a non-exhaustive list of personal protective equipment was established according to the potentially identified OSH risks.
GD 1051/2006 on minimum safety and health requirements for the manual handling of loads that pose a risk to workers, in particular back disorders	Minimum safety and health requirements for the manual handling of loads to prevent back disorders among workers, through risk assessment, staff training, and the use of appropriate ergonomic measures.	As part of OSH training, consideration shall be given to training personnel to avoid back disorders and to risk assessment.
Government Decision No. 1028/2006 on minimum health and safety requirements for the use of display screen equipment	Government Decision No. 1028/2006 establishes the minimum health and safety requirements for the use of display screen equipment, aiming to prevent risks to the eyes, muscles, and joints through the ergonomic organization of workstations and appropriate training of workers.	As part of OSH training, consideration shall be given to training staff to prevent risks arising from the use of display screen equipment.
Government Decision 971/2006 on minimum requirements for safety and/or health signage at work, as amended and supplemented	Minimum requirements for safety and/or health signage at work. This provides for the use of appropriate signage to warn, prohibit, indicate obligations, or guide workers in an emergency.	During the organization of the construction site, as well as during the operation and decommissioning stages, the necessary perimeters and emergency exits shall be signposted.
Order 712/2005 MAI approving the general provisions on training employees in emergency situations, with subsequent amendments and additions	General provisions on employee training in emergency situations. This provides for the obligation of employers to ensure regular training of employees on prevention and intervention measures in emergency situations, such as fires or natural disasters.	Employee training measures in case of emergencies are covered in the chapter on Social Conditions Assessment.
Government Decision 1146/2006 on minimum safety and health requirements for the use of work equipment by workers, as amended and supplemented	Establishes the minimum health and safety requirements for the use of work equipment by workers. It stipulates that equipment must be safe, suitable for the activities carried out, properly maintained, and that workers must be adequately trained in its use.	Work equipment shall be used safely, only after training. Work equipment shall be subject to periodic checks and risk analysis.
Public health		

Legislation	Description	Approach within the project
Law No. 307/2006 on fire protection, republished, with subsequent additions and amendments.	Establishes obligations for the prevention, extinguishing, and limitation of the effects of fires: technical equipment (fire extinguishers, hydrants, detectors), fire safety instructions, and legal responsibilities of facility owners.	Natural and legal persons must comply with technical regulations and fire protection provisions and must not endanger life, property, and the environment through their decisions and actions, being liable, according to the law, for establishing and applying fire protection measures, as well as for the consequences of fires, in accordance with the provisions of Articles 5 and 6 of Law No. 307/2006 on fire protection, republished, with subsequent additions and amendments.
Order 119/2014 of the Minister of Health approving the Hygiene and Public Health Standards regarding the living environment of the population, with subsequent amendments and additions applicable	Regulates the requirements for indoor and outdoor air quality, lighting, microclimate in work and living spaces, control of microorganisms, noise and vibrations, as well as monitoring and reporting obligations to health authorities.	<i>Chapter 5.2.2.7 also explains in detail how legislative requirements regarding public health are integrated into the project design, including requirements regarding hygiene and public health standards and standards regarding the limitation of the general population's exposure to electromagnetic fields.</i>
OMSP No. 1193/2006 approving the Norms on limiting the exposure of the general population to electromagnetic fields from 0 Hz to 300 GHz	Imposes exposure limit values for static and alternating electromagnetic fields, the method of measurement and monitoring in areas accessible to the public, as well as the obligation to inform and delimit areas with high EMF levels.	
Working conditions		
Law 53/2003 Labor Code, republished, with subsequent amendments	Regulates labor relations and workers' rights in relation to the employer, ensuring the right to fair working conditions and remuneration, the right to vocational training, information and consultation, and equal treatment. The employer is required to assess health and safety risks in the workplace, implement prevention and protection measures, and ensure that workers receive training in occupational health and safety.	Employer-employee relations shall be implemented in accordance with the legislative requirements set out in the Labor Code. These aspects can be consulted in the chapter dedicated to the Assessment of social conditions. At all stages (design, execution, operation), the following fundamental principles will be respected: <ul style="list-style-type: none"> o freedom of work o prohibition of forced labor o equal treatment o protection of employees o freedom of association consensus, good faith, information, and consultation
Human rights		
The Constitution of Romania	Stipulates that the right of individuals to access any information of public interest cannot be restricted (Art. 31, paragraph 1) and that public authorities, according to their powers, are obliged to provide accurate information to citizens on public affairs and matters of personal interest (Art. 31, paragraph 2). The Romanian Constitution contains a number of fundamental legislative provisions, including the following: <ul style="list-style-type: none"> - The right to work cannot be restricted. The choice of profession, trade, or occupation, as well as the choice of workplace, is free. - Employees have the right to social protection measures. These relate to the safety and health of employees, the working conditions of women and young people, the establishment of a national minimum gross wage, weekly rest, paid annual leave, work in special or exceptional conditions, vocational training, and other specific situations established by law. 	Through the measures implemented, the project complies with all the above provisions. At all stages of the project, the public and interested parties will be informed, and access to information will not be restricted.

Legislation	Description	Approach within the project
	<ul style="list-style-type: none"> - Forced labor is prohibited. - Children and young people enjoy special protection and assistance in exercising their rights. - The exploitation of minors, their use in activities that would harm their health or morality or endanger their lives or normal development, is prohibited. <p>Minors under the age of 15 may not be employed as employees.</p>	
Law 272/2004 on the protection and promotion of children's rights	Regulates the legal framework for respecting, promoting, and guaranteeing the rights of the child.	The project plan follows clear legal provisions to protect children and young people through a special protection regime. The analysis did not identify any risks of exploitation of minors within the value chain.
Law 448/2006 on the protection and promotion of the rights of persons with disabilities	The law regulates the rights and obligations of persons with disabilities in order to ensure equal and non-discriminatory access with the aim of integrating them into society.	<p>Persons with disabilities were identified as part of the vulnerable groups within the project, so specific measures were implemented to ensure fair access to information about the project (e.g., large print, use of various means of communication, such as subtitles for persons with hearing impairments or other methods depending on the needs identified).</p> <p>Employment procedures will include measures to prevent discrimination against persons with disabilities in the workplace.</p>
Law 167/2020 for amending and supplementing Government Ordinance No. 137/2000 on the prevention and punishing all forms discrimination, as well as supplementing Article 6 of Law No. 202/2002	Regulates measures against discrimination on various grounds, such as race, sex, age, religion, or disability, and clarifies the applicable sanctions.	The procedures implemented provide for the promotion of non-discrimination principles. These are described in the SEP and ESMP Plan.
Law 202/2002 on equal opportunities and treatment between women and men	The law aims to promote equal opportunities and treatment between the sexes in all areas of life, including education, work, health, politics, and social life. The law stipulates rights related to working conditions, such as equal pay for work of equal value, protection against harassment in the workplace, and prohibits any form of discrimination based on gender.	The procedures implemented provide for the promotion of the principles of non-discrimination and equal opportunities. These are described in the SEP and ESMP Plans.
Law 544/2001 on access to information of public interest and Government Decision No. 123/2002 approving the methodological norms for its application	<p>The law outlines the principles of transparency in public administration, providing citizens with free and unrestricted access to information of public interest, as defined by this law; it constitutes one of the fundamental principles of the relationship between individuals and public authorities, in accordance with the Romanian Constitution and international treaties ratified by the Romanian Parliament and Government.</p> <p>The law establishes the right of every citizen to request and receive information of public interest from public authorities, including specific environmental information. Authorities are required</p>	The project has implemented a specific procedure for access to information of public interest, which is described in the SEP Plan. Stakeholders can submit requests for information in several ways, including through the project owner's website. A specific form has been published for the preliminary results of the ESIA Report.

Legislation	Description	Approach within the project
	<p>to respond in writing to requests for information of public interest within 10 days or, where appropriate, within a maximum of 30 days from the registration of the request, depending on the complexity of the data requested.</p> <p>According to Article 21, the explicit or tacit refusal of the authority gives the citizen the right to file an administrative complaint with the head of the institution.</p> <p>According to Article 34 of GD 123/2002, a reasoned response to the complaint shall be sent to the person who submitted it within 15 days of the date of registration.</p>	
<p>Law 86/2000 ratifying the Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters, signed in Aarhus in 1998</p>	<p>By ratifying the Aarhus Convention, the law ensures the public's right to access environmental information without the applicant having to demonstrate a specific interest.</p> <p>The public's right to participate effectively in decision-making processes that have an impact on the environment is guaranteed. Public consultation must take place at an early stage, when all options are open and public participation can influence the final decision, in accordance with the provisions.</p>	<p>The public will be involved in the decision-making process from the early stages of the project, with open access to information on environmental impact and transparent consultations.</p>
<p>Law 554/2004 on administrative litigation</p>	<p>The provisions of the law give the public the opportunity to challenge administrative decisions relating to access to information, including the refusal to provide public information, in court.</p>	<p>The public will have the right to challenge in court any administrative decision related to the project that does not comply with the principles of transparency and access to information.</p>
<p>Law 233/2002 approving Government Ordinance No. 27/2002 on the regulation of the activity of resolving petitions - Romanian Parliament</p>	<p>The law establishes the legal framework for petition resolution activities</p>	<p>The project implemented a specific procedure for resolving petitions. The SEP plan describes the procedure and methods for submitting a petition or sending comments.</p>

1.7.2 International standards and donor requirements

Table 3: IFC and Equator Standards

Standard	Description	Approach within the project
IFC PS1	Assessment and management of environmental and social risks and impacts	A detailed ESIA assessment has been prepared; an environmental and social management plan (ESMP) has been developed; clear monitoring and reporting mechanisms are included.
IFC PS2	Labor and working conditions	The project complies with national labor laws; safe and fair conditions for workers are provided, including measures for occupational health and safety.
IFC PS3	Resource Efficiency and Pollution Prevention	The technologies used are energy efficient; measures are in place for the management of hazardous waste (batteries) and chemicals.
IFC PS4	Health, safety, and security in communities	Measures are in place to prevent risks to communities (noise, fires, battery handling); an emergency response plan will be developed.
IFC PS5	Land acquisition and involuntary resettlement	The project uses land designated for construction, previously used for agricultural activities, avoiding relocation; in the case of connection works on agricultural land, these are short-term and have a minor impact. Mitigation measures have been provided for in the ESIA.
IFC PS6	Biodiversity conservation and natural resource management	An assessment has been carried out; the project avoids protected areas and includes measures to protect local habitats and species.
IFC PS7	Indigenous populations	No indigenous communities have been identified in the project's area of influence. <i>This standard does not apply in the context of the project, as there are no indigenous peoples in Romania. Instead, specific measures are planned for identified vulnerable groups, including minorities, persons with disabilities, and other categories.</i>
IFC PS8	Cultural Heritage	Cultural heritage is a component analyzed as part of the environmental impact assessment procedure. <i>Based on spatial data on the location of archaeological sites and built cultural heritage sites, no areas of cultural heritage sensitivity were identified in the vicinity of the land proposed for development.</i>
Equator Principles	Framework for assessing environmental and social risks for investment projects, applicable to signatory financial institutions	The project complies with the Equator Principles requirements: a compliant ESIA was carried out, stakeholders were involved, and mitigation measures are integrated into the investment decision.



2. Project Description

2.1 Project location

The land intended for the development of a battery energy storage system (BESS) is located in the southern part of Gura Ialomiței and in the northern vicinity of Mihail Kogălniceanu. The area affected by the project includes both urban land—used for yards/buildings (for the BESS site)—and rural land—used for agricultural purposes (for the cable route).

The BESS site is located in the administrative territory of the commune of Gura Ialomiței, and its immediate surroundings are as follows:

- South: County Road DJ2 and a disused, partially demolished railway line;
- West: Agricultural land;
- East: Residential property;
- North: Agricultural land.

The main access to the site is from Strada Gării (from the south and southeast), in the immediate vicinity of DJ2, located approximately 30 meters from the southern boundary of the land.

The underground connection cable route starts from the BESS system located on Strada Gării no. 12, Gura Ialomiței, and extends to the 400/110 kV Gura Ialomiței electrical station, operated by Transelectrica. The 1.6 km route runs through both the administrative territory of Gura Ialomiței commune and Mihail Kogălniceanu commune, crossing agricultural areas and existing infrastructure . The first part of the connection, at the BESS property boundary, will cross a 100 m section of land that was part of a railway line that has been decommissioned and demolished, then it will cross perpendicularly, over a 6 m section, the DC2 communal road administered by the Mihail Kogălniceanu Local Authority. Subsequently, the cable route will continue on the communal service road and will cross under privately owned land.

The surroundings of the cable route are:

- South: Agricultural land (outside the built-up area of Mihail Kogălniceanu);
- West: Agricultural land (outside the town of Mihail Kogălniceanu);
- East: County Road DJ218;
- North: Agricultural land outside the built-up areas of Gura Ialomiței and Mihail Kogălniceanu.

The project site is located at a considerable distance from national borders, with the nearest neighboring country being Bulgaria, approximately 70 km to the south.

Table 4: Project location in relation to sensitive areas

Sensitive element	Element type	Distance from site/route	Comments
RORW11-1_B9 – Ialomița River (lower sector)	Surface water (river)	~4.8 km south (BESS site)	Overall good chemical status; under diffuse and point source pollution pressure; no direct hydrological connectivity
RORW14-1_B4 – Danube River (Chiciu–Isaccea sector)	Surface water (river)	~7.1 km southeast (cable route)	Under the influence of hydrotechnical interventions; no direct connection; very low risk of indirect impact
ROSPA0111 Berteștii de Sus - Gura Ialomiței	Natura 2000 site	0.9 km (BESS) 171 m (opposite the cable route)	Also includes ROSCI0389 Salt marshes at Gura Ialomiței – Mihai Bravu
ROSPA0120 Kogălniceanu – Gura Ialomiței	Natura 2000 site	1 km (BESS) 153 m (opposite the cable route)	Important area for aquatic birdlife
Gura Ialomiței housing (northern area)	Residential area	~150 m, north of BESS	Former railway station converted into housing

Sensitive element	Element type	Distance from site/route	Comments
Mihail Kogălniceanu housing	Residential area	>300 m from the cable route	No direct intersections
Gura Ialomiței power station (Transelectrica)	Technical infrastructure	~ 1.6 km from BESS, connected by cable	Final destination of the connection
DJ2 / Str. Gării / DJ218	Public roads	20–30 m from BESS and route	Provides access and partial route for the cable
Non-functional railway	Rail transport infrastructure	30 m from the BESS boundary	Runs along the southern boundary of the BESS site; not operational, but represents a topographical and cadastral landmark

2.2 Project components

The proposed investment will consist of developing battery energy storage capacity using a lithium-ion (LFP type) battery structure

In the first phase, the proposed investment will consist of developing a battery energy storage capacity using a lithium-ion (LFP type) battery structure with an installed capacity of 300 MWh, with a subsequent expansion of capacity to 500 MWh.

The investment project includes the following works:

- Construction of a concrete platform on which the energy storage equipment (BESS), control and command system, air conditioning systems, and energy flow monitoring systems will be installed. The medium voltage part includes transformer stations, the 33kV/110kV transformer station:
- Construction of utility networks;
- Construction of a protective fence and access gate, lighting system, and video surveillance system.
- Construction of LES cable routes, installation and connection of the electricity storage facility in the existing 400/110/20kV Gura Ialomiței transformer station.

The storage system will be developed using a lithium-ion battery structure, with an installed capacity of 300 MWh, which will have a minimum charge-discharge cycle efficiency of 90.50%, at a charge/discharge rate of 0.5 C, a standard temperature of 25 degrees Celsius, and a SoH of 50%. The installed power will be 150 MW.

The storage system, hereinafter referred to as BESS (Battery Energy Storage System), developed in the first phase will consist of:

A. Main elements of the storage facility

1. Electrochemical battery systems (containerized) arranged in a modular solution

- Capacity per container: 5,015 MWh
- Number: 60–80 units

2. Bidirectional inverters (AC/DC) for AC/DC/AC conversion arranged in a modular, containerized/metal skid configuration

- Power: 2.5 MW/unit
- Number: 60–80 units

3. 33/0.69kV transformer stations

- Power: 5 MVA/unit

- Number: 30–40 units

B. Transformer Station and Connections

1. 110/33/33 kV Transformer Station

- Includes 110kV circuit breaker, 110kV separator, measuring equipment, 2880 MVA transformer, etc.
- 1 assembly

2. Connection stations

- 3 pieces (for connecting 10 transformer stations each)

3. 33/0.4kV transformers for auxiliary services

- Power: 250 kVA
- Number: 2 pieces

4. 0.4kV diesel generator for auxiliary services

- Power: 250 kVA
- Number: 1

C. Support structures and infrastructure

- Site roads and access
- Perimeter fencing
- Land systematization
- Concrete platforms/foundations for containers and transformers
- Equipment storage containers – 2 units
- Control and connection container (33 x 4.6 m)

D. Additional equipment and systems

- PTAB for 20kV mains supply
- Lighting system
- Video surveillance, access control, and anti-theft system
- Fire detection and warning system
- Water supply system and reservoir/retention basin
- Grounding and atmospheric surge protection system

E. Resistance and construction elements

- Reinforced concrete foundations (block type, cuzinet)
- Lightning rods and rods (with cup foundations)
- Metal support structures for equipment (HEA, UNP, S235J2)
- Anchoring systems and galvanized corrosion protection

The BESS site will be fenced around its perimeter.

The state of health (SoH) of a battery describes the difference between the condition of a battery under study (in operation) and the condition of a new battery, taking into account cell aging. It is defined as the ratio between the current maximum capacity of the battery and its nominal capacity. The service life of the batteries will be at least 10 years.

2.3 Access to the project sites

Access to the site from the county road (DJ2) via the communal road (DC2) - Gării Street. DJ2 is located approximately 30 south of the site.

Vehicle access will be through a 5 m wide gate made of two swing panels, and pedestrian access through a dedicated 1 m wide gate.

Within the project, crushed stone roads with a maximum width of 5 m will be built to facilitate access to the main objectives and equipment: transformer station, connection and transformer posts, inverters, battery racks.

2.4 Profile and production capacities

Battery energy storage (BESS) activity falls under CAEN class 3516 – Electricity storage, achieved by operating a static electricity storage system with an installed capacity of 150 MW and 201,749.5 MWh/year of stored energy (with an extension of a further 201,749.5 MWh/year after completion of phase II), with the role of providing operational flexibility, balancing, and support for the integration of renewable sources into the National Energy System.

The operation of the energy storage system does **NOT** involve any technological production processes.

The operation of the BESS is fully automated and does not require any involvement from personnel. The battery control and management system will measure the operating parameters of the BESS and perform the appropriate actions to ensure automatic operation in conditions of safety and energy/operational efficiency. The BESS will self-regulate the charge-discharge cycle according to the demand required at any given moment, without user intervention.

2.5 Project stages

2.5.1 Pre-construction stage

Land and property acquisition

In order to implement the SC AUKERA PROJECT COMPANY DELTA SRL project, surface rights were obtained in advance for the BESS on the land and existing buildings on the site of the future project.

According to the urban planning certificate, the route of the 110 kV underground power line will be located on both private and public land.

The land is not encumbered by any restrictions incompatible with the project activities, is not located in a protected area, is not listed as a historical monument, and there are no temporary building restrictions.

Obtaining the necessary permits and authorizations

The following certified urban planning regulatory documents were issued for the implementation of the project.

Name	Number and date	Purpose	Issuer
Urban planning certificate	2/20.01.2023	Development of battery energy storage capacity	Gura Ialomița Town Hall
Urban planning certificate	24/06.03.2025	Electricity connection	Ialomița County Council
Urban planning certificate	21/16.05.2025	Cable Route inside TSO substation	Gura Ialomița Town Hall
Urban planning certificate	1270/28.02.2025	StepUp Substatio	Gura Ialomița Town Hall
Urban planning certificate	2/18.06.2025	Development of battery energy storage capacity – Phase II	Gura Ialomița Town Hall

The following approvals/agreements were requested through urban planning certificates:

Name	Number and date	Opinions/agreements requested	Status of approvals obtained
Urban planning certificate	2/20.01.2023	Rețele Electrice Romania SA	✓ Location Permit no 25359812 / 06.12.202
		National Environmental Protection Agency	✓ Decision no 272/28.10.2024
		Transelectrica SA	✓ Permit no 10064/01.09.2023
		Cultural Ministry	✓ Permit no 1241/10.02.2025
Urban planning certificate	24/06.03.2025	Building permit	✓ Permit no 03/27.02.2025
		Electricity supply	✓ Favorable location notice no. 2632305/20.03.2025 issued by Rețele electrice România S.A
		Environmental Protection Agency ¹	✓ Decision no 2988/11.04.2025
		Land removal decision	✓ Permit no: 04/11.06.2025
		Road administrator agreement	✓ Permit no 5013/14.05.2025
		SC Rețele Electrice Dobrogea SA	✓ Location Permit no 26324305 / 20.03.2025
		SC Orange Romania SA	✓ Permit no AFO974752/23877/21795
		National Railway Company CFR SA	✓ Permit no 7/2/1546 from 16.05.2025
		SC CNTEE Transelectrica SA	✓ Permit no 95/07.07.2025
		National Agency for Land Improvement	✓ Permit no: 33/12.05.2025
Urban planning certificate	21/16.05.2025	Ministry of Defence MAPN	✓ Permit no DT/11148 from 29.08.2025
		Building Permit	✓ Permit no 20/28.07.2025
		Transelectrica SA	✓ Permit no 96/07.07.2025
		Environmental Protection Agency	✓ Decision no 4364/06.06.2025
		Ministry of Defence MAPN	✓ Permit noDT/7313/17.06.2025
Urban planning certificate	1270/28.02.2025	Public Sanitation	✓ Permit no. 1231/19.05.2025
		Building Permit	✓ Permit no. 23 / 22.07.2025
		Rețele Electrice Romania SA	✓ Location Permit no 26300910/20.03.2025
		Emergency Situation Agency ISU	✓ Permit no. 69/25/SU-IL from 27.05.2025
		Ministry of Defence MAPN	✓ Permit no DT/11147
Urban planning certificate	2/18.06.2025	Environmental Protection Agency	✓ Decision no 2987 / 11.04.2025
		Building Permit	✓ Permit no 02 / 03.06.2025
		Swage system	✓ Permit no 76/23.07.2025
		Environmental Protection Agency	✓ Decision no 5542/15.07.2025
		Orange Romania SA	✓ Permit no AFO861896/29014/26428

¹ Current name: National Agency for Environment and National Areas – Ialomița County Environmental Directorate

Name	Number and date	Opinions/agreements requested	Status of approvals obtained
		Retele Electrice Romania SA	✓ Permit no. 26300910 / 20.03.2025
		Building Permit	✓ Permit no. 03 / 30.07.2025

✓ - obtained, X-not obtained, ○ - in the process of being obtained

After obtaining all the approvals and authorizations required by the urban planning certificates, the project owner will start the procedure for obtaining the Building Permit, in accordance with the provisions of Law No. 50/1991 on the authorization of construction works.

After the Building Permit is issued, the next step is to get the construction site ready, which includes setting up access points, putting in temporary facilities, marking off the work area, and putting in place environmental protection measures, according to the technical design and the legal requirements in force.

Setting up the site for the construction camp

The proposed project will also require the organization of the construction site, which will include areas for storing raw materials, warehouses, parking areas for vehicles, and rest areas for workers involved in the construction process.

The following must be taken into account when organising the construction site:

- The contractor shall submit a detailed plan that includes the location of site facilities such as ecological toilets, material storage areas, hazardous material storage, and container provision.
- If necessary, fuel storage will generally take place in the workshop areas of the site organization, which are usually fenced and paved. A mobile tank (if necessary) will be used to refuel vehicles on site.
- The resulting waste will be collected in specially designated areas and transported to the nearest waste disposal site for recovery/disposal.
- Adequate washing facilities and sanitary facilities shall be provided in offices and workshops. Sanitary facilities shall include portable toilets;
- Water for human consumption will be available in the camping area and at the offices on site, as well as in other convenient locations.

Construction materials from outside the study area will be transported to the site using the existing road network. National, county, municipal, and agricultural roads will be used to deliver these materials.

The construction site will be located on the land designated for the investment, without extending beyond the cadastral boundary.

2.5.2 Construction phase

The construction works will include a wide range of activities, including: site preparation and clearing, use of heavy machinery, transport of construction materials, earthworks, including excavation and levelling, paving and drainage systems. Channels and drains will also be built to carry away rainwater.

The project will be carried out in two main phases:

- The first stage will involve the installation of a capacity of 201,749.5 MWh/year;

- the second stage will involve supplementing the total capacity to 201,749.5 MWh/year.

Sourcing and transportation of building materials

To carry out this project, it will be necessary to use a wide range of building materials with physical, chemical, and mechanical properties suitable for the technical requirements of the works. The raw materials will include, in significant quantities: crushed rock (stone), mineral aggregates (gravel, sand), water, cement, construction timber, steel reinforcement (reinforcing bars) and synthetic polymers (plastics).

In addition, the project may require the use of auxiliary materials and consumables such as: industrial paints, organic solvents, electronic components, metal conductors, cables, liquid fuels (diesel, gasoline), technical oils, food products for site personnel, motor vehicles, biological materials, technical gases, power sources, welding equipment, and other items that support the performance of operational activities.

Materials will be sourced exclusively from economic operators that hold all the approvals, authorizations, and licenses required by the legislation in force, including those relating to tax compliance and quality standards. From the perspective of sustainability and logistical efficiency, priority will be given to local suppliers or those located in close geographical proximity to the project site, in order to reduce the carbon footprint associated with transport and to lower the related operational costs.

Storage of construction materials

Construction materials will be stored on site. Bulky materials such as stones, sand, and steel must be carefully stored in the area specially designated by the contractor and protected from the elements to avoid losses caused by weather conditions such as wind and rain. Petroleum products will also be stored on site.

Wastes and Storm Water Management

Waste generated by the project will include excavated materials, construction debris, and a variety of solid waste. Excavated materials and construction debris will be reused or recycled within the project as much as possible. What remains will be used to fill potholes on dirt roads in the area or disposed of at a specially designated site.

2.5.3 Operational phase

During the operational phase, the main activities of the project will involve the proper use and maintenance of the energy storage infrastructure and stormwater drainage systems, with dedicated maintenance personnel and a regularly allocated budget.

2.5.4 Decommissioning phase

Demolition works

After the end of the storage system's useful life, it will be decommissioned. Project components, including roads, drainage systems, and foundations, will be demolished.

Dismantling of equipment and fixtures

All materials and equipment, including electrical installations, partitions, and pipe networks, will be dismantled and removed from the site when the facilities, roads, and other project components are decommissioned. Priority will be given to reusing these materials in other projects.

Site restoration

After removal of all waste resulting from demolition and dismantling works, the site will be rehabilitated by restoring the topsoil and revegetating with native plant species, or it will be landscaped in accordance with the development trends of the period.

Construction materials and Energy used

The main sources of energy required for the decommissioning of the project will include electricity and fossil fuels (especially diesel). Electricity will be used for welding, metal cutting/grinding, and lighting. Diesel will power heavy trucks and machinery such as bulldozers. The contractor should seek to promote the efficient use of materials and energy through proper planning in order to reduce the economic and environmental costs associated with extracting new materials.

Solid waste generated

Large quantities of solid waste will be generated during the decommissioning of the project. This will include construction debris, metal scraps, excess soil, excavated materials, etc. The developer is advised to take measures to minimize the generation of this waste and to ensure that appropriate procedures are in place for the disposal or recycling of the waste produced.

With regard to the organization of the construction site and storage areas, it is necessary to rehabilitate and restore them to an acceptable ecological condition after the completion of activities, in accordance with the environmental regulations in force.

2.6 Project schedule

The implementation period for the investment objective is estimated at **24 months**, with an execution period of **20 months**.

According to the building permits obtained the execution period is 12 months from the Start of construction date for each Building Permit.

According to the Grid connection contract signed with DNO Retele Electrice the deadline for COD is 30.06.2026 for Phase 1 and 31.12.2026 for Phase 2. Aukera has the right to extend the deadlines up to 31.03.2027 (end date of the contract), or to extend with additional 12 months, upon re-payment of the Grid Connection Tariff.

2.7 Resources required

The electricity storage capacity will be developed on a plot of land with an area of approximately 38,756 m², located within the built-up area of the commune of Gura Ialomiței, at 12 Gării Street, identified by cadastral number 917, in accordance with Urban Planning Certificate No. 2/20.01.2023.

From a legal point of view, the land is privately owned by the project beneficiary, is free of encumbrances, and is located in an urban area with technical and municipal functionality compatible with the proposed investment.

The current use of the land is classified as "yards and buildings," with no documented existence of natural habitats or species of conservation interest. The land was previously used for construction purposes and shows signs of anthropization (concrete platforms, ruderal vegetation, partially demolished structures).

According to local urban planning regulations and the certification obtained, the land is compatible with the development of energy infrastructure, with no need for expropriations, relocations, or changes in land tenure. The site does not overlap with the boundaries of any protected site, but it is located in the vicinity of two Natura 2000 areas (ROSCI0389 and ROSPA0120), which requires a cautious approach to environmental protection and the prevention of indirect effects on biodiversity.

According to the applicable urban planning regulations, the urban planning indicators are: land occupancy percentage (POT) of 25% and land use coefficient (CUT) of 0.06.

To ensure sufficient protective distances from the houses in the vicinity of the investment target, it will be developed as far as possible from the residential area located to the north, on the southern or central side of the land.

The site is bordered to the south by a disused railway line, along which a railway safety zone of at least 20 meters from the centerline of the track is established by law. Although the line is currently out of service, the land on which it is located remains subject to regulations on the protection of railway infrastructure.

Thus, the project will comply with the conditions for the location of constructions in the railway safety zone, and the organisation and execution works will not affect the stability of the embankment or the related technical infrastructure. Any intervention in the vicinity of this area will be carried out in accordance with the opinion of CFR or the competent authority for the administration of railway land, if applicable.

The underground electrical connection route for the BESS project is approximately 1.6 km long and crosses land located in the administrative territory of the communes of Gura Ialomiței and Mihail Kogălniceanu. From a legal point of view, the land is located both within and outside the built-up area and consists of a combination of public domain (roads, access roads), Romanian State property (administered by SC CFR SA) and private land. The current use of these lands is mainly agricultural or related to technical infrastructure (roads, technological access, former railway).

The urban planning certificate for the route (CU no. 24/06.03.2025) confirms that the route is compatible with urban planning documentation and does not affect protected areas or land with special status.

The land on which the BESS will be located is in the vicinity of the Gura Ialomiței electrical station

belonging to the System Operator TRANSELECTRICA SA, with the physical connection between the two to be made via an underground electrical line – the final solution will be finalized during the Solution Study development stage.

The proposed route for the cables mainly crosses agricultural land and service roads, and the current use is declared as: land in the protection and access area, land in the agricultural and technical/energy transport area; no protected areas or land with special use restrictions are affected.

The territorial balance sheet for the project is presented below:

Table 5 Table: BESS territorial balance

Objective	Area (m ²)	Percentage
Buildings	3,750	10
Equipment platforms	3,500	9
Access roads and parking lots	2,500	6
Green spaces	29,416	75
TOTAL	39,166	10

The transformer station will occupy an area of 5,000 m² within the BESS site.

The route of the underground electrical cables for the grid connection will temporarily affect an estimated area of approximately 6,400 m², corresponding to a length of approximately 1.6 km and an average working width of 4 meters. This area will be used during the execution phase for excavation, equipment access, temporary storage of materials, and restoration work. After completion of the work, the land will be restored to its original condition and returned to agricultural use, where applicable.

2.7.2 Raw materials

The project will use raw materials and materials that comply with the national regulations and standards in force, fully harmonized with European legislation and standards.

The main raw materials for the planned works will be mineral aggregates (rough stone), which are particularly necessary for the construction of the platforms. These aggregates will be transported, under the responsibility of the contractor, from the nearest quarries authorized by the National Agency for Mineral Resources (ANRM).

In addition, various construction materials, metalwork, and accessories will be used, supplied by specialized units, also under the responsibility of the construction-assembly contractor. All materials will be delivered with quality certificates and will be received, handled, transported, and stored in appropriate conditions throughout the duration of the works to prevent damage, degradation, or loss.

The construction works will be carried out using equipment specific to this type of activity, provided by the contractor. This will include, but is not limited to: excavators, bulldozers, compactors, and front loaders.

The hazardous chemicals involved will mainly be fuels, lubricants, and oils used for the operation of machinery and means of transport. Refueling will be carried out exclusively at authorized stations, and any oil changes will only be carried out in specialized units, thus avoiding contamination of the site.

2.7.3 Utilities

The planned works do NOT require connections for utility supply.

The utilities required to carry out the activities proposed in the investment project will be:

Water supply

During the preparatory phase of the works, as well as during **the actual execution** of the works, the main use of water will be as drinking water for the execution personnel, which will be supplied in bottles from specialized suppliers by the contractor.

The contractor is prohibited from discharging hazardous substances (fuels, oils, paints, etc.) into surface waters. During the execution of the works, the collection and disposal of domestic wastewater shall be ensured, and additional drinking water consumption shall be ensured during the construction period.

There will be no water consumption for technological purposes during the implementation of the project.

The project's **operational** phase does not require the construction of water supply, sewerage, treatment, or wastewater disposal networks. Domestic/technological water will be provided by two tanks installed on site, which will be filled with water periodically. Mobile ecological toilets depending on the needs and requirements of the Beneficiary.

Wastewater disposal

During the proposed construction works, water will not be used for technological purposes, so no technological wastewater will be produced.

The contractor's personnel will have access to toilets within the site organization (outside the project execution area), set up in a perimeter to be proposed by the beneficiary, on a site owned by the beneficiary, with basic facilities provided.

Electricity supply

During the execution of the works, the contractor will provide all the utilities necessary for the proper functioning of the site organization, including the electricity supply.

The battery-based electricity storage and supply system will be connected to the SEN electricity grid via a 110 kV Deep Connection Station (SRA), conventionally equipped with a 33/110 kV oil-insulated transformer and a 110 kV line cell with oil-insulated and SF6 (sulfur hexafluoride) electrical equipment.

2.7.4 Personnel

The project will use human resources throughout its lifetime, with greater involvement during the execution period. The workforce will be provided mainly through external contracting by services for the execution, maintenance, and operation of the facility.

The following categories of personnel will be required for the implementation of the project:

- construction and assembly teams (civil, electrical, mechanical),
- supervisory staff and site engineers,
- occupational health and safety (OHS) coordinators,
- environmental/waste management officer,

- security, logistics, and support personnel,
- technicians and maintenance teams (during the operational period).

In addition to these categories, there will be temporary workers involved in construction and assembly work, site preparation, material handling, and equipment installation.

Depending on the availability and skill level of human resources, the use of local personnel will be considered. The following human resources will be required for the implementation of the project, in addition to personnel involved in construction and assembly work:

Table 6: Human resources required during the execution phase

Position	Number of persons required
Technician	30
Engineer	6
Health and Safety / Fire Safety Officer	1

A total of 8 employees will be needed for the automated remote operation and maintenance of the BESS system.

Table 7: Human resources required during the operation phase

Position	Number of people required	Working hours
Technician/Certified Electrician	4	2 shifts, 8 hours/day
Engineer	2	1 shift, 8 hours/day
Financial manager	1	Part-time
Health and Safety / Fire Safety Officer	1	Part-time

There are no plans to develop permanent accommodation facilities for workers on site, but if necessary, temporary solutions (e.g., modular units, rented facilities) may be used, in compliance with national legislation and relevant international recommendations.

The designated contractor will be responsible for providing the necessary accommodation facilities for workers.

2.8 Project alternatives

Three alternatives were analyzed:

- **The "Do Nothing" scenario**
- **2 "With Project" scenarios** for the development of an electricity storage system using lithium-iron-phosphate (LiFePO₄) technology. Both scenarios aim to efficiently integrate a BESS system into the electricity grid, with the main objective of increasing energy flexibility and efficiency, reducing greenhouse gas emissions, and optimizing consumption at peak times.

The "Do Nothing" scenario

In the absence of the proposed project to install a Battery Energy Storage System (BESS), the area studied will not benefit from the advantages associated with additional capacity to balance the electricity grid, integrate intermittent renewable sources, or reduce greenhouse gas emissions. The "Do Nothing" scenario involves maintaining the current status quo without investing in storage infrastructure.

Consequences of the "Do Nothing" scenario:

- Insufficient capacity to balance the electricity grid: Without the project, there will be no local solution for frequency stabilization and load control, which may affect the quality of distribution services in the context of the increasing share of renewable energy.
- Reduced opportunities for integrating renewable sources: Photovoltaic and wind power systems in the area will have limited capacity for integration into the grid due to the lack of an efficient storage solution, which will lead to energy losses and lower potential for decarbonization of the local energy mix.
- Failure to achieve energy and climate transition objectives: The "Do Nothing" scenario contradicts national and European objectives on climate neutrality and emissions reduction by failing to make a concrete contribution to increasing grid flexibility and reducing the use of conventional fossil fuel sources.
- Zero or negative socio-economic impact: No jobs will be created during the construction and operation phase, there will be no direct local economic contribution (taxes, fees, collaborations with local suppliers), and the region will not benefit from cutting-edge technological infrastructure that could attract additional investment.
- Increased risks associated with climate variability and intermittent energy: In the context of climate change and increased energy demand during extreme periods (heat waves, drought), the lack of a storage system increases the vulnerability of the energy infrastructure.

Scenario 1 involves the installation of a BESS system with a power of 150 MW and a storage capacity of 300 MWh. This system could operate for two hours at maximum load and would require 186 BESS containers, occupying an area of approximately 27,000 m². The technology used is LiFePO₄, with an estimated lifespan of 15 years. Implementation would take approximately 12 months. Estimates show an annual energy delivery of approximately 300 MWh, a reduction in greenhouse gas emissions of over 70,285 tonnes of CO₂ equivalent/year, and a reduction in network losses of approximately 3,413 MWh/year. The total investment cost (CAPEX) for this scenario is approximately EUR 90.3 million, and the annual operating costs (OPEX) are estimated at EUR 9.3 million. The total score given to this scenario, following the multi-criteria assessment, is 95.90 points.

Scenario 2 envisages a double-capacity BESS system with 300 MW of installed power and 600 MWh of storage capacity. The system can also operate for two hours at maximum load and requires 372 BESS containers, covering an area of approximately 48,000 m². It also uses LiFePO₄ technology and has an estimated lifespan of 15 years. The estimated implementation time is 14 months. The annual energy delivered is estimated at 300,132 MWh, and the annual reduction in greenhouse gas emissions is approximately 70,374 tons of CO₂ equivalent. Network losses are reduced by 5,696 MWh/year. The total investment cost (CAPEX) is approximately EUR 117 million, and operating costs (OPEX) are estimated at EUR 13.1 million per year. Scenario 2 achieved a total score of 93.51 points.

Table 8: Analysis of project scenarios

Variable	Unit of measurement	Selection mode	Scenario 1 - 150 MW / 201,749.5 MWh/year	Scenario 2 - 300 MW / 300,132 MWh
Installed capacity	MWh	Maximum value	201.7495	300.1320
		Score	99.87	100.00
Amount of electricity purchased from renewable sources	MWh/year	Maximum value	121,049.59	121,202.24
		Score	99.87	100.00
Nominal yield (net)	%	Maximum value	94.00	94
		Score	100	100
Amount of electricity injected into the grid at peak consumption	MWh/year	Maximum value	113,786.62	113,930.11
		Score	99.87	100.00
Greenhouse gas emission reductions	tons of CO ₂ equivalent/year	Maximum value	70,285.99	70,374.63
		Score	99.87	100.00
New renewable energy production capacities	MW	Maximum value	57.57	57.649
		Score	99.88	100.00
Losses in electrical networks as a result of operating at high load (>90%)	%	-	3	5
Reduction of electricity losses in transmission and distribution networks	MWh/year	Maximum value	3,413.60	5,696.51
		Score	59.92	100.00
Updated CAPEX	EUR	Minimum value	90,301,567.88	117,011,617.50
		Score	100.00	29.58
Updated OPEX	EUR	Minimum value	9,335,315.16	13,129,819
		Score	100.00	40.65
Total score (weighted)			95.90	93.51

Considering the elements detailed in the table above, Scenario 1 stands out in terms of superior economic efficiency. Although it has a lower installed capacity, the annual energy delivery is almost identical to that in Scenario 2, and the reduction in greenhouse gas emissions is only slightly lower. The implementation time is shorter and the area occupied is significantly smaller. Also, the total costs (investment and operation) are much lower compared to Scenario 2, which makes it more financially sustainable and more suitable for implementation in the short and medium term.

On the other hand, Scenario 2 may be justified in the context of higher future energy requirements due to its double installed capacity. However, the high costs and increased logistical complexity should be carefully weighed against the additional benefits obtained.

In conclusion, Scenario 1 is recommended for implementation as it offers an optimal balance between technical performance, environmental impact, and economic efficiency. It adequately meets the project's objectives while maintaining a high degree of financial and logistical feasibility.

2.9 Relationship with other existing or planned projects

Over the last decade, Ialomița County has seen growing interest in investments in renewable energy sources (RES). This trend is reflected in the increase in the number of projects completed or under development in this field. In this context, the table below highlights,

for guidance purposes, a number of existing or planned installations, demonstrating the local dynamics in the renewable energy sector.

Table 9 : Identified renewable energy projects

No.	Project name	Description (Type, Capacity, Year)	Location (Town/City)	Developer(s)	Status
1	Făcăeni Wind Farm	Onshore wind farm, capacity 132 MW (44 Vestas turbines), 2015	Făcăeni, Vlădeni, Mihail Kogălniceanu	EDP Renewables Romania (EDPR)	Active (operational since 2014)
2	Țândărei Photovoltaic Park	Photovoltaic park, capacity 45.15 MW, planned for ~2024/25. Includes new 110 kV station and grid connection.	Țândărei	Tenersolar Park S.R.L.	Planned (EPC contract signed in Nov. 2024)
3	Coșereni Photovoltaic Park	Photovoltaic solar park, capacity 4.5 MW, commissioned in 2013. Produces ~7,500 MWh/year.	Coșereni	Tryba Energy (France)	Active (operational since 2013)
4	Giurgeni Photovoltaic Park ("Ialomița I")	Photovoltaic park, capacity ~8 MW. Initiated in 2012 by the County Council & Gigawatt Global; completed and connected in 2018 after delays. Operated by concessionaire (Minex & Premier Com) since 2022.	Giurgeni	Ialomița County Council (public initiative); concessioned to Minex S.R.L. & Premier Com S.R.L. in 2022	Active (commissioned in 2018)
5	Slobozia Solar Project	Large photovoltaic park, capacity 70.2 MW. Won CfD contract in 2024 – ~€54.18/MWh for 10 years.	Slobozia (suburb)	Nofar Energy (Israel)	Planned (CfD auction winner, 2024)
6	Ialomița Nord Wind Farm (Grivița)	Onshore wind farm ~247 MW (ATR approved). Planned installation ~253 MW (according to PUZ).	Gheorghe Lazăr, Țândărei, Ograda	Țândărei Solar S.R.L.	Planned (ATR obtained in Oct. 2023)
7	Giurgeni Wind Project	Onshore wind farm, planned ~193 MW. Provides for connection to the 400 kV grid (Bucharest South–Gura Ialomiței line).	Giurgeni	ICEWIND Regenerabil S.R.L.	Planned (in the EIA study phase)
8	Făcăeni Eolian II	Wind farm expansion ~226.5 MW (44 new turbines) planned near the existing Făcăeni wind farm.	Făcăeni, Vlădeni, Mihail Kogălniceanu	EDP Renewables Romania (current operator)	Planned (environmental permit pending)
9	Bărbulești I & II Solar Parks	Two photovoltaic projects (~5 MW cumulative). Approximately 18,000 solar panels planned, total capacity ~5 MWp. Environmental permits issued between 2020–2023.	Bărbulești	Area Energy Solar S.R.L.; STI Green Words Energy S.R.L.	Planned (under development)
10	Vlădeni Photovoltaic Cluster	Large-scale PV development on 638 ha of county land (divided into 4 lots). Planned multi-park complex (>300 MW potential). Concession awarded in 2021, but legally challenged.	Vlădeni (west of Ialomița)	Not specified	Planned (concession awarded in 2021; under dispute)
11	CEF Ialomița 1	Large-scale photovoltaic park, 225 MW	Axintele	Infinity Power Park S.R.L.	ATR approved

Source: ANRE, Annex 9.1 - List of technical connection approvals (ATR) and connection contracts (CR) issued for electricity generation facilities from renewable and other sources

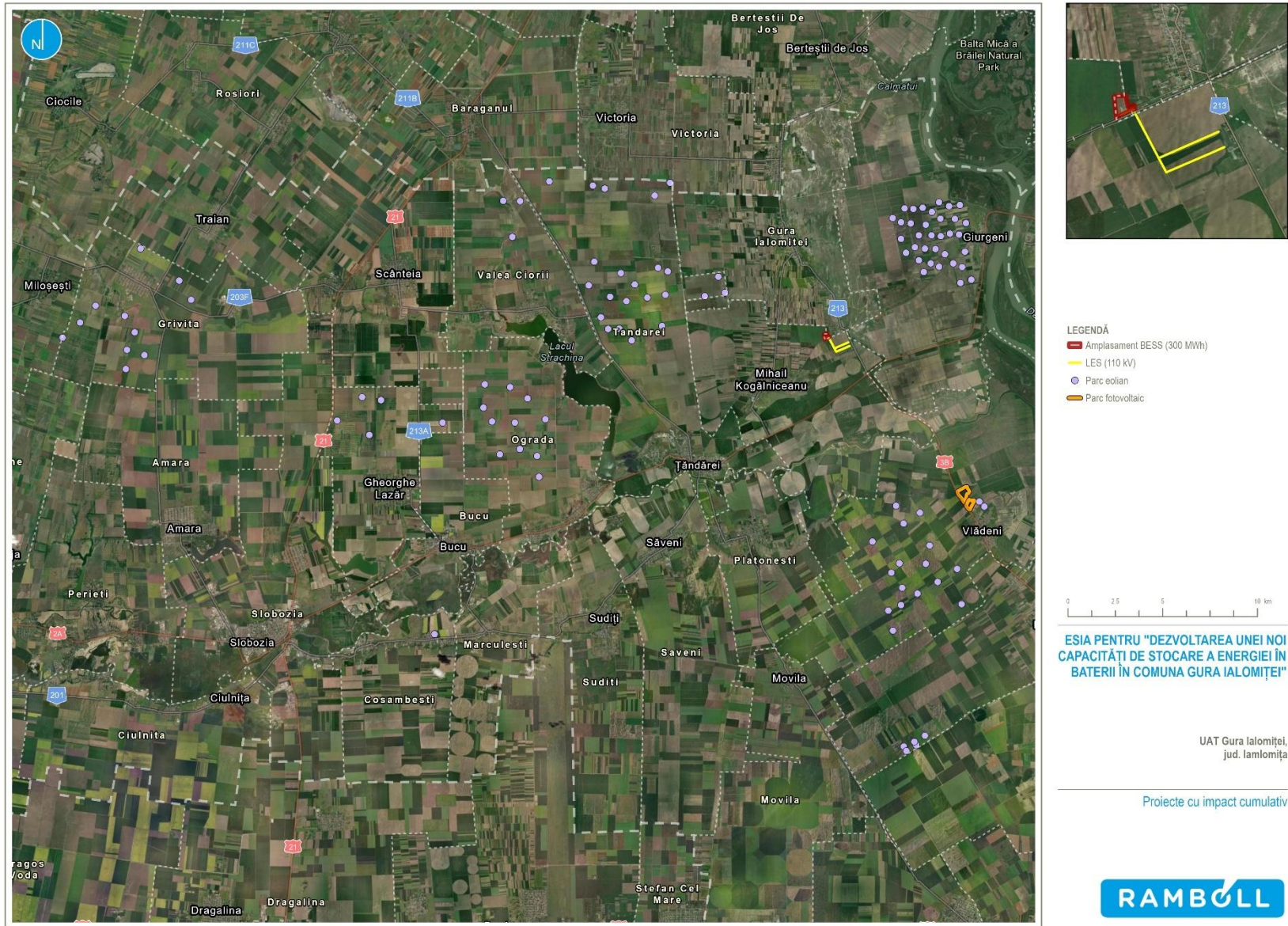


Figure 1: Locations of the projects with which it could have a cumulative impact with BESS project

At the same time, according to publicly available data, the following projects are under construction or nearing completion/commissioning in the Gura Ialomiței administrative-territorial unit, with which the BESS project may have a cumulative impact:

Table 10 : Projects with which it could have a cumulative impact

Name	Owner	Activity	Year of development
Increasing storage capacity at silos for agricultural products	SC GREEN HARVEST SRL	Expansion of grain storage capacity (construction of new silo cells)	2023 Building permit issued in 2024
Establishment of a voluntary collection center in Gura Ialomiței	INTRACOMMUNITY DEVELOPMENT ASSOCIATION ECOO 2009	Setting up a public center for selective waste collection (CAV type) Waste collection	2023-present Building permit pending
400 kV double circuit LEA Cernavodă-Stâlpu and connection to the Gura Ialomiței station	CNTEE TRANSELECTRICA SA	Construction of a 400 kV overhead power line (~160 km) and extension of the 400 kV Gura Ialomiței station (2 cells) to connect the line Electricity transmission and distribution	2020-present Permits issued in 2020 for local sections
Zonal Urban Plan - Construction of the "Gurbănești" wind power plant (max. 60 turbines)	GURA IALOMIȚEI SOLAR SRL (private investor, part of Renovatio)	Development of a wind farm (~253 MW) on the territory of Gurbănești commune (CL) and connection to the SEN (probably at the Gura Ialomiței station) 2023-present	2023-present PUZ approved, awaiting authorisation
Modernization of public roads in the commune of Gura Ialomiței (and component villages) - 7.5 km	UAT Gura Ialomiței Commune (Town Hall)	Rehabilitation and asphaltting of communal roads (local streets ~7.5 km)	2022

BESS Gura Ialomiței Project:

- It is perfectly aligned with local and county policies on sustainable development, green infrastructure, and climate change adaptation.
- It is consistent with national strategies for the integration of renewables, energy security, and PNRR objectives;
- It has strategic value in stabilizing and digitizing the local and regional network (southeastern Muntenia);
- It is an example of synergy between local and national policies in the field of clean energy and innovation.

Table 10: Relationship with existing local plans/programs and strategies

Strategy/Plan	Level	Link to BESS	Comments
Local development strategy (2021–2027, approved by the Local Council)	Local	Supports investments in modern energy infrastructure and technologies	BESS indirectly contributes to the objective of economic diversification and reduction of local infrastructure vulnerabilities
County Spatial Planning Plan (PATJ Ialomița)	County	Includes the development of energy infrastructure (wind, photovoltaic, networks, SEN digitization)	BESS complements the 400 kV Cernavodă–Stâlpu power line and supports the integration of wind projects in the area (e.g., Gurbănești)
County sustainable development strategy 2021–2027	County	Includes priorities for renewable energy and innovation	BESS is a concrete example of technological innovation and efficiency in the regional energy system
South Muntenia Regional Operational Program 2021–2027	Regional	Supports green transition, infrastructure resilience, digitization	Can indirectly support BESS through digitization and smart critical infrastructure projects
National Integrated Energy and Climate Change Plan () (PNIESC 2021–2030)	National	Target: >4000 MW storage by 2030; prioritisation of balancing capacities for RES	The BESS project aligns with the objective of increasing the flexibility of the SEN to support the integration of intermittent renewable sources

Strategy/Plan	Level	Link to BESS	Comments
Romania's Energy Strategy 2020–2030 (with a view to 2050)	National	Encourages investment in storage for grid stability and energy security	BESS contributes to reducing energy imports, balancing production from renewable sources, and increasing security of supply
National Recovery and Resilience Plan (PNRR), Component C6 – Energy	National	Subcomponent I.4 – Support for battery energy storage	BESS Gura Ialomiței is financed by the PNRR with ~€9.89 million, being part of the first 38 projects approved
Modernization Fund – BESS Guide (launched in 2024)	National	Support for independent or co-located storage with RES	BESS may benefit from additional funding for expansion or connection to RES in the future
National Strategy for Adaptation to Climate Change (rev. 2023)	National	Promotes low-emission technologies and resilient critical infrastructure	BESS reduces the need to use fossil fuel sources for balancing and contributes to climate adaptation through flexibility

Given the specific nature of the proposed project and the nature of the projects in and around the Gura Ialomiței UAT, there will be no negative impact from their interconnection. On the contrary, considering the development potential of the analyzed area, benefits are expected in terms of both labor and quality of life.



3. Basic conditions

3.1 Environmental conditions

3.1.1 Topography

The topography of the site is generally flat, dominated by tabular fields and meadows due to its location in the eastern part of the Romanian Plain - Bărăgan, being dominated by extensive tabular fields and meadows. Approximately 65% of the county's surface area belongs to the Bărăgan Plain, 15% to the Danube Meadows, 9% to the Vlășia Plain, and 11% to the Ialomița Meadows and the Argeș-Buzău diversion plain.

The terrain has a maximum inclination of 1%, a slope of 2.9%, and an elevation of approximately 493 m, with a maximum difference of 2 m.

Conclusion:

From a topographical point of view, the site has low sensitivity, characterised by relatively flat terrain, with a general slope of less than 1% and insignificant level variations, which do not generate major constraints for the implementation of the project.

The topographical risks associated with the site are minimal, given the generally flat terrain and the lack of significant unevenness, which allows for optimal organisation of the surface area for the development of the project.

3.1.2 Soil and subsoil

The analyzed site is located within the built-up area of Gura Ialomiței. According to Urban Planning Certificate 2/20.01.2023, the current land use category is yards and buildings.

According to CORINE Land Cover 2018 data, the main types of land use in the Gura Ialomiței area are:

- **Non-irrigated arable land (code 2.1.1):** This represents the majority of the area, used for cereal and oilseed crops.
- **Natural and semi-natural grasslands (code 2.3.1):** Present mainly in saline areas and near watercourses.
- **Wetlands and marshes (code 4.1.1):** Located in the Danube floodplain, they provide valuable habitats for biodiversity.

The land was previously used for construction purposes and shows signs of anthropogenic influence (concrete platforms, ruderal vegetation, partially demolished structures). The neighboring areas are also used for agriculture.

In the area of the Administrative-Territorial Unit (ATU) of Gura Ialomiței, located in the northeast of Ialomița County, the soils have characteristics specific to the lowland region, influenced by the proximity of the Ialomița River and the former Danube marshes. According to the soil map of Romania, the following soil types are found in the area of the analyzed site:

- **Chernozems:** found in the southwestern part of the site. These are fertile soils, rich in humus, with good water retention capacity, very favorable for agriculture.
- **Alluvial soils:** Present near watercourses and in the eastern part of the site. These soils were formed by recent deposits and are fertile, but with variable drainage depending on the local texture.
- **Saline soils:** Found in the northeastern part of the site, these are salinized soils with a high sodium content, which reduce natural fertility and require special improvement measures.
- **Gleic soils:** Found in the northern part of the site, in the vicinity. These are soils affected by high humidity, frequently found in low-lying areas with poor drainage – they can pose challenges in construction (e.g., settlement, water accumulation).

The BESS site is located in an area dominated by chernozems and alluvial soils, which is favorable in terms of bearing capacity and fertility. However, the proximity of areas with solonchaks and gley soils implies increased local sensitivity to water accumulation, salinization, and potential settlement processes.

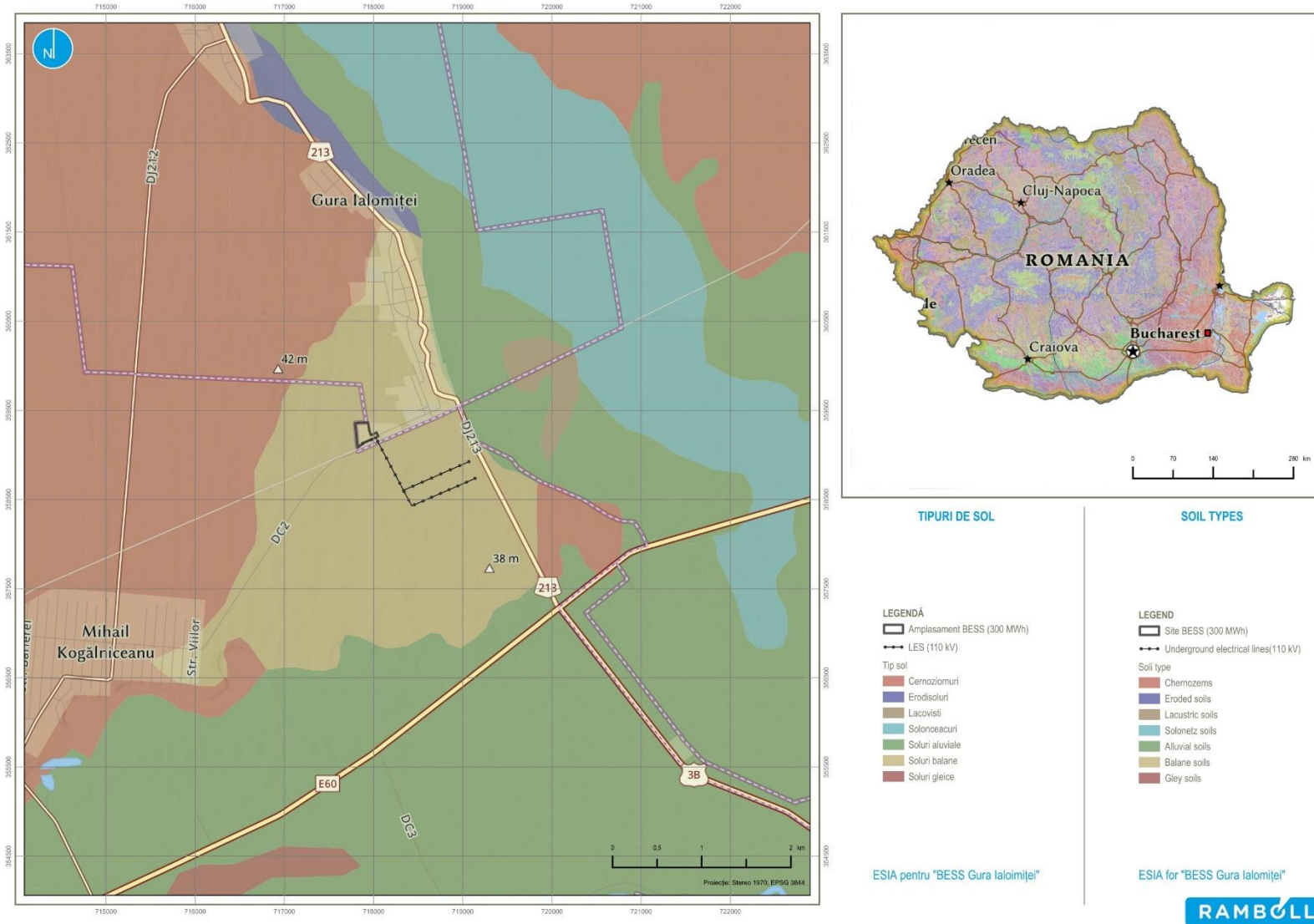
The boreholes drilled during the Geotechnical Study in 2025 indicate the following lithology:

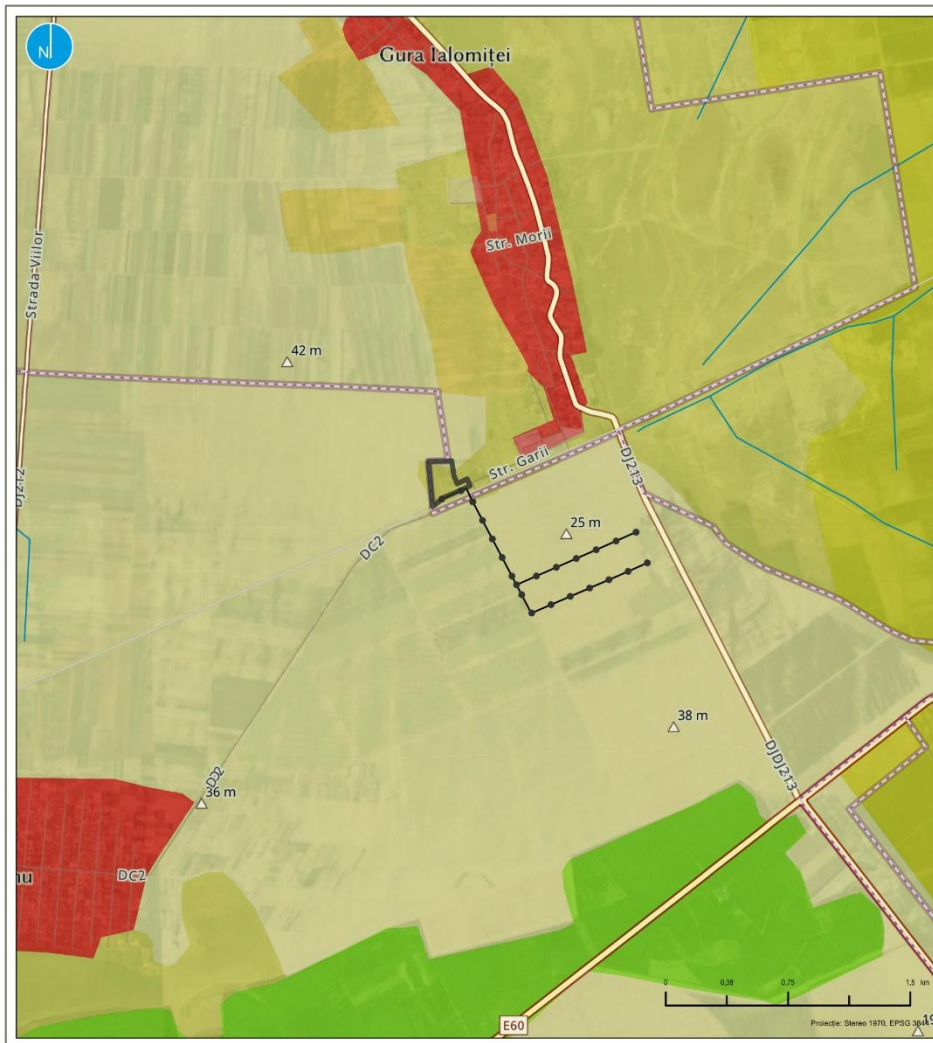
- Under the relatively thick topsoil layer, a loessoid complex with thicknesses estimated in geological literature at 4-8 m, identified as soils sensitive to moisture, group B, with additional settlement upon moisture $Im_3 = 6.1-10.3\%$, having additional specific settlement upon moisture under the weight of the layer $Img \geq 5 \text{ cm/m}$, being soils difficult to foundation.
- Loess in its natural state has high porosity and low volumetric weight, but is dry, with $Sr < 0.4$ (40%), hard; this type of soil is considered difficult for foundation because it has a sensitivity to

moisture (), it settles further when wet/flooded under the load transmitted by the foundations or under its own weight (geological load).

- Locally, it is estimated that loess can have a minimum thickness of 4.00 m and a maximum thickness of 7.00 m; the img calculation will be calculated for a column/thickness of 7.00 m.

Figure 2: Soil map
Source: Soil Map of Romania





CATEGORII DE FOLOSINTA ALE TERENULUI

- LEGENDĂ**
- Amplasament BESS (300 MWh)
 - LES (110 kV)
 - Categoriile de folosință a terenurilor
 - Spatiu urban discontinuu și spațiu rural
 - Terenuri arabile neirigate
 - Terenuri cultivate cu orez
 - Pășuni secundare
 - Zone de culturi complexe
 - Paduri de foioase

ESIA pentru "BESS Gura Ialomiței"

LAND USE CATEGORIES

- LEGEND**
- Site BESS (300 MWh)
 - Underground electrical line (110 kV)
 - Corine land cover classes
 - Discontinuous urban fabric
 - Non-irrigated arable land
 - Rice fields
 - Pastures
 - Complex cultivation patterns
 - Broad-leaved forest

ESIA for "BESS Gura Ialomiței"



Figure 3 : Land use categories
Source: Corine Land Cover, 2018

Conclusion

The analyzed site shows moderate sensitivity to risks related to soil quality and functionality.

In the absence of previous industrial activities with contamination potential, according to Law 74/2019, **the site is not considered a potentially contaminated site, which excludes major risks of historical pollution.** However, the biological functions of the soil may be threatened in the absence of adequate adaptation measures, particularly in the context of climate change and impermeabilization processes.

From a geological point of view (see Figure 3), the project site is located in an area characterized by a complex sedimentary structure, specific to the Moesian Platform, with a succession of formations deposited in fluvial, lacustrine, and marine regimes. The more recent Quaternary strata are represented by loess deposits, sands, and alluvium, with moderate thicknesses and a predominantly sandy-clayey composition. The local geology does not indicate the presence of major geotechnical risks, but requires attention in the design from the perspective of the stability of the support layer and the variable permeability of the surface materials.

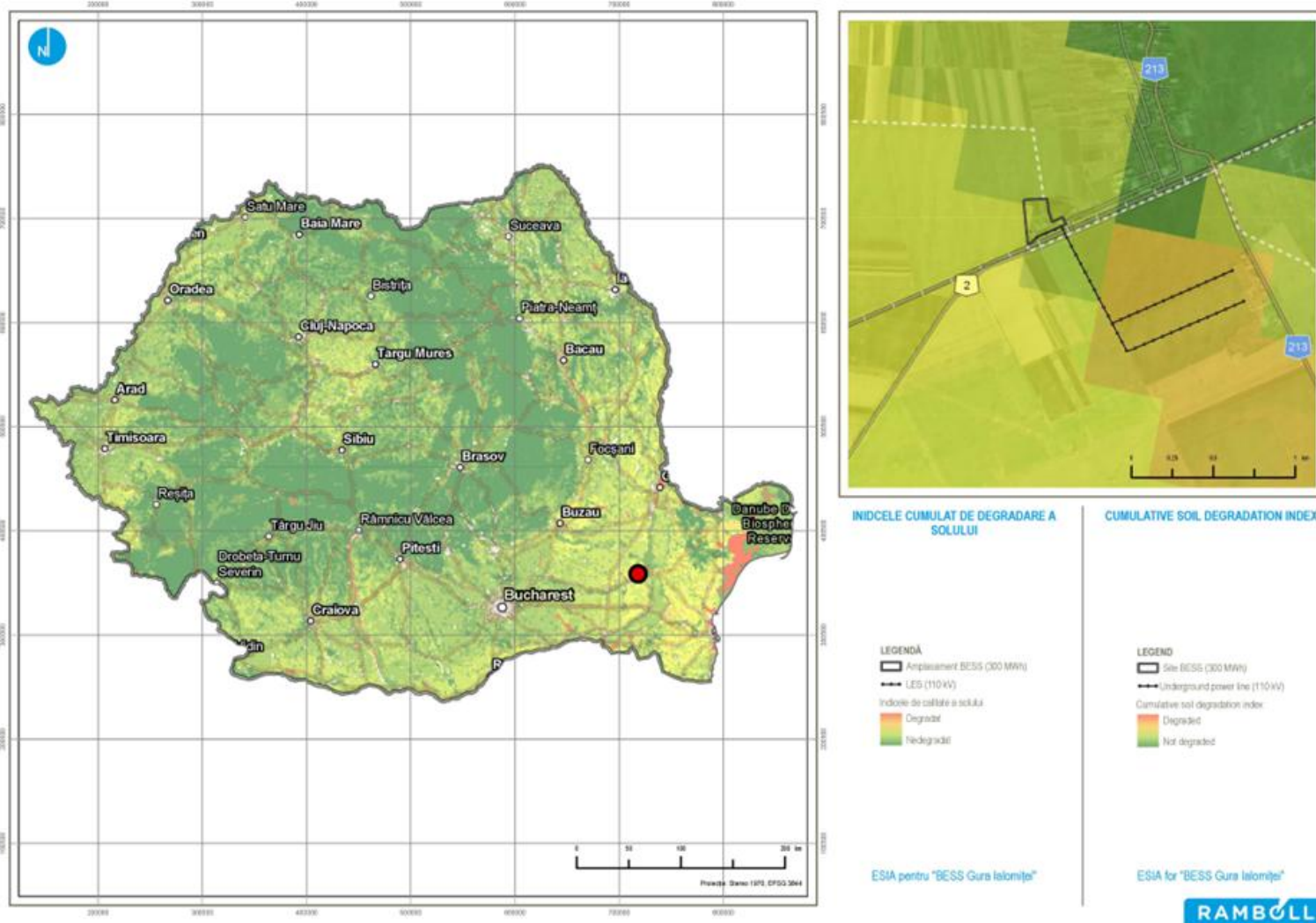
Seismic risk classification is carried out in accordance with the "Seismic Design Code - Part I - Design Provisions for Buildings", code P 100 - 1/2025. According to the zoning of Romania in terms of control period (corner), T_c of response time, the investigated area has a coefficient of $T_c = 1.0$ s.

According to the zoning of Romania in terms of peak ground acceleration values for earthquake design with a recurrence interval of $IMR = 225$ years (20% probability of exceedance in 50 years), the investigated area has a value of $a_g = 0.25$ g.

With regard to earthquake design of buildings, Romania's territory is divided into seismic hazard zones. The level of seismic hazard in each zone is considered, in simplified terms, to be constant. For major urban centers and buildings of special importance, the seismic hazard is assessed locally, based on instrumental seismic data and specific studies for the site in question. The time required for a complete oscillation of seismic waves, specific to an area, is defined as the control period " T_c " of the design spectrum and characterizes its seismic conditions and is expressed in seconds.

Figure 4 : Soil quality map (global degradation index)

Source: JOINT RESEARCH CENTRE, European Soil Data Centre (ESDAC), Soil degradation indicators in EU



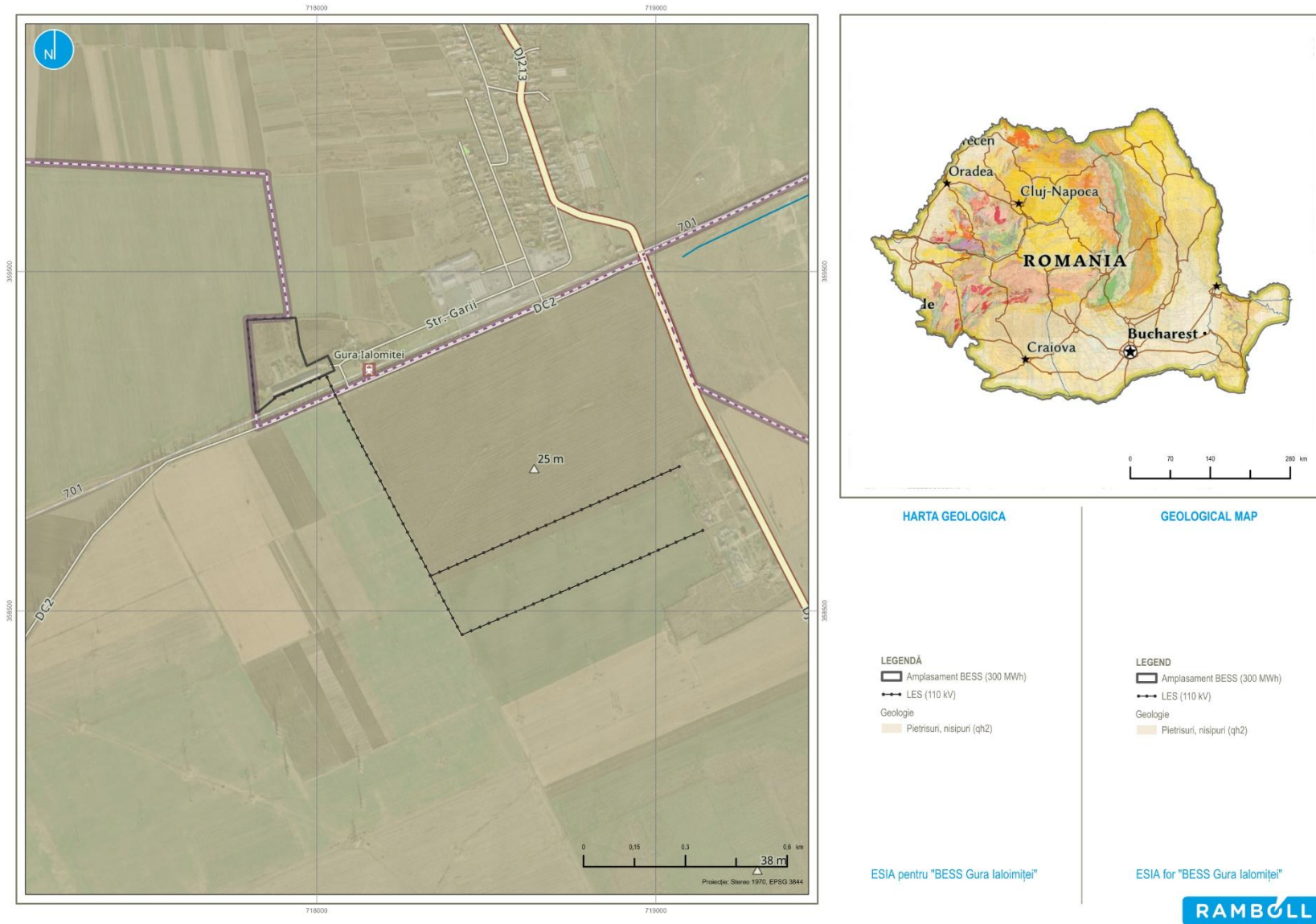
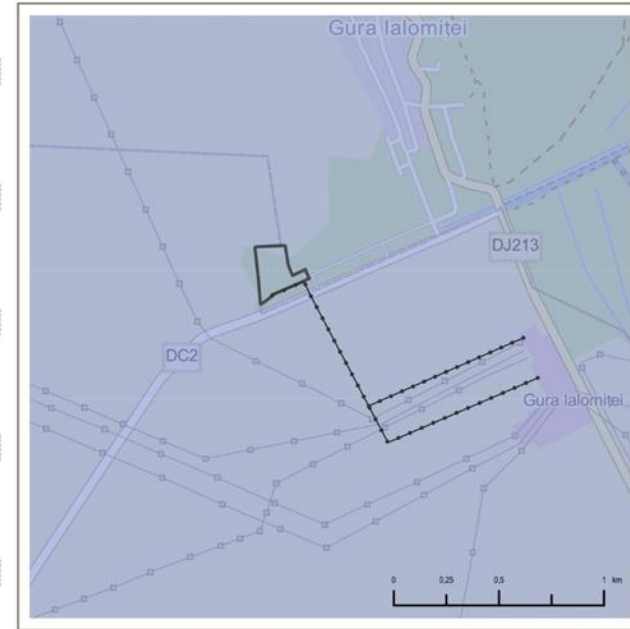
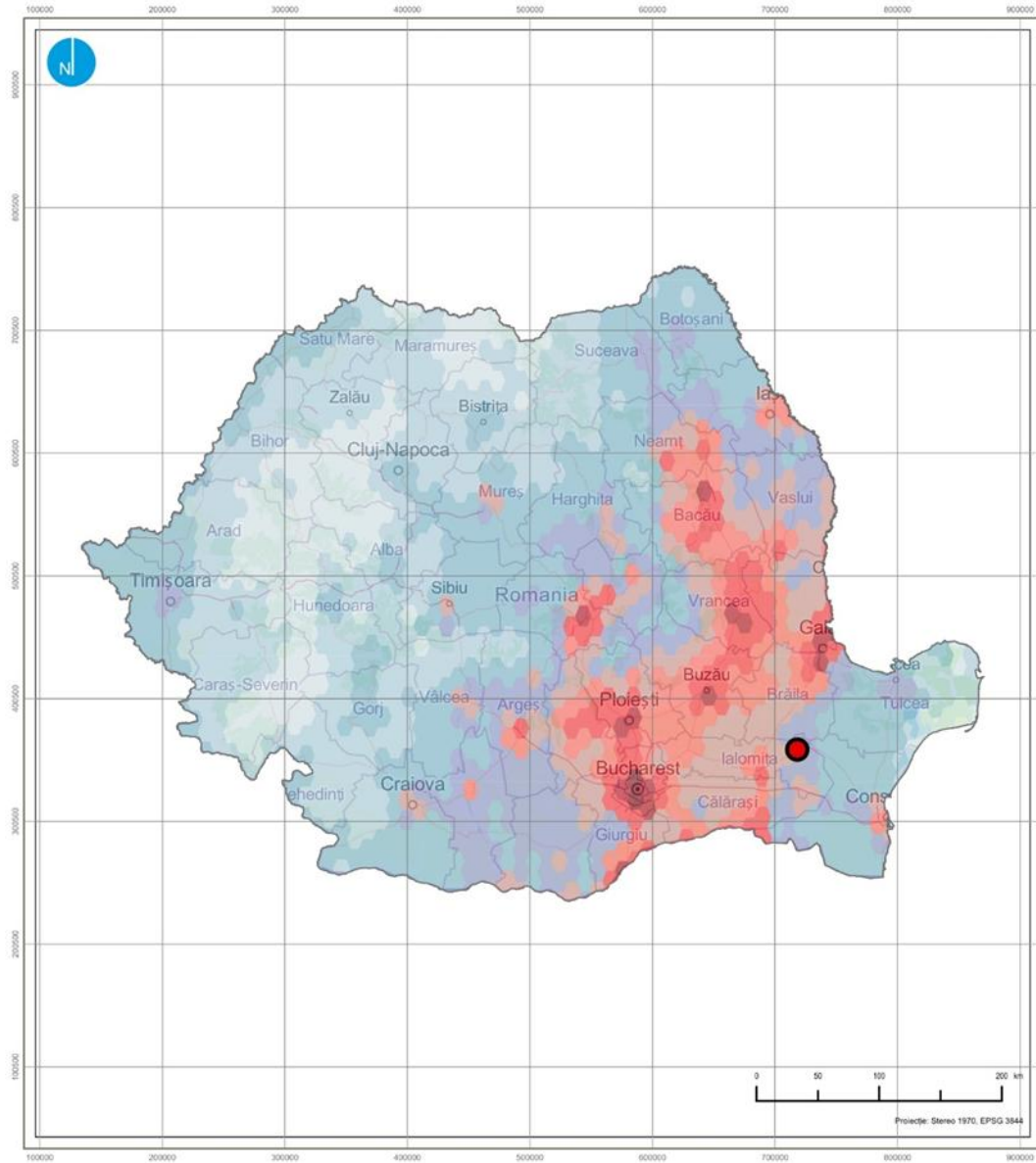


Figure 5: Geological map
 Source: Geological Map of Romania, Geological Institute, 1978



INDICELE DE RISC SEISMIC

SEISMIC RISK INDEX

LEGENDĂ

- Amplasament BESS (300 MWh)
- LES (110 kV)
- Indicele de risc seismic
 - Foarte scăzut
 - Scăzut
 - Moderat
 - Mediu
 - Ridicat
 - Foarte ridicat
 - Extrem

LEGEND

- Site BESS (300 MWh)
- Underground electrical line (110 kV)
- Sismic risk index
 - Very low
 - Low
 - Moderate
 - Medium
 - High
 - Very high
 - Extreme

ESIA pentru "BESS Gura Ialomiței"

ESIA for "BESS Gura Ialomiței"

3.1.3 Hydrogeology

There are two main aquifers in the analyzed area: the phreatic aquifer in the Ialomița floodplain and the phreatic aquifer in the Ialomița terrace, which are not always in direct hydraulic communication, being separated by fine deposits or differences in topographic level.

Groundwater was not encountered in the boreholes drilled during the geotechnical study, but it is assumed to be located at depths between 8.00 and 10.00 m from the natural ground surface, with vertical oscillations of ± 2.00 m, depending on the precipitation regime and the water level of the Borcea branch. The direction of groundwater flow in the project area is predominantly from northwest to southeast in the case of the aquifer in the Ialomița terrace, and from west-southwest to east-northeast for the phreatic aquifer in the floodplain, especially downstream of the town of Țândărei. This hydraulic dynamic reflects the local influences of the terrain morphology, precipitation regime, and hydraulic communication between the aquifers.

Three groundwater bodies of regional importance, both from a hydrogeological and strategic point of view, have been identified in the analyzed area. These bodies of water are part of the plain and floodplain hydrographic systems, with a hydrostatic regime influenced by natural factors (precipitation, river infiltration) and anthropogenic factors (water supply catchments). The main characteristics of these groundwater bodies are:

ROAG12 – East of the Valahe Depression

The ROAG12 water body is located in the eastern part of the Valahe Depression and is represented by a deep aquifer with porous-permeable characteristics. From a geological point of view, it consists of Romanian-Lower Pleistocene deposits belonging to the Frătești and Cândești formations.

The groundwater in this body accumulates in deep strata, and the general direction of flow is from west to east. The chemical quality of the water is classified as good, with no major exceedances of compliance indicators identified. This water body is used to supply water to numerous localities in the Bucharest–Slobozia area and is of strategic importance for regional drinking water reserves.

RODL07 – Danube floodplain (Hârșova–Brăila)

The RODL07 water body stretches along the Danube floodplain between Hârșova and Brăila and is characterized as a phreatic aquifer with a porous-permeable structure. Geologically, it consists of recent alluvial deposits (sand and gravel) deposited over time by the Danube River.

The hydrostatic level is influenced by variations in the river's flow and is predominantly fed by direct infiltration from the Danube. The water quality is generally good, and the water body is of considerable importance for the regional hydrological balance and for maintaining the functioning of ecosystems in adjacent wetlands.

ROIL09 – South Călmățui

The ROIL09 water body is located in the south of Ialomița County and is classified as a groundwater aquifer with medium to high permeability. It consists of Quaternary alluvial deposits, predominantly fine sands and clays.

The hydrostatic level is relatively shallow, with a slow upward trend. The water body is mainly fed by precipitation and infiltration from local watercourses. The chemical quality is generally good, but in certain areas, the permissible values for ammonium, chlorides, or sulfates may be exceeded due to anthropogenic activities or local lithological characteristics. The water body is mainly used to supply drinking water or process water to nearby localities, with no significant risks in terms of quantity or quality.

All three water bodies – ROAG12, RODL07, and ROIL09 – are in generally good quantitative and chemical condition and are important from a hydrogeological point of view for the areas in which they are located. They provide important groundwater resources, being used for domestic, agricultural, and industrial purposes, and play an essential role in maintaining the regional ecological balance.

There is a water well on the project site that was used as a water source in the past. This well does not have a defined sanitary protection zone.

Conclusion:

The BESS site area contains groundwater bodies of regional importance (ROAG12, RODL07, ROIL09), which are in good chemical condition and used for drinking and process water supply. Due to the porous-permeable nature of the aquifers and the shallow depth of the water table (~8–10 m, with fluctuations of ± 2 m), the area has **medium to high hydrogeological sensitivity**. Potential risks during construction and operation include groundwater contamination from accidental electrolyte or fuel spills.

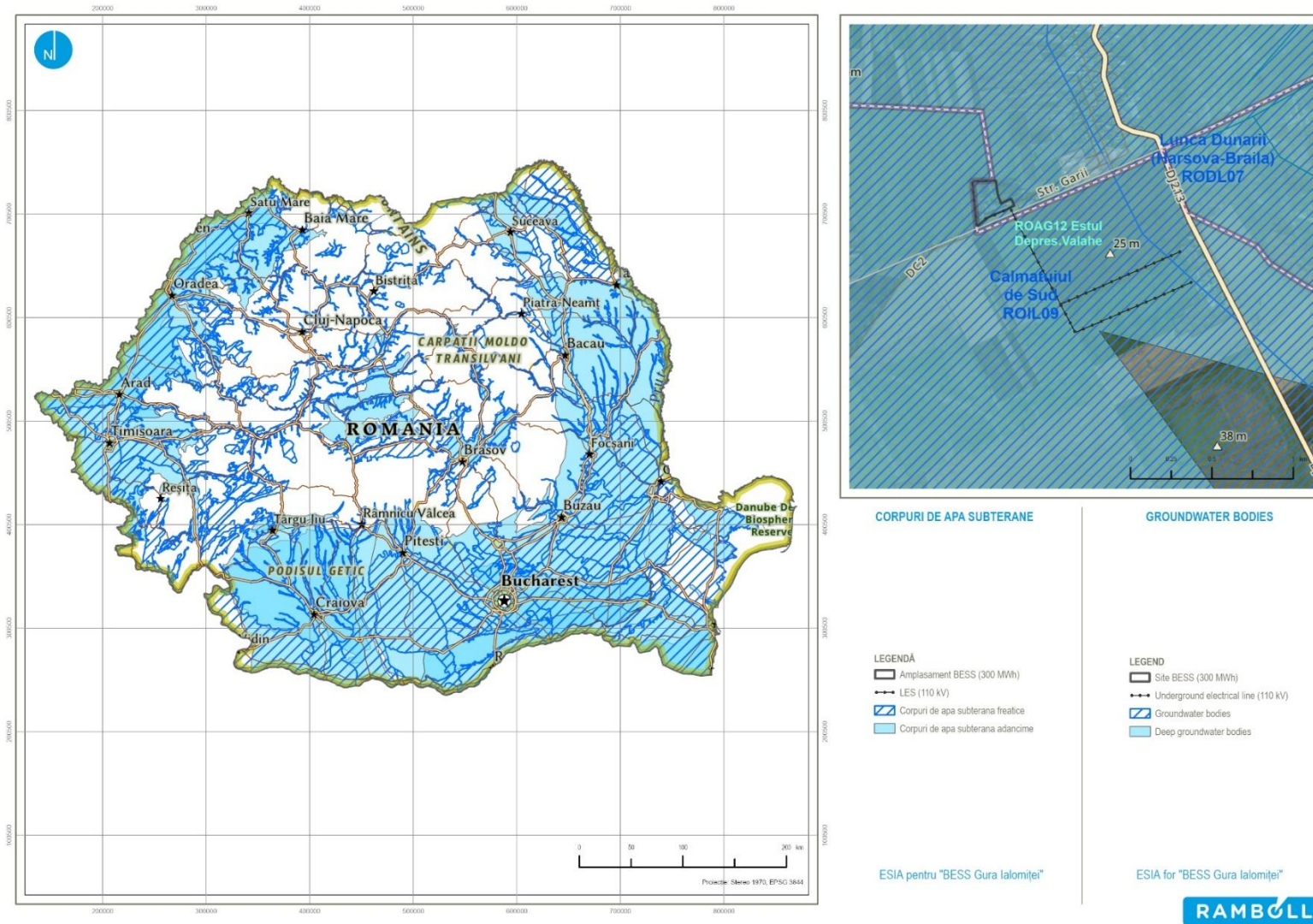


Figure 6: Groundwater bodies in the project site area
Source: ROWATER

3.1.4 Hydrology

From a hydrological point of view, the studied area is located in the Ialomița River Basin, in its lower part, near the confluence with the Danube.

The site is located at the confluence of the Ialomița River and the Danube River, near the Borcea branch, which is a secondary branch of the Danube River.

The following surface water bodies have been delimited on the watercourses in the site area:

- surface water body RORW11-1_B9 Ialomita_Slobozia_confl. Dunare located approximately 4.8 km from the project site boundary
- surface water body RORW14-1_B4 Dunarea Chiciu-Isaccea located 7.1 km from the project site boundary

Information on the characterization of the two surface water bodies in the area of the studied site:

- **The RORW11-1_B9 water body** corresponds to the lower sector of the Ialomița River, located between the municipality of Slobozia and its confluence with the Danube River. This river segment belongs to Ialomița County and is an essential component of the Ialomița river basin, being integrated into the hydrographic network of the Romanian Plain.
 - The Ialomița River in this sector has characteristics typical of plain rivers, with a meandering riverbed, gentle slopes, and a moderate hydrological regime. The width of the riverbed varies, and the flow velocity is low, favoring the accumulation of alluvium and the appearance of marginal wetlands.
 - From a functional point of view, this water body is used to supply water to localities in the area, for agricultural irrigation, fishing activities and, in some cases, for leisure and recreation. This segment of the river is also ecologically important, providing habitat for numerous aquatic and riparian species.
 - **The ecological status** of this water body is generally assessed as moderate to good, depending on the section analyzed, in the context of point and diffuse pressures from agricultural activities, wastewater discharges, or riverbed regulation works.
 - **The chemical status** is generally considered good, except for possible local exceedances of nutrient concentrations (nitrogen, phosphorus) or other priority substances, particularly in areas downstream of urban centers or industrial activities.
 - The RORW11-1_B9 water body is of significant importance for the hydrological and ecological balance of the south-eastern part of Ialomița County and requires careful management to maintain its quality and usability in the long term. This river contributes directly to the water reserves of the Danube, especially during periods of flooding and hydrological rebalancing of the floodplains.
- **The RORW14-1_B4 water body** corresponds to the section of the Danube between Chiciu (km 375) and Isaccea (km 54), with a length of approximately 670 km. This section is part of the lower Danube and is considered a strategic water body for Romania, both from a hydrographic and socio-economic point of view.
 - This segment of the river is classified as a heavily modified water body (HMWB), with the corresponding hydrographic typology being RO14HMWB. Its classification as "heavily modified"

derives from the major influences of anthropogenic activities on the natural regime of the river, particularly due to hydrotechnical works and intensive navigation activities.

- The chemical status of this water body is assessed as good, indicating that the values of the quality indicators (priority and hazardous substances) are within the limits permitted by national and European legislation (in accordance with the Water Framework Directive 2000/60/EC). No systematic exceedances of quality parameters have been identified.
- However, the ecological potential of the Chiciu–Isaccea sector is classified as moderate. This assessment reflects morphological and hydrological changes to the river, particularly due to riverbed regulation, bank reinforcement, dredging activities, and the influence of nearby urban and industrial areas. These anthropogenic pressures have diminished the natural character of habitats and ecological continuity.
- The Danube River in this sector is essential for international river navigation, which has led to the implementation of projects to improve navigability, including hydrotechnical infrastructure works in the area of the bifurcation to the delta branches. These interventions are strictly monitored to comply with environmental and biodiversity protection objectives.
- The environmental objective for this water body is to maintain good chemical status and achieve good ecological potential in the medium and long term, in line with national and international water management strategies.
- The RORW14-1_B4 – Chiciu–Isaccea Danube water body plays an important role in Romania's hydrographic network. Although it is affected by anthropogenic changes that reduce its ecological potential, its chemical status is good, making it a relatively balanced segment, but one that requires careful management to achieve the established environmental objectives.

No permanent surface sources have been identified in the immediate vicinity of Gura Ialomiței (significant rivers, lakes).

Conclusion:

Two relevant surface water bodies have been identified in the extended area of influence of the project: RORW11-1_B9 – the lower sector of the Ialomița River, located approximately 4.8 km south of the site, and RORW14-1_B4 – the Chiciu–Isaccea sector of the Danube, located approximately 7.1 km away. Both water bodies are classified as being in good overall chemical status, but are under specific anthropogenic pressures: diffuse and point source pollution in the case of the Ialomița, and hydrotechnical interventions in the case of the Danube. However, the significant distances from the project site and the lack of direct hydrological connectivity significantly reduce the potential for direct or indirect impact.

Consequently, the sensitivity of the "surface water" factor is assessed as **medium**, and the risk of impact by the project is **low**, provided that impact prevention measures are implemented.

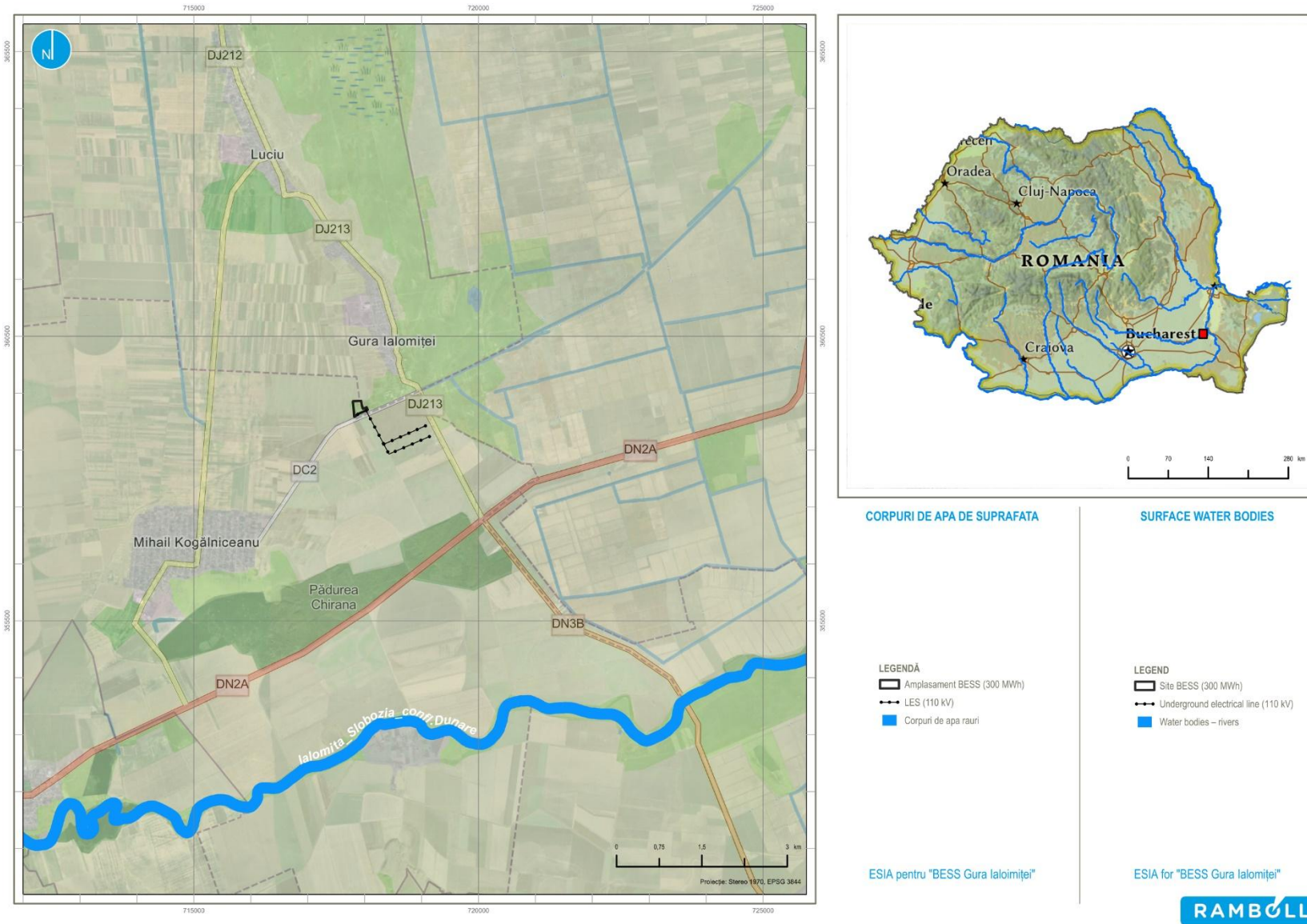


Figure 7: Surface water bodies in the project site area
Source: ROWATER

3.1.5 Air

The project site is located in an area with generally good air quality, characteristic of rural regions with low traffic density and predominantly agricultural economic activities. The estimated air quality index (AQI)² in the area is around **31**, which corresponds to a low level of risk to human health.

However, direct monitoring of air quality in the area is limited, as the network of automatic stations in Ialomița County comprises only two units (Slobozia and Urziceni), and the one in Urziceni has experienced technical malfunctions in the past. In the absence of continuous local measurements, assessments for the commune of Gura Ialomiței are based on estimates from the Air Quality Maintenance Plan and regional extrapolations.

Identified sources of local air pollution include:

- **Residential heating** with solid fuels, generating emissions of PM10, PM2.5, NOx, and SO₂, in the absence of natural gas connections;
- **Agricultural activities** (including burning plant debris and using fertilizers), which contribute to NH₃ and fine particle emissions;
- **Road traffic**, although low, produces CO, NOx, and particulate matter emissions in areas with higher mobility;
- **There are no major industrial sources in the commune**, but there may be regional influences.

According to data from the "Air Quality Maintenance Plan for Ialomița County 2024-2028"³, at the level of the commune of Gura Ialomiței, the estimated emissions of atmospheric pollutants reflect a moderate to low level of atmospheric pollution, specific to a rural area with agricultural activities and dispersed housing.

Table 11 : Estimated air pollutant emissions

Pollutant	Estimated quantity	Comments on estimated level
PM10	78.71 t/year	Moderate – influenced by solid fuel heating and dust from agricultural activities.
PM2.5	76.64 t/year	Significant for a rural community – shows a significant contribution from incomplete combustion.
NOx	8.29 t/year	Low, typical for traffic and limited domestic combustion.
SO	1.14 t/year	Low, but probably present from wood/coal heating.
CO	414.29 t/year	Relatively high, but typical for areas where solid fuels are used without complete combustion.
Cadmium (Cd)	1.35 kg/year	Low level, but worth monitoring due to high toxicity.
Nickel (Ni)	0.21 kg/year	Low, no major risk in the current context.
Lead (Pb)	2.80 kg/year	Moderate, possibly from traffic or burning of contaminated materials.

Source: Air Quality Maintenance Plan for Ialomița County 2024-2028

Pollutant emission levels in the area are generally low to moderate, reflecting the rural nature of the area. Higher values for PM10, PM2.5, and CO suggest high seasonal sensitivity (especially in winter), mainly associated with inefficient residential heating and traditional agricultural practices (including burning plant debris). Although there are no systematic exceedances of the permitted limits, the persistence of these sources can lead to local health impacts, especially in unfavorable weather conditions (temperature inversions, lack of wind).

² European Air Quality Index, 2025, <https://airindex.eea.europa.eu/AQI/index.html>

³ Ialomița County Council, 2024, <https://cjalomita.ro/wp-content/uploads/2024/06/PMCA-IL-2024-2028-propunere.pdf>

In the area of the "BESS Gura Ialomiței" project, air quality is characterized by low to moderate background pollution. The modeled annual average values for NO₂ and NO are below 20 µg/m³, and the annual concentration of PM₁₀ is between 21–30 µg/m³, below the regulatory limit of 40 µg/m³. No industrial or point sources of pollution are identified in the vicinity. No significant emissions are expected during BESS operation. During the construction phase, dust control measures (e.g., road watering, vehicle speed limits, aggregate covering) will need to be implemented to keep the impact on air quality at an insignificant level.

Table 12: Average annual values of air pollutants

Pollutant	Value Gura Ialomiței	Interpretation	Suggested ESIA measures
NO ₂ (2023)	<10 µg/m ³	Very low	No special measures required
NO (2018)	10–20 µg/m ³	Moderate	Maintain very low emissions
PM ₁₀ (2018)	21–30 µg/m ³	Acceptable	Limiting dust generation on construction sites

During the construction phase, the following estimated traffic volume will occur:

Daily:

Transport of personnel to and from the construction site: 3 minibuses and 20 cars;

Machinery permanently present on site, belonging to the General Contractor and subcontractors – 15–20 pieces of equipment;

Weekly:

A maximum of 5–10 deliveries directly to the construction site from suppliers, according to the procurement plan;

Work visits to the site from the Beneficiary and other stakeholders (<8 cars).

It should be noted that even if the PM₁₀ concentration is high, even if no significant exceedances of the limit values are expected, diffuse and seasonal sources (residential heating, agricultural activities) can lead to temporary increases in concentrations.

Conclusion:

Air quality in the project area is good, with average annual concentrations of air pollutants below the limits set by legislation (Law 104/2011). The sensitivity of the area is moderate, determined by diffuse emissions from residential heating and agricultural activities. From the perspective of the BESS project development, air sensitivity is considered to be low, provided that a controlled operating regime is maintained, emissions are limited during the construction phase, and accumulation with other potential sources in the vicinity is

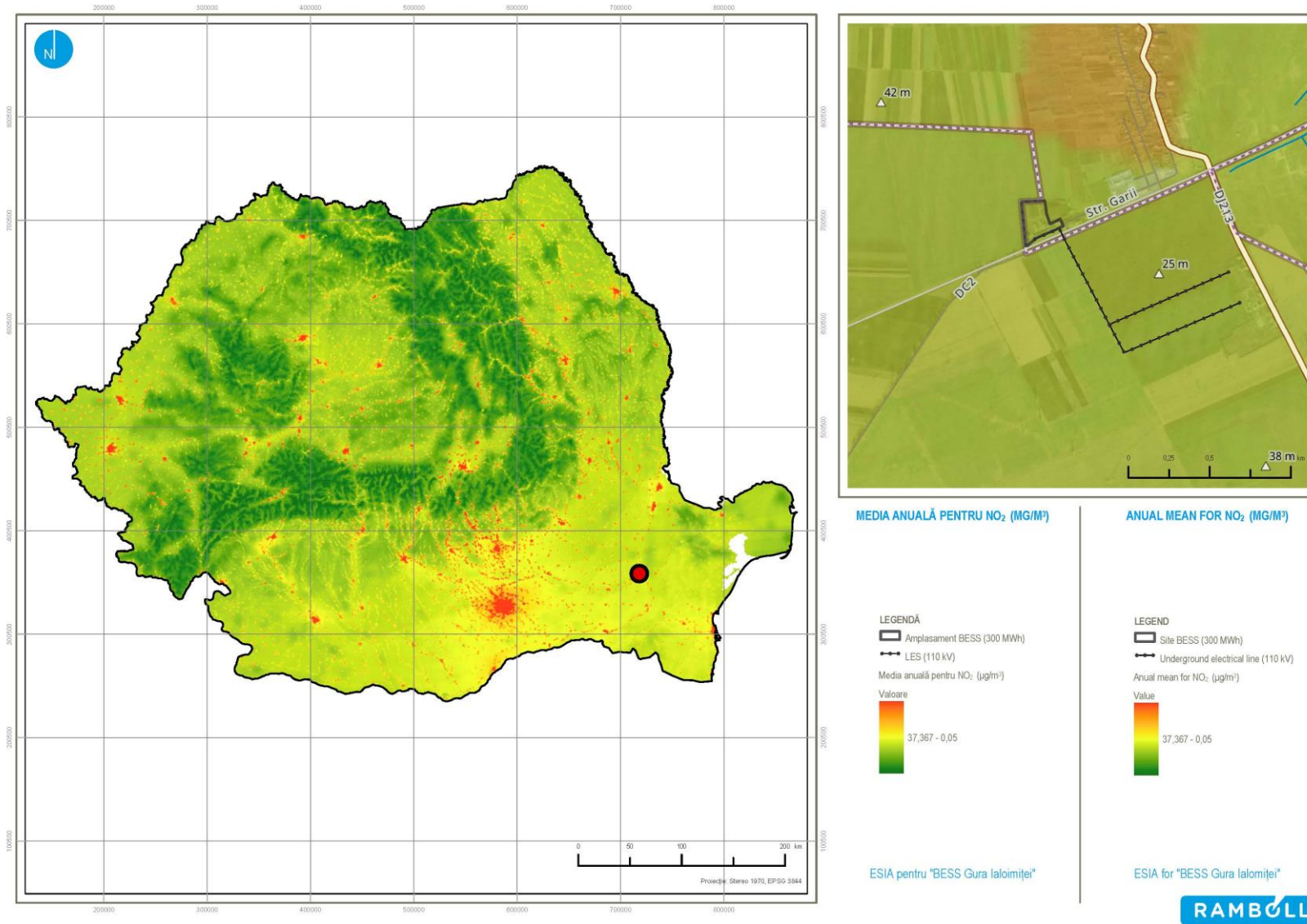


Figure 8 : Average annual NO2 concentration in the project site area, 2023
 Source: EEA, Latest measurements from Europe's air quality monitoring network

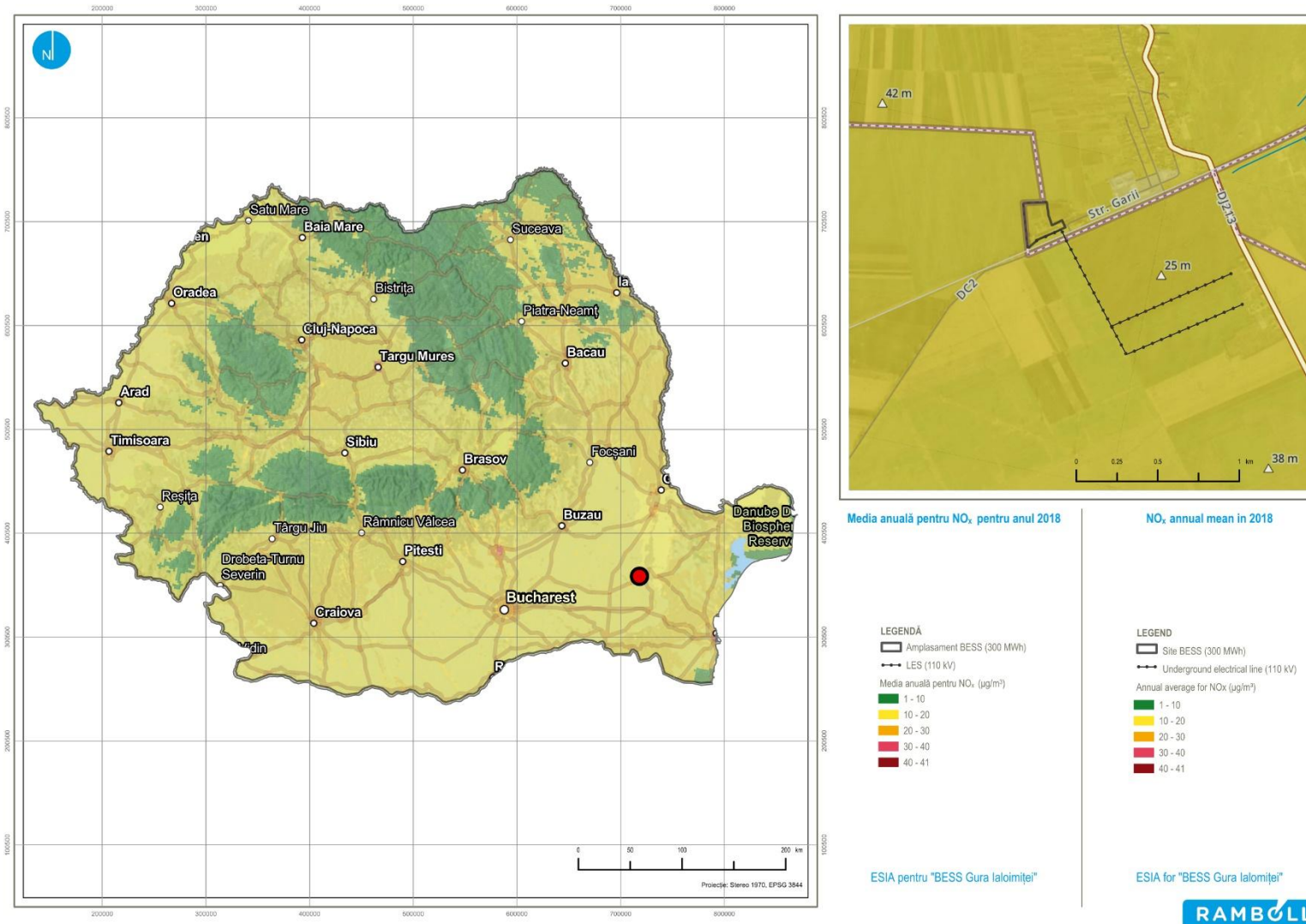


Figure 9 : Average annual NO_x concentration in the project site area, 2019
Source: EEA, Latest measurements from Europe's air quality monitoring network



Figure 10 : Average annual concentration of PM₁₀ in the project site area, 2019
Source: EEA, Latest measurements from Europe's air quality monitoring network

3.1.6 Noise

No specific data on noise level monitoring is available for the project site area. The assessment of background noise pollution is based on regional estimates and analysis of potential noise sources specific to rural areas.

In rural areas, the main sources of noise include:

- Road traffic: Although lower than in urban areas, traffic on county and municipal roads can contribute to noise levels, especially near main roads.
- Agricultural activities: The use of agricultural machinery, such as tractors and combine harvesters, can generate significant noise during periods of intense activity, such as sowing and harvesting.
- Local events: Fairs, festivals, and other community events can temporarily increase noise levels in certain areas of the municipality.

According to available data, the commune of Gura Ialomiței is located in an area with high potential for quietness, according to the Quietness Potential Index (QSI) developed by the European Environment Agency (EEA). This index assesses the likelihood of an area being quiet on a scale from 0 (high noise) to 1 (maximum quiet), taking into account the distance from major noise sources such as main roads, railways, and industrial areas.

In the case of Gura Ialomiței, the absence of heavy transport infrastructure and significant industrial activity contributes to a QSI score close to 1, indicating a favorable acoustic environment. This classification is supported by the EEA's interactive maps, which identify areas with potential for quietness in Europe.

In conclusion, Gura Ialomiței benefits from a favorable acoustic environment, with a high potential for quietness according to European assessments. Maintaining this status requires continuous monitoring and the implementation of preventive measures to prevent noise levels from increasing in the future.

Conclusion:

The project site has **moderate acoustic sensitivity**, as it is located in an area with high potential for quietness, typical of rural areas with low traffic and no major industrial activities. This context requires increased attention to any new sources of noise generated by the project.

The acoustic risks associated with the BESS project are considered low, but, given the sensitivity of the area, it is recommended that technical measures be implemented to control noise emissions.

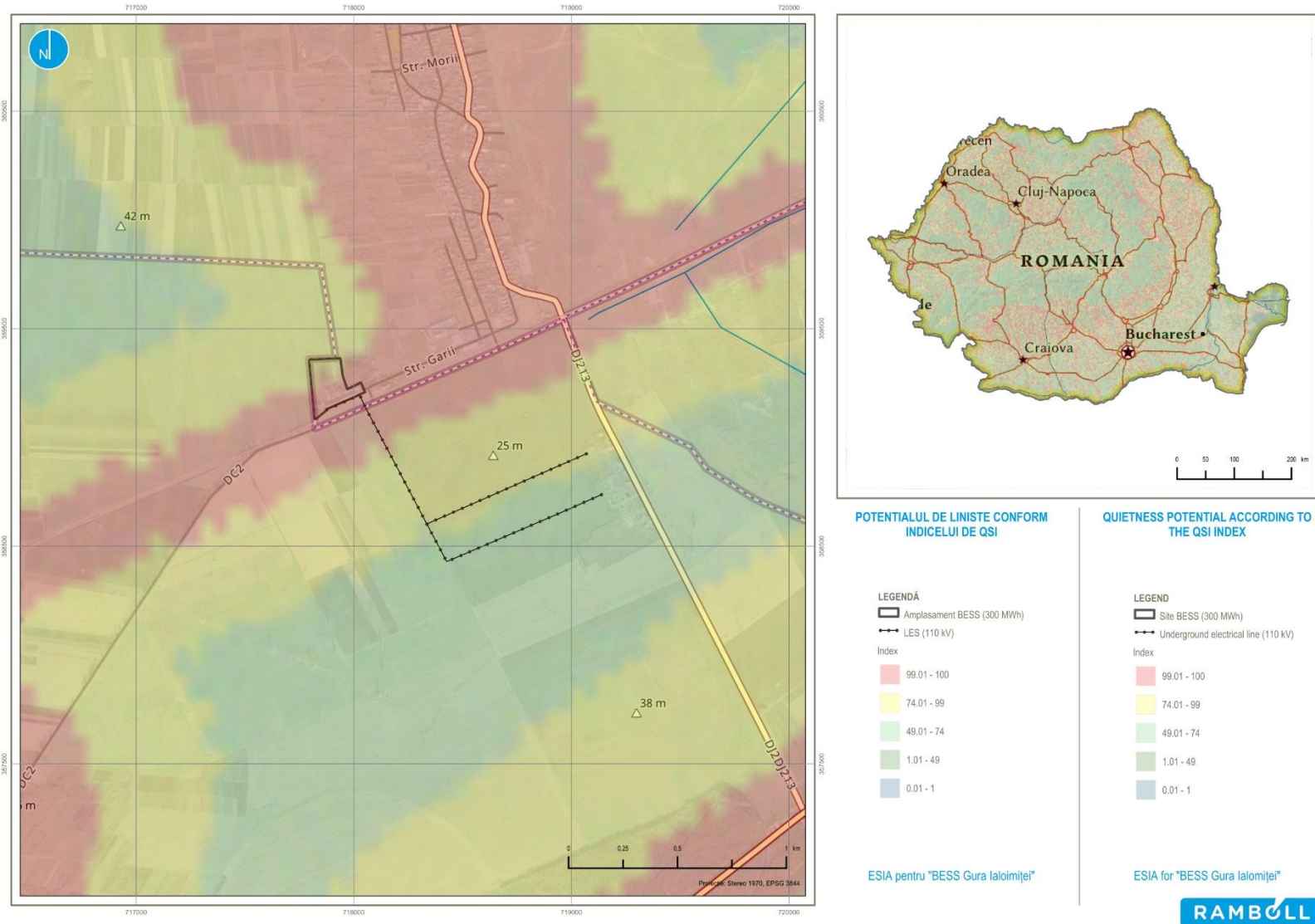


Figure 11 : Quietness index at the project site
 Source: EEA, 'Quiet areas in Europe: the environment unaffected by noise pollution'

3.1.7 Biodiversity

The analyzed site is distinguished by high biodiversity, influenced by its location in the Romanian Plain and its proximity to the Danube River. The area comprises a diversity of natural habitats – from salt marshes and wetlands to deciduous forests and agricultural land – which provide favorable conditions for numerous species of flora and fauna.

Its proximity to the lower Danube river system helps maintain high soil moisture and feed wetlands, which are essential for species that depend on aquatic areas.

From a hydrogeographical point of view, the area is characterized by the presence of relatively shallow water tables, which can favor the development of hydrophytic vegetation and attract amphibian and wading bird species. The soils, especially alluvial and chernozemic soils, support intensive agriculture, mainly cereal crops, in the immediate vicinity of the site. The project site does not overlap with the boundaries of any protected natural areas.

3.1.7.1 Protected natural areas

The nearest protected natural areas are listed in the following tables.

Table 13 : List of Natura 2000 sites in the vicinity of the project

Name	Code	Area type	Characteristics of protected natural areas	Distance from the project
The salt marshes at Gura Ialomiței – Mihai Bravu	ROSCI0389	Site of Community Importance	Area 3,449 ha The site was declared protected by Order No. 1964/2007. The site has an area of 3,488.6 ha and is home to two habitats and one species of conservation interest. The boundaries of ROSCI0389 partially overlap with the boundaries of ROSPA0120	approximately 171 m from the underground power lines about 970 m from the BESS boundary
Kogălniceanu – Gura Ialomiței	ROSPA0120	Bird protection area	Area 7,087.6 ha The Natura 2000 site ROSPA0120 was declared protected by Decision No. 1284/2007. The site is important for bird species (breeding, migration, wintering populations). The site is also designated as an IBA (Important Bird Area) according to the following criteria developed by Birdlife International: C1, C2, C3, C4, C6.	approximately 153 m from the underground power lines about 1 km from the BESS boundary
Berteștii de Sus – Gura Ialomiței	ROSPA0111	Bird protection area –	Area 6,864.6 ha The site was declared protected by Decision No. 1284/2007. It is home to 25 species of birds of conservation interest. The boundaries of ROSCI0389 partially overlap with the boundaries of ROSPA0111	at approximately 970 m, with the BESS boundary

Table 14 : List of nature reserves and monuments, RAMSAR sites in the vicinity of the project

Name	Code	Area type	Characteristics of protected natural areas	Distance from the project
Balta Mică a Brăilei Natural Park	RONPA0017	Natural park	Area 17.53 ha The site was declared protected by Order No. 424/2005 The boundaries of RONPA0017 overlap with the boundaries of RORMS002	approximately 10.9 m from the underground power lines approximately 11.6 m from the BESS boundary

Name	Code	Area type	Characteristics of protected natural areas	Distance from the project
Canals in Hârșova	RORMS0016	Wetland of international importance	Area 7.4 ha The RORMS0016 site overlaps with ROSPA0005 and ROSCI00006. The site is important for bird species (breeding, migratory, wintering populations), such as: <i>Accipiter brevipes</i> , <i>Circus macrourus</i> , <i>Pelecanus onocrotalus</i> , <i>Alcedo atthis</i> , <i>Botaurus stellaris</i> .	approximately 6.29 m from the underground power lines approximately 7.35 m from the BESS boundary

All three sites contribute to maintaining ecological connectivity between wetlands and agricultural land.

High bird mobility and regional ecological connectivity: Bird species cover large areas (20–30 km), and the Gura Ialomiței area is located in the center of a regional ecological corridor between the Danube and adjacent wetlands, which enhances the functional role of the land even outside the boundaries of protected sites

Pressures and threats identified for protected natural areas in the study area

ANPIC	Pressures/threats	Source
ROSCI0389 The salt marshes at Gura Ialomiței – Mihai Bravu	E01 Urbanized areas, human habitats	Standard form
	A01 Cultivation	Standard form
ROSPA0120 Kogălniceanu – Gura Ialomiței	A02.01 Intensive agriculture	Management plan
	A04.01 Intensive grazing	Management plan
	A05.01 Animal husbandry	Management plan
	B02 Forest and plantation management and use	Management plan
	E04.01 Agricultural infrastructure, landscape structures	Management plan
	F03.01 Hunting	Management plan
	H05.01 Solid waste and refuse	Management plan
	J01.01 Fires	Management plan
	K03.06 Antagonism with domestic animals	Management plan
	K01.03 Weeds	Management plan
ROSPA0111 Berteștii de Sus – Gura Ialomiței	A02.01 Intensive agriculture	Management plan
	A04.01 Intensive grazing	Management plan
	A05.01 Animal husbandry	Management plan
	B02 Forest and plantation management and use	Management plan
	E04.01 Agricultural infrastructure, landscape structures	Management plan
	F03.01 Hunting	Management plan
	H05.01 Solid waste and refuse	Management plan
	J01.01 Fires	Management plan
	K03.06 Antagonism with domestic animals	Management plan
	K01.03 Weeds	Management plan

It is important to note that the land designated for the BESS site is classified as "construction yards" and shows signs of previous use, having already been anthropized. No species of flora or fauna of conservation interest have been identified on the site itself. The presence of agricultural land in the vicinity of the project as a secondary habitat is relevant for birds such as *Burhinus oedicnemus*, *Anthus campestris*, and *Glareola pratincola*, which use the agro-natural mosaic for feeding and breeding.

The agricultural land in the vicinity of the site contributes to maintaining an ecological mosaic that is favorable for generalist species and birds that use crops as a temporary feeding or nesting habitat.

The description of the nearest identified protected areas is presented in the following paragraphs.

ROSCI0389 The salt marshes of Gura Ialomiței – Mihai Bravu

The Natura 2000 site ROSCI0389 Sărăturile de la Gura Ialomiței – Mihai Bravu is home to two habitats and one species of conservation interest.

Table 15 : Habitats-ROSCI0389 Sărăturile de la Gura Ialomiței

Habitat code	Habitat name	Representativeness	Relative area	Conservation status	Overall assessment
1310	Communities of <i>Salicornia</i> and other annual species colonizing muddy and sandy soils	B	C	B	C
1530	Pannonian marshes and salt steppes	B	B	B	C

Representativeness: A. excellent; B. good; C. significant; D. insignificant

Relative area: A. $100 \geq p > 15\%$; B. $15 \geq p > 2\%$; C. $2 \geq p > 0\%$

State of preservation: A. excellent preservation, B. good preservation, C. average or poor preservation

Overall assessment: A. excellent value; B. good value; C. significant value

Table 16: Species-ROSCI0389 Gura Ialomiței Salt Marshes – Mihai Bravu

Species	Taxonomic group	Population	Conservation	Isolation	Global
<i>Spermophilus citellus</i>	Mammals	-	B	C	B

Population: A: $100\% \geq p > 15\%$; B: $15\% \geq p > 2\%$; C: $2\% \geq p > 0\%$; D - insignificant population

Conservation status: A - excellent conservation; B - good conservation; C - average or poor conservation

Isolation: A - (almost) isolated population; B - non-isolated population, but at the edge of the distribution area; C - non-isolated population with an extensive distribution area

Overall: A - excellent value; B - good value; C - insignificant value

ROSPA0111 Bertestii de Sus – Gura Ialomiței

The site is home to 25 bird species of conservation interest, 6 of which are in good conservation status.

Table 17: Assessment of the site in relation to the species referred to in Article 4 of Directive 2009/147/EC, species listed in Annex II to Directive 92/43/EEC

Species			Population				Conservation Status			
Code	Scientific Name	type	Min	Max	Unit	Cat	A B C D	A B C		
							Pop.	Con.	Iso.	Glo.
A042	<i>Lesser White-fronted Goose</i>	W	1	2	i	R	C	B	B	B
A255	<i>Anthus campestris</i>	R	50	10	i	C	C	B	C	C
A396	<i>Branta ruficollis</i>	W	550	1500	i	C	C	B	B	B
A133	<i>Burhinus oediconemus</i>	R	5	10	p	C	C	B	C	B
A403	<i>Buteo rufinus</i>	R	1	3	p	C	C	B	C	C
A403	<i>Buteo rufinus</i>	C	5	10	i	C	C	B	C	C
A243	<i>Calandrella brachydactyla</i>	R	20	50	p	C	C	B	C	B
A138	<i>Chradrius alexandrinus</i>	R	2	5	p	C	C	B	C	B
A031	<i>Ciconia ciconia</i>	R	8	10	p	C	C	B	C	C
A031	<i>White stork</i>	C	200	100	i	C	C	B	C	C
A081	<i>Circus aeruginosus</i>	C	20	50	i	C	C	B	C	B
A082	<i>Circus cyaneus</i>	W	20	50	i	C	C	B	C	B
A083	<i>Circus macrourus</i>	C	5	10	i	C	C	B	C	B
A084	<i>Circus pygargus</i>	C	10	30	i	C	D			
A231	<i>Coracias garrulus</i>	R	20	50	p	C	C	B	C	B
A026	<i>Little egret</i>	R	50	10	i	C	C	B	C	B

Species			Population				Conservation Status				
Code	Scientific Name	type	Min	Max	Unit	Cat	A B C D	A B C			
							Pop.	Con.	Iso.	Glo.	
A379	<i>Emberiza hortulana</i>	R	10	20	p	C	D				
A097	<i>Falco vespertinus</i>	R	10	30	p	C	B	B	C	A	
A097	<i>Falco vespertinus</i>	C	200	1500	i	C	B	B	C	A	
A135	<i>Meadow pipit</i>	R	50	120	p	C	B	B	C	A	
A131	<i>Black-winged stilt</i>	R	5	15	p	C	C	C	C	C	
A151	<i>Philomachus pugnax</i>	C	1000	3000	i	C	C	B	C	B	
A132	<i>Recurvirostra avoetia</i>	R	10	2	p	C	C	C	C	C	
A132	<i>Recurvirostra avoetia</i>	C	20	40	i	C	C	C	C	C	
A166	<i>Tringa glareola</i>	C	10	500	i	C	C	B	C	B	

Type: p = permanent, r = breeding, c = concentration, w = wintering (for plant and non-migratory species, use permanent); Unit: i = individuals, p = pairs or other units according to the standard list of population units and codes in accordance with Articles 12 and 17 of the reporting; Abundance categories (Cat.): C = common, R = rare, V = very rare, P = present – to be completed if data are deficient (DD) or in addition to information on population size.

The site is important for the breeding populations of the following bird species: *Anthus campestris*, *Burhinus oedipnemus*, *Buteo rufinus*, *Calandrella brachydactyla*, *Chradrius alexandrinus*, *Ciconia ciconia*, *Coracias garrulus*, *Egretta garzetta*, *Emberiza hortulana*, *Falco vespertinus*, *Glareola pratincola*, *Himantopus himantopus*, *Recurvirostra avoetia*.

It is important during the migration period for the following bird species: *Buteo rufinus*, *Ciconia ciconia*, *Circus aeruginosus*, *Circus macrourus*, *Circus pygargus*, *Falco vespertinus*, *Philomachus pugnax*, *Recurvirostra avoetia*, *Tringa glareola*.

The site is important for the wintering of the following bird species: *Anser erythropus*, *Branta ruficollis*, *Circus cyaneus*.

The proposed site includes a large salt marsh with a very significant population of *Glareola pratincola*. The salt marsh is used during migration by many species of Community importance, such as *Philomachus pugnax* and *Falco vespertinus*.

ROSPA0120 Kogălniceanu – Gura Ialomiței

The Natura site is home to 38 bird species, of which only 11 are in good conservation status.

Table 18 : Assessment of the site in relation to the species referred to in Article 4 of Directive 2009/147/EC, species listed in Annex II to Directive 92/43/EEC

Species			Population				Conservation Status			
Code	Scientific Name	type	Min	Max	Unit	Cat.	A B C D	A B C		
							Pop.	Con.	Iso.	Glo.
A402	<i>Accipiter brevipes</i>	R	2		p	C	C	A	C	C
A041	<i>Anser albifrons</i>	C	2000	3000	i		C	B	C	C
A041	<i>Anser albifrons</i>	W	500	1500	i		C	B	C	C
A255	<i>Anthus campestris</i>	R	200	400	p	C	C	C	C	C
A403	<i>Buteo rufinus</i>	R	1	3	p	P	D			
A403	<i>Buteo rufinus</i>	C	5	10	i	P	D			

Species			Population				Conservation Status			
Code	Scientific Name	type	Min	Max	Unit	Cat.	A B C D	A B C		
							Pop.	Con.	Iso.	Glo.
A403	<i>Buteo rufinus</i>	W	5	10	i	P	D			
A243	<i>Calandrella brachydactyla</i>	R	20	50	p	P	D			
A138	<i>Charadrius alexandrinus</i>	R	2	5	p	P	D			
A031	<i>Ciconia ciconia</i>	R	10	200	i	C	C	B	C	B
A031	<i>Ciconia ciconia</i>	C	500	1500	i	C	C	B	C	B
A030	<i>Ciconia nigra</i>	C	80	120	i	C	C	B	C	C
A081	<i>Circus aeruginosus</i>	C	20	50	i	C	C	B	C	B
A082	<i>Circus cyaneus</i>	C	20	50	i	P	D			
A083	<i>Circus macrourus</i>	C	30	40	i	C	B	B	C	C
A084	<i>Circus pygargus</i>	C	50	70	i	C	D			
A231	<i>Coracias garrulus</i>	R	20	30	p	C	C	B	C	C
A238	<i>Dendrocopos medius</i>	P	15	25	p	C	D			
A429	<i>Dendrocopos syriacus</i>	P	4	6	p	C	D			
A027	<i>Egretta alba</i>	C	40	70	i	C	C	B	C	C
A027	<i>Egretta alba</i>	W	10	30	i	C	C	B	C	C
A026	<i>Little egret</i>	R	30	50	i	P	C	A	C	B
A026	<i>Egretta garzetta</i>	R	200	300	p	C	C	A	C	B
A379	<i>Emberiza hortulana</i>	R	10	20	p	C	D			
A098	<i>Falco columbarius</i>	W	10	12	i	C	C	B	C	C
A097	<i>Falco vespertinus</i>	R	5	10	p	C	C	B	C	B
A097	<i>Falco vespertinus</i>	C	100	200	i	C	C	B	C	B
A131	<i>Black-winged stilt</i>	R	20	30	p	C	B	C	C	B
A131	<i>Black-winged stilt</i>	C	300	500	i	C	B	C	C	B
A156	<i>Limosa limosa</i>	C	200	600	i	C	C	C	C	B
A151	<i>Philomachus pugnax</i>	C	500	1500	i	C	C	B	C	B
A034	<i>Platalea leucorodia</i>	R	5	10	i	C	C	B	C	B
A034	<i>White-winged tern</i>	C	20	50	i	C	C	B	C	B
A032	<i>Plegadis falcinellus</i>	R	10	30	i	C	C	B	C	B
A032	<i>Plegadis falcinellus</i>	C	200	500	i	C	C	B	C	B
A307	<i>Sylvia nisoria</i>	R	30	40	p	C	C	B	C	C
A166	<i>Tringa glareola</i>	C	10	500	i	P	D			
A142	<i>Vanellus vanellus</i>	R	20	50	p	C	C	A	C	C
A142	<i>Northern lapwing</i>	C	300	500	i	C	C	A	C	C

Type: p = permanent, r = breeding, c = concentration, w = wintering (for plant and non-migratory species, use permanent); Unit: i = individuals, p = pairs or other units according to the standard list of population units and codes in accordance with Articles 12 and 17 of the reporting requirements; Abundance categories (Cat.): C = common, R = rare, V = very rare, P = present - to be completed if data are deficient (DD) or in addition to information on population size.

The site is important for the breeding populations of the following bird species: *Accipiter brevipes*, *Anthus campestris*, *Buteo rufinus*, *Calandrella brachydactyla*, *Charadrius alexandrinus*, *Ciconia ciconia*, *Coracias*

garrulus, Egretta garzetta, Emberiza hortulana, Falco vespertinus, Himantopus himantopus, Platalea leucorodia, Plegadis falcinellus, Sylvia nisoria, Vanellus vanellus.

It is important during the migration period for bird species: *Anser albifrons, Buteo rufinus, Ciconia ciconia, Ciconia nigra, Circus aeruginosus, Circus cyaneus, Circus macrorus, Circus pygargus, Egretta alba, Falco vespertinus, Himantopus himantopus, Limosa limosa, Philomachus pugnax, Platalea leucorodia, Plegadis falcinellus, Vanellus vanellus.*

The site is important for the wintering of the following bird species: *Anser albifrons, Buteo rufinus, Egretta alba, Falco columbarius.*

The site is also designated as an IBA (Important Bird Area) according to the following criteria developed by Birdlife International: C1, C2, C3, C4, C6. The site was identified as important in 2007 because it regularly supported significant populations of the species listed below, meeting the IBA ("trigger") criteria:

Table 19 : Populations meeting IBA criteria

Species	Current IUCN Red List category	Season	Year of population estimate	Population estimate per site	IBA criteria met
<i>Montagu's Harrier - Circus pygargus</i>	LC	breeding	1990-2006	3 individuals	C6
<i>European Roller - Coracias garrulus</i>	LC	breeding	1990	20 breeding pairs	C
<i>Pallid Harrier – Circus macrorus</i>	NT	passage	1990	60-70 individuals	C1, C6
<i>Tawny Pipit – Anthus campestris</i>	LC	breeding	1990	1000-1200 individuals	C6
<i>Merlin - Falco columbarius</i>	LC	wintered	1990	12-15 individuals	C6
<i>Barred Warbler – Curruca nisoria</i>	LC	breeding	1990	20-30 breeding pairs	C
<i>Red-footed Falcon -Falco vespertinus</i>	VU	breeding	1990	28-44 breeding pairs	C

C1. Species of global conservation concern - Criterion: The site regularly hosts a significant number of globally threatened species or other species of global conservation concern; C2. Concentrations of a species threatened at European Union level - Criterion: The site is known to regularly host at least 1% of a migratory species population or of the EU population of a species threatened at EU level (listed in Annex I and referred to in Article 4.1 of the EC Birds Directive); C3. Congregations of migratory species not threatened at EU level - Criterion: The site is known to regularly host at least 1% of a migratory species population not considered threatened at EU level (according to Article 4.2 of the EC Birds Directive) (not listed in Annex I); C4. Large congregations - multi-species aggregations - Criterion: The site is known to regularly host at least 20,000 migratory waterbirds and/or 10,000 pairs of migratory seabirds of one or more species.

Table 20 : IBA protection

Protected area	Protected area designation	Area of protected area (km ²)	Relationship between protected areas and IBAs	Overlap of protected areas with IBA (%)
The salt marshes at Gura Ialomiței – Mihai Bravu	Site of Community importance (Habitats Directive)	3,489	The protected area overlaps with the site	4.4
Kogălniceanu – Gura Ialomiței	Special Protection Area (Birds Directive)	7,088	The protected area overlaps with the site	93.3

Protected area	Protected area designation	Area of protected area (km ²)	Relationship between protected areas and IBAs	Overlap of protected areas with IBA (%)
Ialomița Corridor	Site of Community Importance (Habitats Directive)	27,109	The protected area is adjacent to the site	0.
Luca Chineja	Site of Community Importance (Habitats Directive)	92	protected area overlaps with site	0.2
Vlășcuța Lake	Nature reserve	73	protected area contained by site	0

The analyzed area reveals that some bird species in the two SPAs prefer agricultural habitats. These species use agricultural land for feeding, breeding, and resting due to the availability of food and vegetation structure. Ecological observations indicate that these bird species have a long-distance travel capacity of over 20 km, thus being characterized by high mobility in search of food. Given the proximity of the sites to the project area, there is a high probability that these birds will reach the proposed site.

The cumulative impact analysis on Natura 2000 sites was carried out taking into account the pressures and threats mentioned in the Standard Forms, the Management Plans of Natura 2000 sites, as well as other projects in the areas related to the sites (such as MPGT projects – Romania's General Transport Master Plan).

3.1.7.2. Key biodiversity area

Key biodiversity areas are established based on IUCN criteria. They are considered to make a significant contribution to global biodiversity conservation (www.keybiodiversityareas.com, KBAs).

Several key biodiversity areas have been identified in the vicinity of the project. The closest key area is located at a distance of approx. 1 km from the nearest one (Kogălniceanu – Gura Ialomiței, Global/Regional criterion TBD).

This site qualifies as a Key Biodiversity Area of international importance that meets the thresholds for at least one criterion described in the Global Standard.

Table 21 : Bird species – KBA

Taxonomic Group	Scientific Name	Common Name	IUCN Red List Category	KBA Criterion	Legal Criterion
Birds	<i>Falco vespertinus</i>	Red-footed Falcon	NT		Yes
	<i>Circus pygargus</i>	Montagu's Harrier	LC		Yes
	<i>Falco columbarius</i>	Merlin	LC		Yes
	<i>Anthus campestris</i>	Tawny Pipit	LC		Yes
	<i>Coracias garrulus</i>	European Roller	NT		Yes

Taxonomic Group	Scientific Name	Common Name	IUCN Red List Category	KBA Criterion	Legal Criterion
	<i>Circus macrourus</i>	Pallid Harrier	NT		Yes
	<i>Sylvia nisoria</i>	Barred Warbler	LC		Yes

Conclusion

The BESS project site is located in an area predominantly used for agriculture, on previously anthropized land, with no evidence of species or habitats of conservation interest. However, its immediate proximity (less than 200 m) to two Natura 2000 sites (ROSCI0389 and ROSPA0120) determines a moderate level of ecological sensitivity. In this context, although the project does not involve direct impacts on these protected areas, a cautious approach is required, including specific measures to prevent indirect effects (noise during the construction phase, risks of accidental pollution). The implementation of these measures is essential to ensure the maintenance of the ecological integrity of nearby natural habitats and the ecological functionality of protected sites.

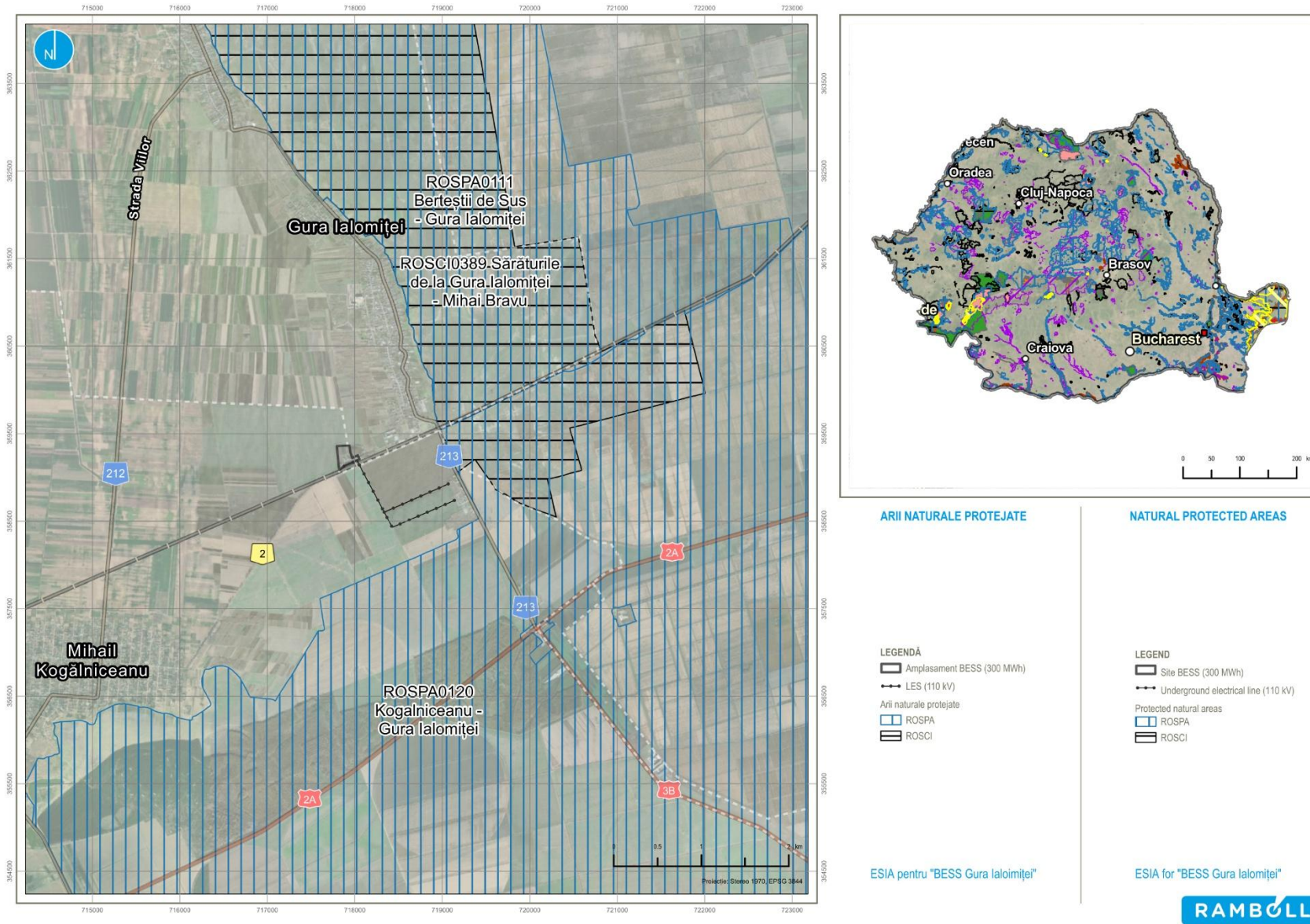


Figure 12 : Location of the site in relation to natural protected areas

3.1.8 Cultural heritage

The analyzed site is located in an area with very low sensitivity in terms of cultural heritage elements. No archaeological sites or cultural heritage objects have been identified, with the nearest historical monuments being located at a distance greater than the minimum protection zone (500 m) from the site boundary.

The following table presents the cultural heritage elements and their distance from the project.

Table 22 : Cultural heritage elements and their distance from the project

Identificati on code (LMI/RAN)	Description of heritage element	Date	Location	Landmark	Distance from project boundary (km)
93655.04	La Tene settlement at Giurgeni - Popina	La Tène	Giurgeni	The site is located 2.2 km east of DJ213 and 4 km north of DN2A, 1.3 km north of the former Jândărei-Giurgeni railway line, in the common floodplain of the Danube and Ialomița rivers. The area overlaps a series of former lakes, south of the vast Baltă Coșcovata, with generous floodplains and flood-prone areas. Most of it was drained and drastically transformed during the communist period. The site also extends partially into the commune of Gura Ialomiței.	3.24
93655.05	The La Tène settlement at Giurgeni - Popina Mare	La Tène	Giurgeni	The settlement is located 2.3 km east of Dj213 and 2.2 km north of DN2A.	3.52
94009.01	Archaeological site at Mihail Kogalniceanu - Crucea Movila inalta	Developed medieval period (16th century)	Mihail Kogălniceanu	The archaeological site is located 3 km SW of Orașul de Floci.	2.39
94036.02/IL-I-s-B-14055	The Dridu settlement at Luciu - east of the village.	Medieval period / 9th-11th centuries	Luciu, Gura Ialomiței commune The settlement is located approx. 200-300 m east of the village of Luciu and east of DJ 213, north of the Ialomița River, west of the Danube River.	The settlement is located approx. 200-300 m east of the village of Luciu and east of DJ 213, north of the Ialomița River, west of the Danube River.	5.60
94036.03/IL-I-s-B-14057	The Dridu settlement in Luciu.	Medieval period / 9th-11th centuries		The settlement is located approx. 200-300 m east of the village of Luciu and east of DJ 213, north of the Ialomița River, west of the Danube River.	5.32
94036.01/IL-I-s-B-14056	The Dridu settlement at Luciu - SE of the village.	Medieval period / 9th-11th centuries The settlement is located 150 m southeast of the village of Luciu, east of DJ 213, north of the Ialomița River,		The settlement is located 150 m southeast of the village of Luciu, east of DJ 213, north of the Ialomița River, west of the Danube River.	4.64

Identificati on code (LMI/RAN)	Description of heritage element	Date	Location	Landmark	Distance from project boundary (km)
		west of the Dan			
IL-II-m-B-14138	Church of the Holy Emperors Orthodox church	1854		-	5.19
-	Cathedral (former Minorite monastery) Orthodox church	1841	Gura Ialomiței commune, Gura Ialomiței	-	1.74

Source: National Archaeological Repertory (cIMEC) and National Heritage Institute – eGISpat Romania

An archaeological diagnostic study was carried out for the site under analysis, which shows that "the land affected by this investment project, as well as the area outside it, are devoid of cultural heritage al remains (stratigraphy, complexes, artifacts)". According to letter no. 1241/2025, the Ialomița County Directorate for Culture concluded that the approval of this institution is not necessary.

With regard to historical monuments, the area under analysis includes the High Cross, a monument erected by Matei Basarab in 1639, located approximately 200 meters from the DN2A national road, on the edge of a forest. In addition, there are four other sites on the list of historical monuments in Ialomița County, with the status of monuments of local interest. Three of these are archaeological sites in the Luciu village area, two of which preserve traces of early medieval settlements from the 9th–11th centuries. The fourth site is an architectural monument: the "Sfinții Împărați" church in Luciu village, built between 1854 and 1862.

Conclusion:

The project site is located in an area with **very low** sensitivity in terms of cultural heritage, with no archaeological sites or historical monuments in the immediate vicinity, the nearest sites being located more than 500 m from the boundary of the land under analysis.

The risks to cultural heritage are insignificant, as the nearest archaeological sites and historical monuments are located more than 2 km from the project boundary, placing the site outside the direct protection areas.

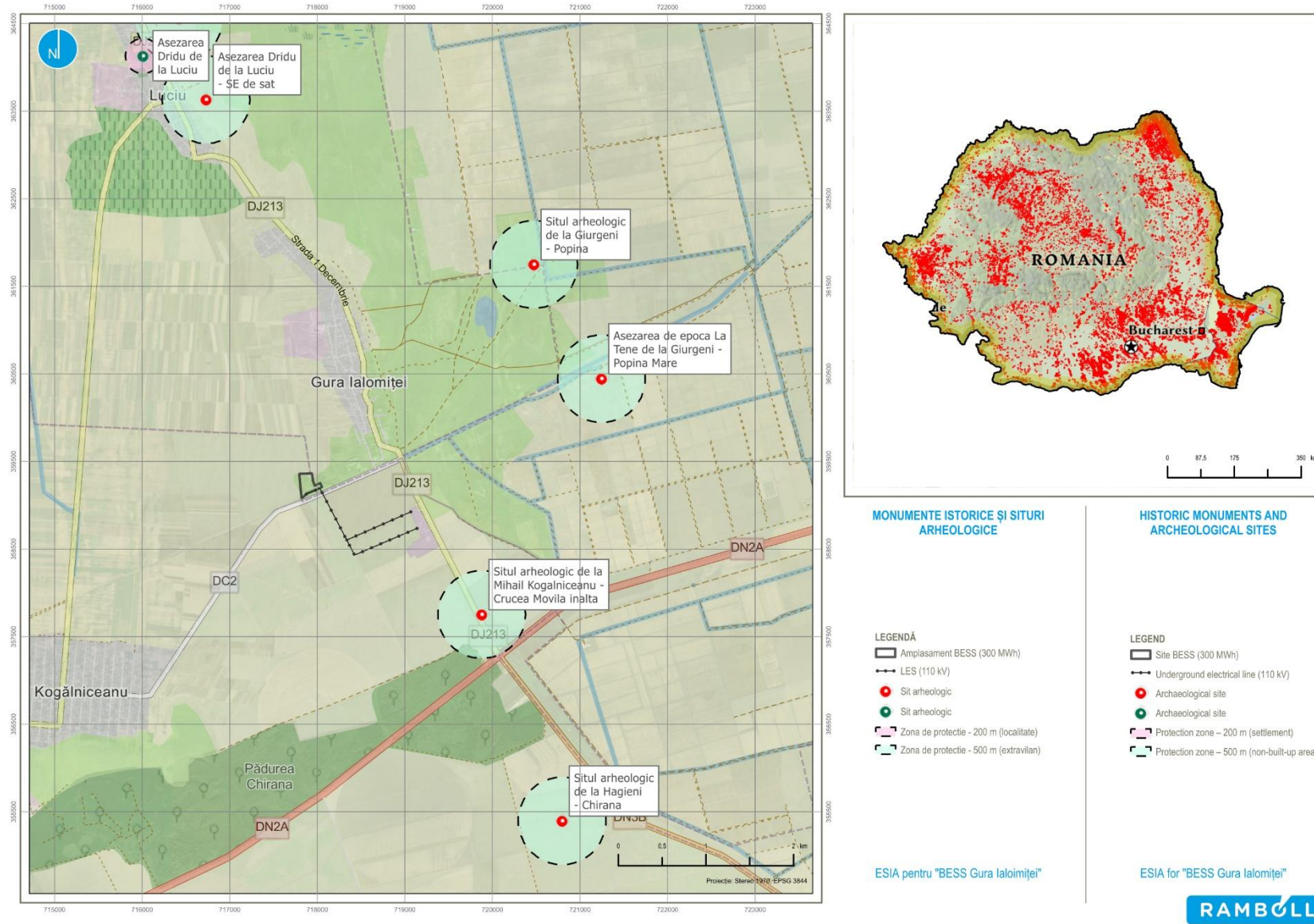


Figure 13 : Location of the site in relation to historical monuments and archaeological sites in the area

3.1.9 Landscape

In the analysis carried out, the main criteria regarding the value of the landscape and the factors that may affect its quality are (activities related to landscape fragmentation/disturbing visual elements):

- Aesthetic value (uniqueness, diversity, cohesion of landscape elements);
- Traditional value (endemic natural elements, distinctive cultural elements).

The commune of Gura Ialomiței is located in the northeast of Ialomița County and has a landscape characteristic of the Romanian Plain, dominated by agricultural land, salt marshes, and wetlands. This area is part of the Steppe Biogeographical Region, unique in the European Union, according to the classification of the European Environment Agency (EEA).

Table 23 : Landscape types in the study area

Landscape type	Climate	Altitude (m)	Land use	% occupancy
Steppe-Lowland-Sediments-Arable land	Steppe	10	Arable land	100

The site analyzed has low to moderate sensitivity in terms of landscape and culture, being located in a heavily anthropized area dominated by intensively used agricultural land and lacking any remarkable natural, historical, or visual elements in the immediate vicinity.

The land is classified as "construction yards" and shows obvious signs of degradation and previous use (partially demolished structures, concrete platforms, ruderal vegetation, abandoned infrastructure). In the vicinity, there is a disused railway line (south) and a former railway station converted into a dwelling (east, ~150 m), elements that accentuate the utilitarian and modified character of the local landscape.

From a visual and functional point of view, the site is not connected to the nearest protected natural areas in the Natura 2000 network (the nearest protected areas – ROSPA0120 – Kogălniceanu – Gura Ialomiței and ROSCI0389 – Sărăturile de la Gura Ialomiței – Mihai Bravu – are located at distances of approximately 153 m and 171 m, respectively, from the underground power lines, and the main site of the project is located more than 970 m from the boundaries of these sites), located at minimum distances of approximately 200 m. Although the physical proximity requires a cautious assessment of possible indirect effects (e.g., night light or noise during the construction phase), the land does not directly influence the integrity or landscape perception of the sites, as it is separated from them by agricultural crops, spontaneous vegetation, and lack of direct visibility.

In terms of cultural heritage, the site is located in a very low sensitivity area, with no sites listed in the List of Historical Monuments within the minimum protection radius (500 m).

Conclusion:

The analyzed site has low to moderate sensitivity in terms of landscape and culture, being located in a heavily anthropized area, dominated by intensively used agricultural land and lacking remarkable natural, historical, or visual elements in the immediate vicinity.



Figure 14: View of the landscape at the project site (photos taken by the Ramboll team on May 8, 2025)

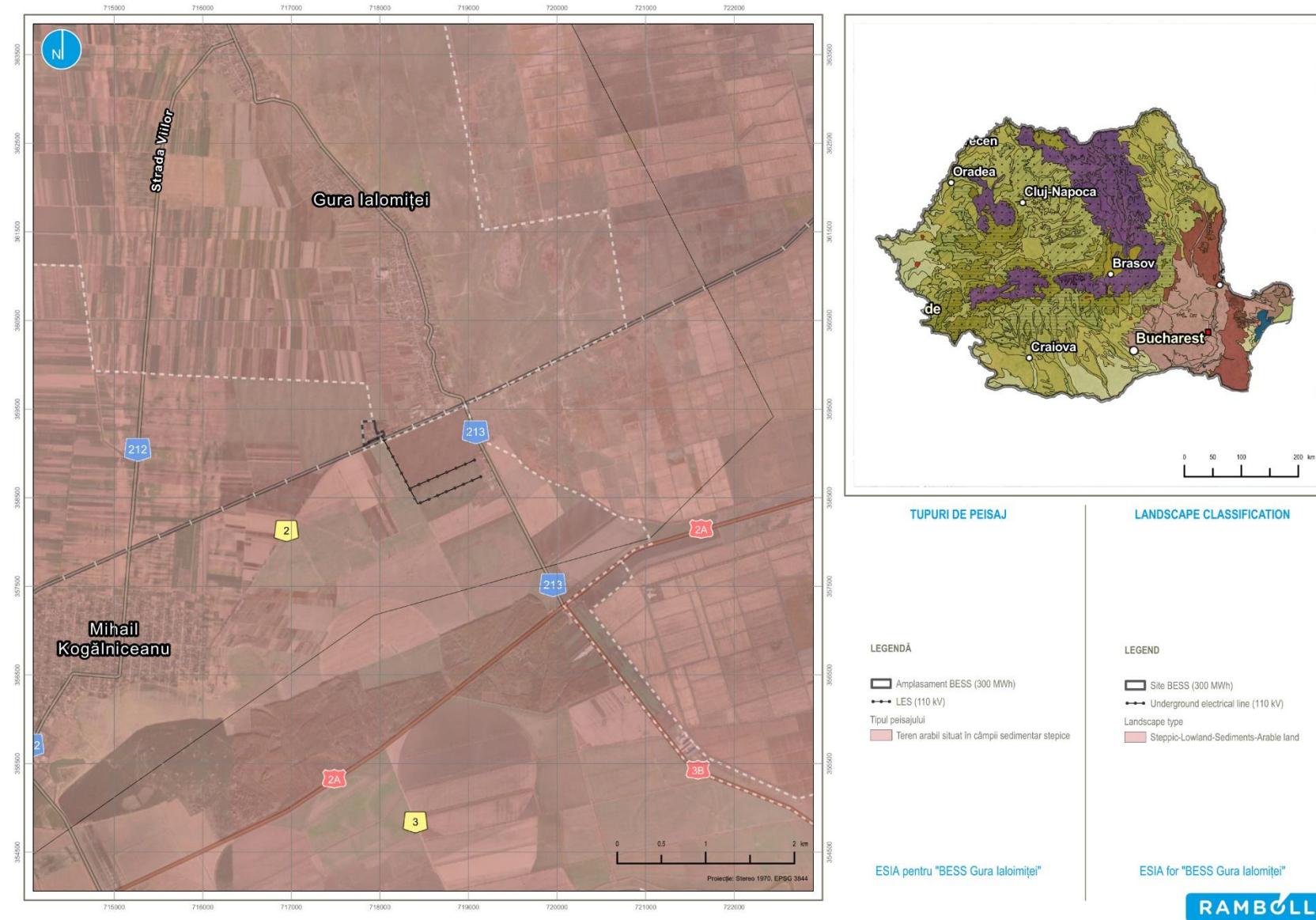


Figure 15 : Types of landscape existing in the project area (source: LANMAP3)

3.1.10 Climate and climate change

The analyzed site, located in Ialomița County, is situated in the Bărăgan Plain, an area characterized by a temperate continental climate, with hot summers and cold winters. This region is exposed to climatic influences from Eastern Europe, which causes significant variations in temperature and precipitation.

The climate of Ialomița County is temperate-continental, characterized by very hot summers and very cold winters, with a relatively large annual and diurnal temperature range and low precipitation. The average annual sunshine duration is between 2,100 and 2,300 hours, with 110 days of clear skies, 123 days of cloudy skies, and 130 days of overcast skies.

Climate regime: Climate zone: II (according to the climate zoning map of Romania, fig. A1 in SR 1907-1).

Details on climate and exposure to climate hazards are presented in chapter 5.2 Climate Change Assessment of this report.

3.2 Social and economic conditions

3.2.1 Administrative organization

In terms of administrative organization, Romania is divided into four macro-regions, eight development regions, 41 counties, and the Municipality of Bucharest, comprising 3,228 administrative-territorial units, including the sectors of the Municipality of Bucharest. Ialomița County, located in the South Muntenia Region, comprises the following administrative-territorial units: 3 municipalities, 4 towns, and 59 communes. The identified area of social impact (the future location of the BESS system and all the works that will take place) is bordered by three administrative-territorial units: Gura Ialomiței, Mihail Kogălniceanu, and Giurgeni. Given the proximity to residential areas and the location of most of the objectives within the built-up area of the commune of Gura Ialomiței, the social impacts identified are concentrated in this commune, but the chapter also takes into account the basic conditions in the commune of Mihail Kogălniceanu (some of the roads crossed will also be in this locality, and the LES cable routes are located in the administrative-territorial unit of Mihail Kogălniceanu).

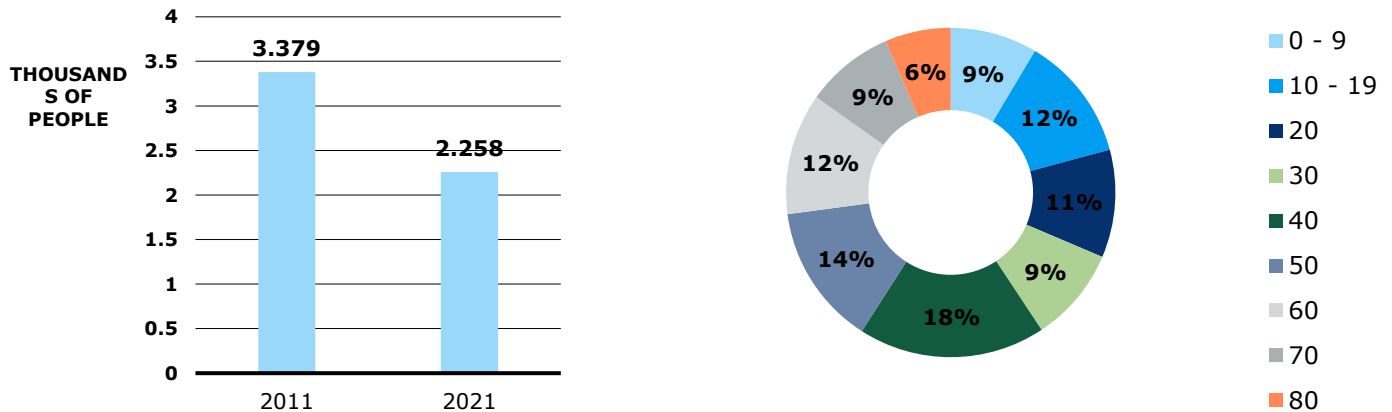
Conclusion: The site is located in the administrative-territorial unit belonging to the commune of Gura Ialomiței and the commune of Mihail Kogălniceanu, in the northeast of Ialomița County, on the border with Brăila County.

3.2.2 Population

Population in the commune of Gura Ialomiței

According to the 2021 census, the commune of Gura Ialomiței had a population of 2,258, down by approximately 33% compared to the figures recorded in 2011. The age group with the highest share was 40-49 years old (18.4% of the population), followed by the 50-59 age group (14%). The sharp decline in population is in line with the trend of demographic decline and population aging observed at the county and national levels. The average age of the population in 2021 in Ialomița County was 42.3 years, slightly below the national average of 42.4 years. The county's aging index is lower than the national average, reaching 114.8 compared to the national average of 121.2. The county's population has also decreased by approximately 9% compared to 2011, with this phenomenon being more pronounced in rural areas such as Gura Ialomiței, as the figures show. The predominant residential environment in Ialomița County is rural, accounting for 56.3% of the population.

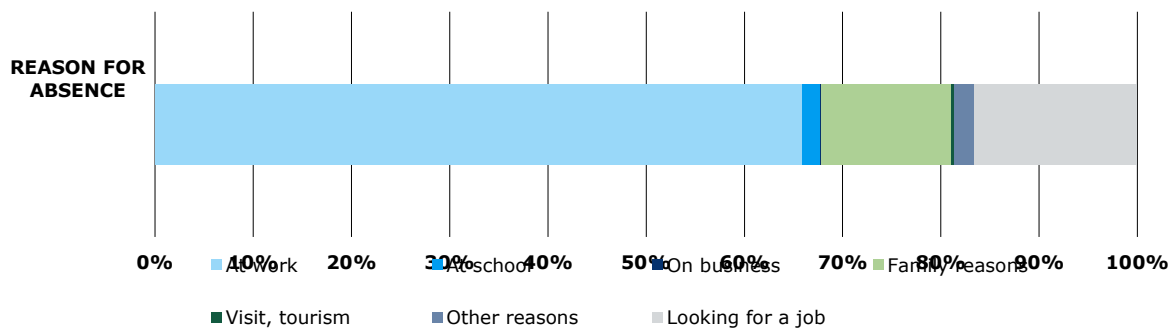
Figure 16 : Number of inhabitants (left) and distribution by age group (right) in Gura Ialomiței in 2021



Source: 2021 Census, available [here](#).

Emigration is one of the main reasons for the decline in Romania's population, along with the falling birth rate. In Ialomița County, 3,772 people were temporarily absent, living abroad, with over 60% of them having left to work, mainly in seasonal jobs or in fields that do not require permanent settlement in the destination country.

Figure 17: Temporarily absent persons abroad and reason for absence in Ialomița County in 2021



Source: 2021 Census, available [here](#).

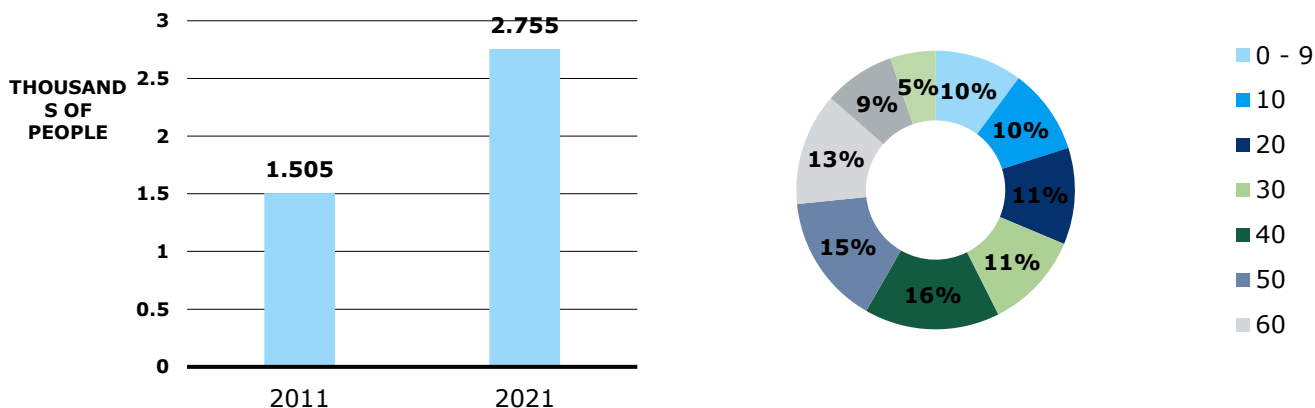
Conclusion: The commune of Gura Ialomiței is facing a sharp decline in population and an aging population, with a 33% decrease in the last 10 years.

3.2.3 Economic aspects

Population in the commune of Mihail Kogălniceanu

The situation in the commune of Mihail Kogălniceanu is as follows: In the 2021 census, the commune of Mihail Kogălniceanu had a stable population of 2,755 people, a significant increase compared to the previous census (2011), when the population was 1,505 people. Population growth is a positive phenomenon, unlike in the commune of Gura Ialomiței. According to the 2021-2027 Development Strategy

Figure 18 : Number of inhabitants (left) and distribution by age group (right) in Mihail Kogălniceanu, 2021



for Ialomița County , this evolution can be explained by a positive balance of changes of residence recorded in recent years, which indicates a trend of migration to this area. The factors that have favored this growth are associated with the phenomenon of suburbanization, in which people from urban areas—especially from Slobozia and Țândărei—choose to relocate to nearby rural communes in search of a more comfortable and affordable living environment.

The dominant age group is 40–49 years (15.72%), followed by the 50–59 age group (15.10%), which suggests a slow aging of the working population and is in line with regional trends related to demographic aging. Thus, internal migration, rather than natural growth, is the determining factor in the positive population dynamics of this commune.

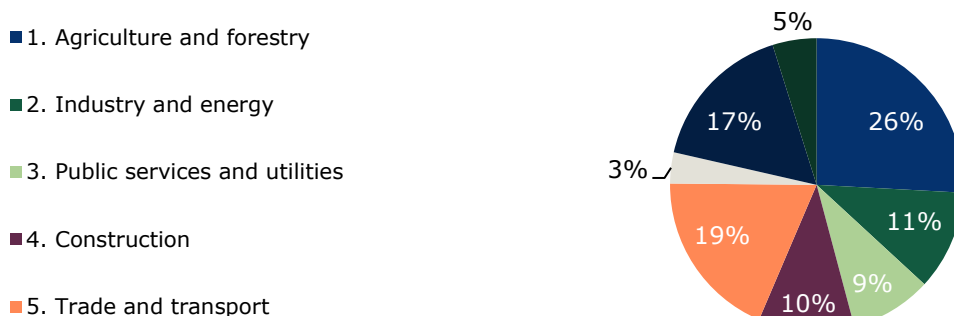
Conclusion: Demographic sensitivity in the commune of Mihail Kogălniceanu is low to moderate, with no urban development pressures, but its rural character highlights a social vulnerability to economic changes.

From an economic point of view, the inhabitants of Gura Ialomiței are predominantly engaged in activities related to agriculture, forestry, and fishing, as well as transport, trade, and vehicle repair (45%). The main companies registered in the locality, in terms of turnover, also reflect a rural-agricultural profile, complemented by commercial and logistics services. The most common areas of activity include cereal cultivation, retail trade in non-specialized stores, especially food products, wholesale trade in fruit and vegetables, and road freight transport. There are also companies in the field of residential and non-residential construction and photography, which indicates a modest diversification of the local economy, with an emphasis on basic services and agriculture.⁴ According to the analysis in the 2021-2027 County Development Strategy, the commune of Gura Ialomiței is classified as a locality with low economic

⁴ According to the rankings presented on the Topfirme website, available [here](#). Last accessed on 23/04/2025.

potential. At the county level, four main sectors of activity encompass over 73% of the total number of employees in Ialomița County: Manufacturing, Trade, Agriculture, Forestry, and Fishing, Construction.

Figure 19 : Resident population employed in national economic activities in Gura Ialomiței 2021



Source: 2021 Census, available [here](#).

Table 24 : Average nominal net wage (RON)

Level	Year	Year	Year
National	1579	3416	4412
SOUTH-MUNTENIA REGION	1463	3024	3897
Ialomița	1239	2793	3618

The average net salary in Ialomița County reached RON 3618 in 2023, an increase of approximately 30% compared to 2021. However, earnings remain below the average recorded in the South-Muntenia Region and at the national level.

Source: National Institute of Statistics.

From an economic point of view, the commune of Mihail Kogălniceanu has a similar structure to Gura Ialomiței – based on agriculture and basic services – but stands out for its greater stability and economic diversification, with less dependence on seasonal migration and a less pronounced demographic decline , which puts it in a slightly more favorable position for attracting sustainable investments.

The commune of Mihail Kogălniceanu is also home to one of the most significant companies in the county in terms of turnover and number of employees, SOPEMA SRL, an agricultural company that cultivates cereals (excluding rice), legumes, and oilseed crops.

Conclusion: The commune of Gura Ialomiței has a low level of economic attractiveness, with a predominantly agricultural profile and low incomes for the population. Both the commune of Mihail Kogălniceanu and the commune of Gura Ialomiței show moderate economic sensitivity, specific to rural areas dependent on agriculture, but Mihail Kogălniceanu stands out with slightly higher economic diversification and lower structural vulnerability compared to Gura Ialomiței.

3.2.4 Working conditions

Both Mihail Kogălniceanu and Gura Ialomiței have high unemployment rates, reflecting a fragile economic situation typical of rural areas, but with reasonable potential to absorb investments that can stimulate local employment. The number of registered unemployed in Gura Ialomiței and Mihail Kogălniceanu has remained relatively constant, with the communes having among the highest proportions of unemployed in the total labor force in the county (between 5% and 10%).

In Romania, labor relations and employee rights are regulated by the Labor Code, which guarantees access to fair working conditions and remuneration, the right to vocational training, information, consultation, and equal treatment. Employers are required to assess health and safety risks in the workplace, apply appropriate prevention and protection measures, and ensure that workers receive adequate training in occupational safety and health.

Although labor legislation is aligned with European standards, in some cases its application is not uniform. Particularly in rural areas and in sectors with a low-skilled workforce (such as agriculture, construction, or retail), employees often face low wages, seasonal or precarious work, lack of access to vocational training, and exposure to difficult physical conditions. In 2023, 25 accidents resulting in temporary incapacity for work were reported in Ialomita County. As shown in Table 6, the recorded rate of accidents at work is lower than the national or regional rate.

Figure 20 : Rate of work accidents in Ialomita County, 2023

Source: National Institute of Statistics

Level	Work accident rate at county level. Year 2023
National	0.
SOUTH-MUNTENIA region	0.74
Ialomița	0.5

Conclusion: The analyzed area shows vulnerabilities in terms of the working population, with a high unemployment rate and activity in sectors with low-skilled labor.

3.2.4.1 Occupational health and safety of workers and their accommodation

In Romania, occupational health and safety are regulated by Law No. 319/2006, which requires employers to assess occupational risks, appoint an OHS manager, and implement appropriate preventive measures, including the provision of personal protective equipment, staff training, and appropriate workplace organization.

In the Gura Ialomiței area, the economy is dominated by small-scale agricultural activities. Working conditions can vary significantly depending on the season, the type of farm, and the degree of formalization of work. Thus, phenomena such as informal work, underreporting of activities, or lack of legal contracts are possible, especially in the case of seasonal workers. The phenomenon is similar in the construction sector, where the practice of "gray" or "black" work has been reported in national reports⁵. However, no significant work accidents have been reported in the studied area, according to available official data.

⁵ The labor market in the construction sector 2022, available here.

In the case of the "Development of a battery energy storage capacity in Gura Ialomiței" project, rigorous prevention measures are integrated, leading to a low residual risk in terms of worker health and safety.

Workers' accommodation will be provided according to the needs identified during the construction phase. If the workforce needs to travel, temporary accommodation will be organized on site in specialized barracks that comply with hygiene and safety requirements. Workers will be provided with drinking water, eco-friendly toilets, and adequate facilities for personal hygiene, in accordance with the legal regulations in force. Also, where no actual accommodation is required, minibuses/other types of transport will be provided. All applicable health and safety standards will be complied with in temporary accommodation areas. There is also accommodation available in the commune/surrounding area.

In Romania, health and safety at work are regulated by Law No. 319/2006, which requires employers to assess occupational risks, appoint an OSH officer, and implement appropriate preventive measures, including the provision of personal protective equipment, staff training, and appropriate workplace organization.

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3.2.5 Education

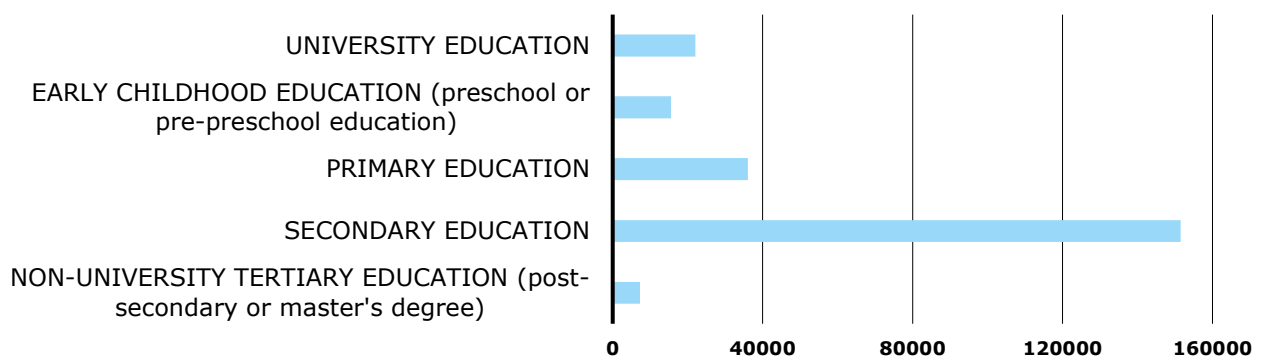
In Ialomița County, approximately 65% of the resident population over the age of 2 has completed some form of secondary education, according to the 2021 census data. In Gura Ialomiței, the school population consisted of 233 students in 2023, most of whom were enrolled in primary and secondary education. The commune is home to the Constantin Gurgu Secondary School, located 1257 km from the project under analysis, so no significant impact is expected.

⁶ The labor market in the construction sector 2022, available here.

In the commune of Mihail Kogălniceanu, the school population consisted of approximately 247 students in 2023, most of whom were enrolled in primary and secondary education, according to data from the local school network.

Over the last decade, Ialomița County has experienced a steady decline in the school population (approximately 21% fewer students in 2021 compared to 2011) due to negative demographic trends and school dropouts, a phenomenon predominantly found in rural areas for primary and secondary education. It is estimated that in recent years, approximately 1.5% and 2.1% of students have dropped out of school.⁷

Figure 21 : Resident population by level of education of the educational institution graduated from in 2021, Ialomița County



Source: 2021 Census, available [here](#).

Conclusion: Both Mihail Kogălniceanu and Gura Ialomiței have a relatively balanced school population, with approximately 230–250 students each, most of whom are enrolled in primary and secondary education. The presence of these educational institutions indicates basic local access to education, but the small size of the school population reflects demographic trends of decline and aging, with a decrease in the school population and risks of school dropout.

3.2.6 Population health

3.2.6.1 Community health and safety

- In 2023, life expectancy at birth in Romania was estimated at 76.4 years, according to Eurostat data, on average 5-6 years more than in the early 2000s. Life expectancy in Romania remains below the European Union average, which reached 81.4 years in 2023.
- In Ialomița County, in 2023, the main cause of morbidity is respiratory diseases, with a rate of 19,122.77 cases per 100,000 inhabitants. These are followed by cardiovascular diseases and endocrine diseases. There has been a significant decrease in the incidence of malignant tumors (44.48 cases per 100,000 inhabitants) compared to previous years.⁸

⁷ Social Services Development Strategy 2023–2030, Ialomița County.

⁸ Source: Ialomița Public Health Directorate.

- In 2020, the average in Ialomița County was 1,758 inhabitants per family doctor, a value that falls within the limits recommended by the Ministry of Health (maximum 3,000 inhabitants/doctor), but there are still areas where residents are forced to travel to other localities for basic medical services.
- Access to healthcare infrastructure varies depending on the area of residence. For 2021, there were reports of rural areas without a family doctor, including Gura Ialomiței.
- Safety is ensured by the local police and the "Barbu Catargiu" Emergency Situations Inspectorate of Ialomița County, which coordinates and implements civil protection and emergency response measures in accordance with national and local regulations. There are four SEVESO sites in the county, none of which are in the vicinity of the future site.⁹

3.2.6.2 Population health and climate change

Over the last decade, the average annual temperature in Romania has risen significantly, by approximately 3.5 degrees compared to the late 1970s and early 1980s in some geographical areas. The health of the population is affected by heat waves, which are more frequent, more intense, and last longer. These increase the risk of heatstroke, dehydration, cardiovascular disease, and aggravate respiratory problems, especially in urban areas, where tropical nights (where temperatures do not fall below 20 degrees) and high thermal discomfort no longer allow the body to recover. Violent weather events (storms, torrential rains) and other phenomena, such as floods, are also more frequent.

Significant warming leads to a deterioration in air quality, promotes the development of allergies, and extends the period of activity of disease vectors (such as mosquitoes that transmit viruses). In 2023, more than 2,500 heat-related deaths were recorded in Romania, with women and people over 80 being the most vulnerable groups. Ialomița County is among the counties with the highest mortality associated with high temperatures, with a rate of 350 per 1,000,000 inhabitants.¹⁰

Conclusion: The health status of the community in Ialomița County reflects persistent challenges related to unequal access to healthcare services, high morbidity from respiratory diseases, and increased vulnerability to climate change, with a significant impact on the elderly population.

⁹ [BARBU CATARGIU EMERGENCY SITUATIONS INSPECTORATE OF IALOMITA COUNTY.](#)

¹⁰ According to Infoclima.ro data available [here](#).

3.2.7 Local infrastructure and access to services

3.2.7.1 Utilities access

Sewerage¹¹

- In 2020, only about 32% of the county's population was connected to the sewerage system. In the commune of Gura Ialomiței, the sewerage network is very short, between 0 and 5 km, which leads to the use of alternative solutions, such as individual septic tanks. In the commune of Mihail Kogălniceanul, access to sewerage is also limited, with individual septic tanks being the predominant solution. In the absence of an extensive system, most households use septic tanks, which generates potential risks of soil infiltration and groundwater pollution, especially in areas with high water tables.

Water supply

- In terms of access to drinking water, in 2023, the length of the simple distribution network in Gura Ialomiței was 25 km, thus ensuring the supply of drinking water to the population. At the level of the Mihail Kogălniceanu commune, there is a drinking water supply network of moderate capacity, most likely covering the center of the locality and areas with higher density.
During the public debates, comments were made regarding the unsatisfactory degree of water potability.

Energy

- In Ialomița County, only 10 localities (5 urban and 5 rural) are supplied with natural gas, which represents about 5% of the localities supplied in the entire South Muntenia region. In the commune of Gura Ialomiței, there is no natural gas distribution network (0 km of pipelines) at the time of drafting the County Development Strategy.
- Centralized thermal energy distribution was completely discontinued at the county level according to data from 2008, with the last consumption reports dating from 2007 in the municipalities of Slobozia and Urziceni.
- Ialomița has been a hotspot for green energy since 2015, with the first photovoltaic parks popping up in the west of the county. The county has one of the highest photovoltaic potentials in Romania, with an estimated yield of up to 1314 kWp/year.¹² In 2023, photovoltaic energy had the largest contribution to the county's energy production, followed by wind energy and prosumers. The commune of Gura Ialomiței and the neighboring localities may be of interest to energy project developers. The commune of Gura Ialomiței is home to the only 400/110 kV transformer station in the county, managed by CNTEE Transelectrica SA București, which supplies the 16 distribution stations in the county. Also, the largest area of degraded land (1,860 ha – about one-third of the total and about 27% of the administrative territory of the UAT) was located in the commune of Gura Ialomiței. These lands have the potential to be reused for this type of project.
- The number of prosumers increased approximately sixfold between 2021 and 2023, from 240 to 1,690 people. The increase in the number of prosumers can cause imbalances in the grid due to large variations in renewable energy production. Without storage solutions (batteries or other

¹¹ The statistics are based on data from the Ialomița County Development Strategy 2021–2027 – Analysis of the current situation.

¹² [Global Solar Atlas](#).

technologies), this surplus can lead to overloads or energy losses, affecting the stability of the electricity grid. Energy consumption has fallen by about 6% since 2021 for both domestic and non-domestic users.

Table 25 : Energy production and consumption in Ialomița County, 2023

Energy source	Production
Coal	-
Hydrocarbons	-
Nuclear	-
Hydro	1.6 MW
Photovoltaic	15.604 MW
Wind	132 MW
Biomass/Biogas/Waste	-
Waste heat/Geothermal	-
Storage	-
Prosumers Total	22.16 MW

Year	Household consumers	Non-domestic consumers
2021	172,243 MWh	336,944 MWh
2023	145,397 MWh	329,794 MWh

Source: Energymap, available [here](#).

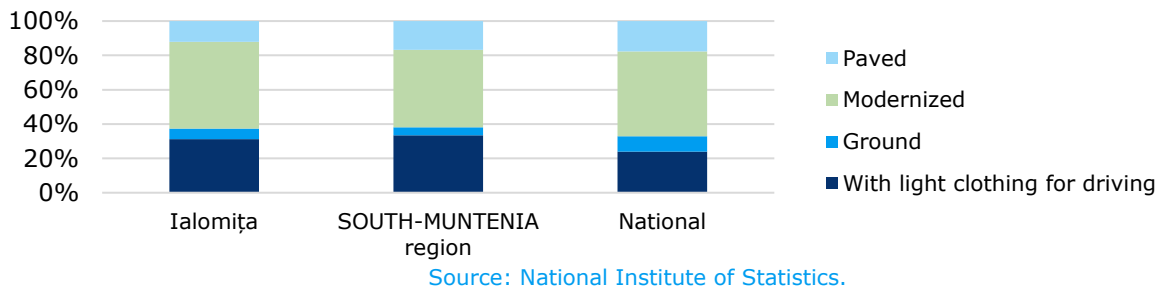
Conclusions: Access to utilities in the project area is limited, with poorly developed infrastructure for sewerage and natural gas. The sensitivity of the utility infrastructure in both municipalities is high, especially with regard to sewerage and lack of access to natural gas. This vulnerability may amplify the risks of pollution and social discomfort in the absence of adequate technical solutions.

However, the area has high potential for the development of renewable energy projects, particularly photovoltaic and storage, due to the existing infrastructure and large areas of reusable degraded land.

3.2.7.2 Roads

The most important road transport flows in Ialomița County are concentrated in the western part, near the town of Fierbinți-Târg, along the Fetești-Țândărei axis, as well as in the area of Gârbov and Gura Ialomiței. Along the main county roads, such as DJ101, DJ213, and DJ203F, traffic volumes ranging from 1,000 to 4,000 vehicles per day were recorded in 2015. There are approximately 25 km of motorway in the county, and about 82% of the road network has been modernized or has light road surfaces, a higher percentage than the average for the South Muntenia region. Currently, Ialomița County is crossed by two priority corridors of continental interest: Corridor No. 4 – Berlin – Nuremberg – Prague – Budapest – Arad – Bucharest – Constanța/Craiova – Sofia – Thessaloniki/Istanbul, which includes a road and rail branch crossing the southeastern part of the county through the municipality of Fetești; and Corridor No. 7 – the Danube River Corridor, which crosses the eastern part of the county through the navigable branch of Borcea.

Figure 22 : Road conditions in Ialomița County, 2023



Conclusion: The road infrastructure in Ialomița County is well developed, with a high degree of modernization and strategic positioning on European transport corridors, especially in the west of the county and in the Gura Ialomiței area, favoring regional and international connectivity.

3.2.8 Vulnerable groups

In Ialomița County, the main vulnerable groups identified are the elderly, children at risk of family separation, people with disabilities, and victims of domestic violence. These categories face problems such as lack of access to adequate social services, isolation, poverty, poor housing conditions, or lack of family support.

For example, in 2022, there were 9,145 adults with disabilities registered, most of whom did not have access to adapted social support services.¹³ At the same time, children whose parents have gone abroad are often left in the care of relatives, exposed to the risk of neglect or abandonment, and victims of domestic violence do not have sufficient access to shelters or specialized counseling. Against the backdrop of a declining population (−9% between 2011–2021), demographic ageing is exacerbating vulnerability and pressure on the social system.

The South Muntenia region ranks among the top regions in terms of the proportion of the population at risk of social exclusion, with a relative poverty rate that remained at similar levels between 2008 and 2020, with a slight increase from 22.9% to 23.4% of the region's population. The 2020 indicator is approximately ten times higher than the poverty rate in the Bucharest-Ilfov region (2.4%).¹⁴ The town of Gura Ialomiței and the surrounding areas are classified as areas with medium-low development (according to the Local Human Development Index - LHDI)¹⁵, which implies certain social and economic vulnerabilities at the community level (see map below).

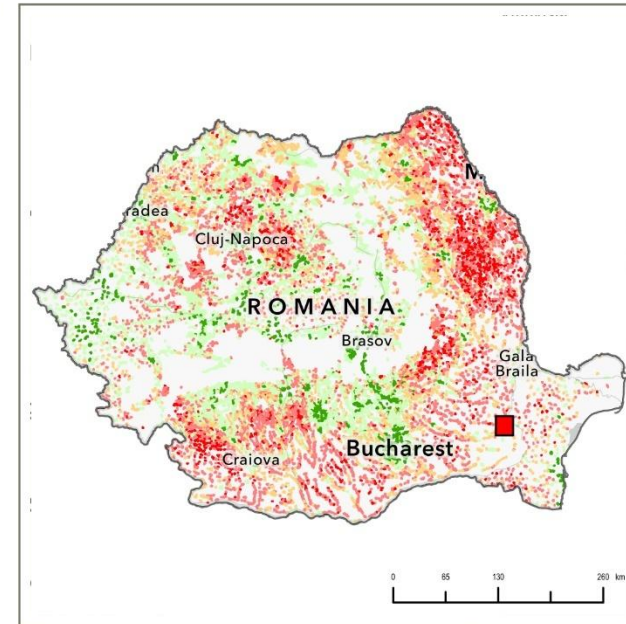
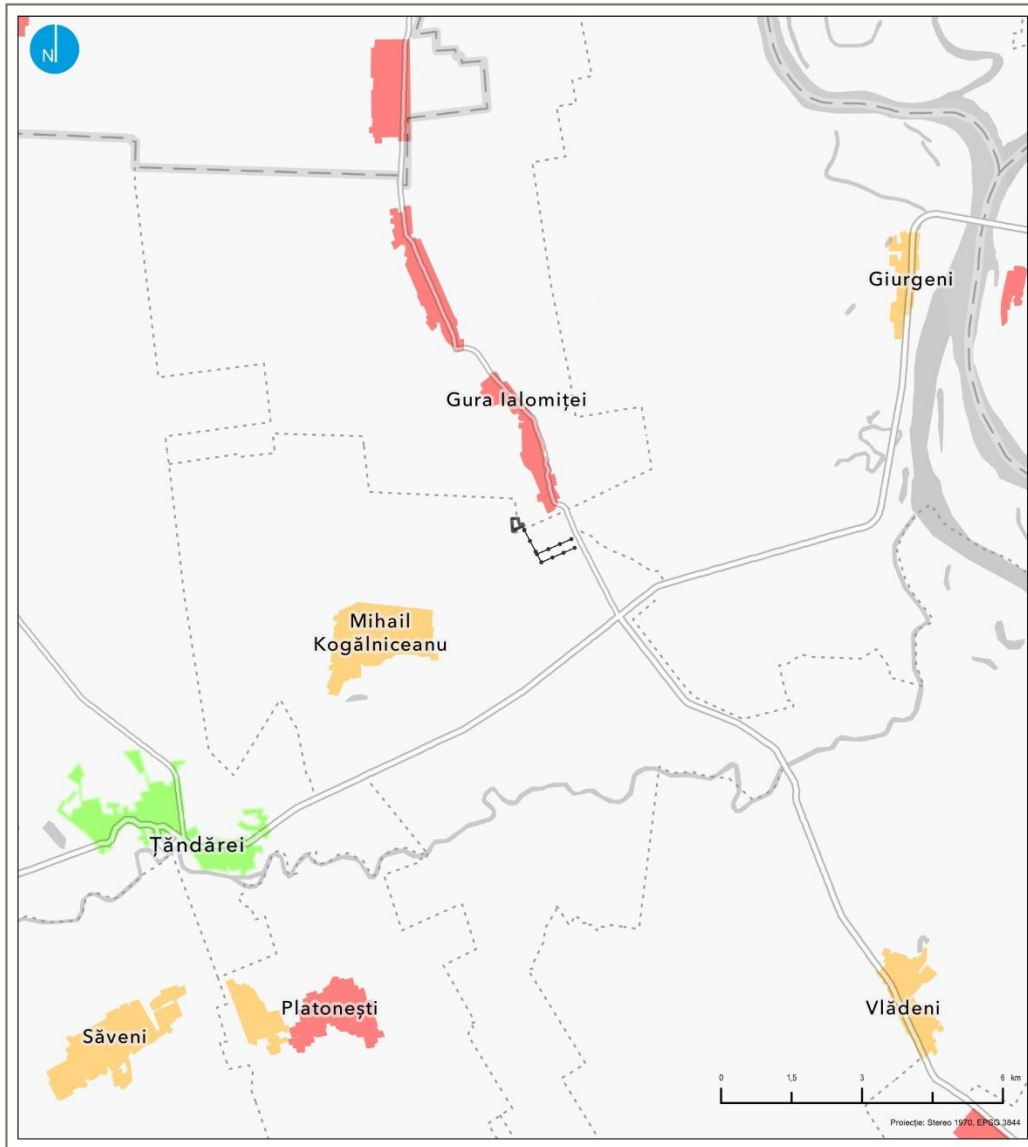
Conclusions: Ialomița County faces multiple forms of social vulnerability, exacerbated by an aging population, labor migration, and limited access to support services, especially for people with disabilities, children left in the care of relatives, and victims of domestic violence.

¹³ Social Services Development Strategy 2023-2030, Ialomița County.

¹⁴ National indicators for sustainable development, Horizon 2020. Available [here](#).

¹⁵ World Bank, available [here](#).

Figure 23 : Map of vulnerable areas in the AoI studied according to the LHDI indicator
 (source: World Bank, Atlas of Marginalized Rural Areas and Local Human Development in Romania)



INDICELE DEZVOLTĂRII UMANE LOCALE

LEGENDĂ

- Amplasament BESS (300 MWh)
- LES (110 kV)
- Indicele dezvoltării umane locale (IDUL)
- Dezvoltare medie-săzută
- Dezvoltare medie
- Dezvoltare medie-ridicăță

ESIA pentru "BESS Gura Ialomiței"

LOCAL HUMAN DEVELOPMENT INDEX

LEGEND

- Site BESS (300 MWh)
- Underground electrical line (110 kV)
- Local Human Development Index (LHDI)
- Lower-middle development
- Middle development
- Upper-middle development

ESIA for "BESS Gura Ialomiței"

3.2.9 General assessment of basic social data

Conclusions:

From an economic and social point of view, the studied area has a population with marked decline and demographic aging trends, with low economic potential. The basic economic activities are those associated with agriculture and forestry. Access to basic utilities and public services is limited in certain situations, especially for sewage and medical facilities. There are vulnerabilities in relation to the elderly, children at risk of family separation, people with disabilities, and victims of domestic violence.

The level of municipal infrastructure provision is low to moderate, with notable deficiencies in sewage and gas, but with an advanced electrical system and potential for smart integration. Water quality and the lack of a sewerage network are factors that require the strict implementation of physical barriers and retention systems for any activity that may generate wastewater (including in the BESS platform area).

The area may be of interest for the development of renewable energy projects in terms of the availability of land that can be reclaimed (approximately 27% of the UAT's land is degraded), the potential for energy from photovoltaic panels, and the proximity to the transformer station managed by CNTEE Transelectrica SA.

The BESS project is compatible with the existing infrastructure and supports it, reducing pressure on the electricity grid and capitalizing on the local renewable energy potential.



4. ESIA approach and methodology

4.1 Scoping stage

Scoping was an important step for this environmental and social impact assessment report. After completing the screening stage and deciding to produce the report, scoping aims to identify the issues that really matter.

For the proposed project, Ramboll conducted a detailed scoping assessment to identify key sensitivities in the natural and socio-economic environment, as well as activities with the potential to generate significant impacts. This stage also allowed for the analysis of the selected site, the project configuration, and possible alternatives, as well as the substantiation of decisions regarding the integration of measures to prevent, reduce, and compensate for the impact.

The main purpose of this assessment was to guide the ESIA study towards those aspects that are essential for environmental protection, informed decision-making, and addressing stakeholder concerns. The scoping assessment also contributed to informing the site selection in the context of the sensitivities identified in the area.

The specific objectives of the scoping assessment included:

- Delineating the project's area of influence (AoI) for both physical and functional components in order to establish a relevant study area;
- Identifying points of interaction between project activities and environmental or socio-economic components, taking into account the construction, operation, and decommissioning phases;
- Preliminary assessment of potential impacts based on these interactions and selection of those issues that warrant further analysis in the ESIA;
- Prepare a detailed assessment of the impacts identified as potentially significant, in accordance with applicable legislative requirements and international standards (e.g., IFC PS, EBRD PR).

This approach ensured that the assessment focused effectively on issues relevant to design, decision-making, and social acceptability, reflecting the local context of the site, ecological sensitivity, and socio-economic characteristics of the study area.

During the scoping phase, the main potential impacts on environmental components and socio-economic factors were identified, as well as sensitive receptors likely to be affected by the implementation of the project. This analysis also took into account the issues previously raised by stakeholders, particularly following interactions with local communities.

During the scoping phase, the potential effects of the project on key environmental components and socio-economic factors were identified. The following table summarises the resources and receptors analysed:

Table 26 : Components

Component	Impact prediction
ENVIRONMENT	
Air	Emissions of NO _x , SO _x , PM, CO, VOCs, GHGs (CO ₂ , CH ₄ , N ₂ O), ozone, and total suspended particulates (TSP).
Noise	Changes in noise levels.
Geology	Changes in geomorphology, topography, or geostucture.
Soil	Changes in the physical and chemical properties of the soil and soil ecology.
Surface water	Changes in the physical, chemical, or biological quality of water (rivers, ponds, etc.).
Groundwater	Possible contamination of groundwater aquifers and changes in the hydrogeological regime.
Local flora and fauna	Changes in the status of plant populations, species health and diversity; impact on protected or economic species.
Protected areas	Changes in fauna distribution, effects on protected or economic species, including food chains.
Landscape/visual aesthetics	Physical presence of facilities, including night lighting.
Waste	Waste generation – hazardous and non-hazardous.
Climate	Contribution to greenhouse gas emissions; the project's capacity to integrate measures to adapt to climate change (e.g., extreme temperatures, floods, drought).
Use of natural resources	Temporary or permanent restrictions on access to resources (land, water, etc.); changes in economic activities and ownership of these resources.
SOCIAL	
Population	Changes in the structure of the local population (number, gender, age) as a result of land acquisitions or project activities.
Social and cultural structure	Disruption of community relations, local governance structures, or social behaviors; potential for intra- and inter-ethnic conflicts.
Economy and employment	Changes at the local/national level in terms of the economy, employment, living standards, and traditional occupations.
Vulnerable people	Possible disproportionate effects on vulnerable people (the elderly, women, people with disabilities, marginalized groups) in terms of access to resources, noise, exposure to emissions, or changes in the living environment.
Education	Changes in access to education, school infrastructure, or educational resources, especially for local communities directly affected by the project.
Human health	Potential exposure to air pollutants, noise, vibrations, or other harmful effects that may affect the health of the local population, directly or cumulatively.

The preliminary prediction of possible impacts is shown in Table 24.

4.2 Definition of the area of influence (Aoi)

The project's area of influence was determined during the ESIA scope definition phase, in accordance with the criteria described in IFC PS1, and includes consideration of areas affected by:

- Direct and indirect impacts. With regard to indirect impacts, particular emphasis is placed on impacts affecting biodiversity and ecosystem services on which the livelihoods of affected communities depend;
- The impact of unplanned but foreseeable events caused by the project that may occur later or in different locations, e.g., population influx, loss of hazardous material containment.
- Associated facilities;
- The cumulative effects generated by the project and other existing, planned, or reasonably defined developments at the time the scope and impact assessment process is carried out.

The study area is not necessarily the same as an impact area and is an area defined for specific studies to determine or verify the sensitivity of the receptor and/or the potential and of the magnitude/intensity of

the impact. Study areas will vary depending on the receptor and the type of impact and are defined during the scoping phase.

The scoping process may be undertaken by the client's internal staff, if internal expertise is available, and/or by consultants who possess the necessary expertise and objectivity. The engagement of consultants to perform the ESIA scope definition may be separate from the engagement of ESIA consultants for the impact assessment or may be combined into a single engagement process. In either case, it is recommended that the engagement be phased so that the proposal for an ESIA consultant is made on the basis of a completed scoping study.

I. Establishing the impact area through clear geographical boundaries:

The area of influence is defined taking into account the following factors:

- **The type, size, and location** of the project;
- **The nature of potential impacts** (physical, biological, social);
- **The degree of mobility and persistence of pollutants or disturbances** (e.g., air or water dispersion, wildlife migration);
- **The dependence of communities** on local resources (water, forests, soils);
- **The legislative and institutional framework**, including requirements for buffer zones.

Area of direct influence:

The area of influence (AoI) is the geographical extent within which a project's activities may generate direct or indirect, temporary or permanent, cumulative impacts on the environment and local communities. The correct establishment of this area is an essential step in the Environmental and Social Impact Assessment (ESIA) process, as it determines the scope of baseline studies, public consultations, and impact analysis.

This area of influence was established based on the results of the Environmental Impact Assessment (EIA), data from the literature for similar works, and expert opinion (precautionary approach). Delimitation elements used:

- a) Location of the site:
 - Definition of the outline of the site where the project will be carried out.
 - Distance from protected natural areas.
 - Distance from watercourses.
 - Distance from the first settlements: Establishment of a proximity distance to the first residential area (e.g., east/west of the site).
 - Distance from historical monuments and archaeological sites
- b) Defining the area where the direct environmental effects of the project are felt (e.g., the area where there is an increase in noise levels, the area where there is a change in air quality)
- c) Defining the area where direct economic and social effects are felt (e.g., the workforce in the locality where the project will be located and in the adjacent localities, the use of transport routes for access).

Area of indirect influence:

The area of indirect influence is the area where the effects generated by other activities occur, modified as a result of the implementation of the regional project (e.g., if the implementation of this project leads to changes in the supply/distribution chain of raw materials used in construction or for operation, it is necessary to expand utility networks and relocate personnel).

4.3 Environmental impact assessment methodology

The following section describes the methodology and process adopted for assessing the environmental impact.

The negative and beneficial impacts on the environment and social component generated by this Project were identified and assessed in relation to the established baseline. A consistent approach to impact assessment was followed to allow for a broad comparison of social and environmental impacts within the ESIA. A set of generic criteria was used to determine the significance of the impact applied to different social and environmental parameters. Where possible, environmental and social impacts were quantified. Where it was not possible to quantify the impact, a qualitative assessment was performed using the consultant's professional experience, reasoning, and knowledge, including consideration of stakeholder views. Where there were data limitations and/or uncertainties, these were recorded in the relevant chapters, along with any assumptions that were made during the assessment.

To determine the significance of each impact, two general factors were considered:

- The importance and/or sensitivity of the environmental and social receptor parameter, as determined during the baseline assessment.
- The magnitude and nature of the impact.

It should also be noted that the quality of the baseline data could affect the accuracy of the assessments made. Therefore, it was necessary to list the key assumptions made and any limitations identified in conducting this ESIA, as can be seen in the relevant technical sections. In general, the ESIA assumes that:

- The main use of land in the surrounding area will remain unchanged throughout the life of the Project.
- The Project will be developed as presented in the Project Description Section.
- The mitigation and monitoring measures provided for in the ESMP will be implemented as appropriate.

The risk and impact assessment was carried out for the following stages:

- Construction phase.
- Operations phase.
- Decommissioning phase.

Impact assessment criteria used

Assessment parameter	Evaluation parameter variables	Description of the characteristics of the evaluation parameter variables
Impact type	Positive	The changes contribute to improving the status/achieving the objectives of the analyzed component.
	Negative	The changes contribute to worsening the status/failure to achieve the objectives of the analyzed component.
Nature of impact	Direct	Main form of impact produced by the occurrence of an effect.
	Secondary	Form of impact generated by a direct impact.
	Indirect	The form of impact that occurs not because of an effect generated by the project, but because of activities that are encouraged to occur as a consequence of the project.
	Cumulative	The form of impact that occurs not because of an effect generated by the project, but because of effects that are cumulative with other activities or effects.
Spatial expansion	Local	The impact is local, limited to the area immediately surrounding the site, without affecting larger regions or elements of the environment of regional interest.
	At the site level	The impact occurs exclusively at the site level, without spreading beyond its boundaries, indicating a limited and controllable spatial extent.
	Regional	The impact has a regional extent and may affect environmental components or socio-economic factors beyond the site area, with possible influences on a wider geographical area.
	National	The impact is national in nature due to the potential effects or the relevance of the activities carried out, and may influence environmental factors, strategic resources, or objectives of national interest.
	Cross-border	The impact manifests itself in the territory of neighboring countries.
Duration	Short	The impact manifests itself over a maximum period of 1 year.
	Medium term	The impact is felt during construction and for a short period after construction.
	Long term	The impact lasts for several years.
Frequency	Accidental	The impact occurs only as a result of an accident (accidental pollution).
	Intermittent	The impact occurs repeatedly/discontinuously, with an unknown frequency.
	Periodic	The impact occurs repeatedly, with a known frequency.
	Permanent	The impact occurs continuously after the moment of occurrence.
Probability	Temporary	The impact occurs only once during one of the project stages. Most often associated with a short duration.
	Almost certain	The impact is inevitable or already present, 60%-100%
	Probable	There is a high chance that the impact will occur, but it is not certain, 60-80%
	Possible	The impact could occur, but there is uncertainty, 40-60%
	Unlikely	The impact is possible, but with a low probability, 20-40%
Reversibility	Rare	Impact is unlikely, 0-20%
	Reversible	The impact generated is reversible, as the effects on environmental factors can be eliminated once activities cease, and the environment can resume its ecological functions within a reasonable time frame.
	Irreversible	The impact is irreversible, as changes to environmental factors cannot be completely removed or restored to their original state, even after the cessation of activities.

4.4 Severity of impact

The following factors are taken into account when assessing the severity of the impact:

Table 27 : Severity of impact

Severity of impact	Description
Probability of occurrence	How likely is it that the event will occur during the Project's life cycle.
Magnitude and duration	The extent of the change induced, such as the size of the damaged area, the proportion of a species that is affected, or a resource that is lost. The magnitude of the impact is the size of the change that the impact may cause compared to the baseline and how this change relates to thresholds and standards, as shown in the table below.
Extent	The geographical area that could be affected by the impact
Reversibility	Whether or not the impact will be reduced and disappear over time once the Project ceases.

The assessment of the severity of the impact also takes into account the following factors:

- Regulations and guidelines: degree of compliance with specific regulations and standards (e.g., permissible limit values). Relationship and alignment with national policies.
- To assess the magnitude of the impact, a color-coded rating system was used, on a scale from significantly negative to significantly positive.

Table 28 : Magnitude of impact

Magnitude class	Description
No changes	The project would not cause any changes to the receiving environment, or any changes are unlikely to be noticeable.
Very low	The project causes very few changes to the receptor. It is usually reversible, temporary (<1 year) and limited to the project site (immediate vicinity). The probability of occurrence is less than 20%.
Low	The project causes visible damage to the environment. It is usually reversible, short-term (1-5 years) and limited to the project site. The probability is 20-40%.
Medium	The project causes moderate environmental damage. It is usually recoverable (with a degree of intervention). The change is felt in the medium term (>5 years) and is expected to affect neighbouring areas. The probability is 40-60%.
High	The project causes significant and long-term environmental damage, which is expected to be felt in the long term (>10 years) or throughout the life of the project. It affects an area that is important at the national level and/or has macroeconomic consequences. The probability of occurrence is 60-80%.
Very high	The project would cause irreversible and permanent damage to the environment and existing social components, usually lasting well beyond the project's lifetime or permanently. The effects may exceed the boundaries of the UATs, with regional or national implications. Its probability is 80-100% (i.e., the impact will occur).

4.5 Receptor sensitivity

Receptor sensitivity was determined using information taken from the current state of environmental and social factors, considering the importance, significance, or value of the social or environmental component under review. It is important to understand the sensitivity of the receptor parameter, as this is a measure of the adaptability and resilience of an environmental parameter to an identified impact. The following sensitivity categories were applied to the assessment:

Table 29 : Receptor sensitivity classes

High	The parameter/receptor is fragile, and an impact is likely to leave it in an altered state from which recovery would be difficult or impossible.
Medium	The parameter/receptor has a degree of adaptability and resilience and is likely to cope with changes caused by an impact, although there may be some residual changes as a result.
Low	The parameter/receptor is adaptable and resistant to change.
Very low	A completely invulnerable receptor with a high absorption capacity to absorb changes

The sensitivity of the receptor environment to changes caused by the Project has been determined within each technical chapter using professional judgment and existing information, where possible.

4.6 Impact mitigation measures

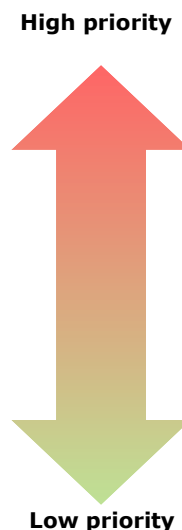
Based on the impact assessment undertaken, a set of mitigation and management measures is identified for each impact that aims to address it.

Mitigation and management measures include the following:

- Additional requirements: these are generally regulatory requirements that have been identified and need to be considered at a later stage.
- Additional studies: for certain environmental/social receptors, the completion of certain additional studies at a later stage. These studies and their scope, timing, etc. will be highlighted where relevant.

Mitigation measures: a vital step in the ESIA process is to identify measures that can be taken to ensure that impacts are mitigated or reduced to acceptable levels. The ESIA has first considered the significance of any impacts caused by the project and will then assign mitigation options by applying the following hierarchy:

- Avoid impacts whenever possible
- Consider alternatives or design changes to reduce impacts whenever possible
- Implement measures to minimize and manage impacts on the receptor
- Restoring/remediating the situation after the impact to return it to its original state before the impact occurred
- Compensate if none of the above approaches are possible, to offset the impact generated by the project
- Improve the effects generated where possible



- Some negative impacts can be easily mitigated, while others cannot or are too difficult and costly to mitigate. The various potential impacts are described in this EIA, together with the provision of "feasible mitigation measures" that can be implemented.

- Recommendations: for positive impacts, it is not possible to identify mitigation measures, but rather recommendations have been identified that aim to enhance the positive impact.
- Where mitigation measures have been proposed, it has been necessary to assess the "residual significance" after the impact mitigation has been taken into account. After the measures were implemented, a reassessment of the Project's impact was carried out, taking into account the effect of the proposed mitigation measures to determine the remaining residual impact. The residual effects are discussed for each environmental and social component in the ESIA sections.

4.7 Cumulative, unplanned, and transboundary impacts

In addition to the baseline assessment and management of the potential impact of the project, the ESIA report will also assess a number of other types of potential impact, including:

- **Combined effects:** For the purposes of this ESIA, combined effects are determined when considering the joint effects of the project and supporting infrastructure;
- **Cumulative impacts:** While an impact may be relatively small when considering the project on its own, the impact may be amplified in combination with the impact of other existing and/or future developments; these combined effects are known as "cumulative" impacts. A cumulative impact is an impact that results from changes caused by other past, present, or reasonably foreseeable actions of other persons outside the scope of the project, together with those of the project, e.g., increased noise from a series of separate developments. When assessing the overall acceptability of a project, it is important to consider potential cumulative effects. The significance of cumulative impact is assessed qualitatively using the same method as impact assessment.
- **Impacts from unplanned events:** Impacts may also arise as a result of unplanned events (i.e., activities or events that are not anticipated to occur in the normal course of project operations, including accidents and malfunctions). These impacts are also assessed as part of the ESIA process, together with risk management and unplanned incident response measures.
- **Transboundary impacts:** Transboundary impacts are those that may affect countries other than the country or countries where a project will be built and operated. Potential transboundary impacts of the project will be assessed, as appropriate, as part of the ESIA and will include consideration of planned and unplanned events.

Unplanned events

Unplanned events are incidents, such as accidents and malfunctions, that are not expected to occur during normal project activities during construction, operation, and decommissioning. Some unplanned events have the potential to lead to a range of negative effects, varying in nature and magnitude depending on the type of event. The potential socio-economic and environmental impacts resulting from a range of unplanned events will be assessed in the ESIA in a separate chapter. A preliminary list of potential unplanned incidents includes:

- Damage to a battery module/container resulting in off-gassing (release of flammable and/or toxic gases) to the environment;

- Emergency venting/relief of gases from the BESS (via pressure-relief devices and/or dedicated ventilation systems);
- Transport incidents (e.g., during waste transport);
- Accidents and incidents involving community members or wildlife.

Although the likelihood of unplanned events occurring is low, appropriate management plans will be developed and implemented to ensure that such impacts are minimized and limited.

Therefore, proper contingency planning minimizes the likelihood of low-probability events occurring, as well as the consequences of such events.

4.8 Determining the significance of the impact

Impacts are defined as changes in baseline conditions due to the construction and/or operation of the Project. Impacts can be direct (resulting from the project), indirect (resulting from project-induced activities), secondary (the occurrence of an impact that causes further interaction in the environment), and cumulative impacts (caused by the combination and/or interaction of project-related activities with those of other activities, including projects and plans of other developments).

The significance of each impact is determined by associating the severity of the impact with the sensitivity of the receptor, following the implementation of mitigation and management measures, according to the table below.

Table 30 : Assessment of impact significance and impact types

Significance of impact	Description
Significant	The impact has a clear, measurable, or observable effect on one or more environmental factors (e.g., air, water, soil, biodiversity). It may lead to ecological losses, degradation of natural resource quality, or irreversible damage to habitats. It requires avoidance, mitigation, or compensation measures.
Insignificant	The impact is minor, temporary, or spatially limited. It does not significantly affect ecosystem functionality or environmental quality. It can be managed through standard environmental best practices and does not require major corrective action.

4.9 Management plan

As part of the ESIA, appropriate baseline data requirements must be provided to form the basis for baseline measurement and ongoing monitoring of environmental and social parameters. The proposed methods for baseline measurements and subsequent monitoring must be demonstrated to be based on current best practice and scientifically and statistically sound from an environmental and social perspective, to enable the diligent and systematic collection of data that will provide unbiased and robust answers. This section should identify the parameters to be monitored, the performance indicators to be used to assess the accuracy of the expected impacts and the effectiveness of mitigation and compensation measures, as well as the trigger values for management response and response activities. This section should also identify and describe the monitoring programs, procedural and compliance audit programs, and reporting requirements and mechanisms that will demonstrate the effectiveness of the proposed management and monitoring measures.

In addition to presenting the proposed programs, the beneficiary must clearly identify what is to be monitored and why. Monitoring programs must be designed to provide objective evidence of project-related activities and whether these activities have a negative impact on the environment in the short, medium, and long term. Monitoring programs must demonstrate an understanding and consideration of the following:

- documentation of the difference between the predicted and actual impact;
- methods for identifying unforeseen impacts and reporting and appropriate remedial measures;
- measuring the effectiveness of mitigation and/or rehabilitation and compensation measures;
- the implementation and effectiveness of emergency and contingency plans;
- present the measures necessary to ensure that the proposed project avoids the release of hazardous materials as a result of a hazardous natural event. This should include details of protective measures that would reduce the likelihood and severity of hazards, consequences, and risks to persons within and in the vicinity of the project area(s);
- present the proposed integrated emergency management planning procedures (including evacuation plans, if necessary) for all situations;
- the need for monitoring at a scale that is sufficiently fine to be useful (e.g., particle measurement in relation to air quality) and continuous monitoring sufficient to identify any peaks in air, noise, odor, water, or other forms of pollution.

The plans must also establish an assessment process to be carried out annually by an independent third party. The results of the assessment must be made public to all stakeholders, in particular the affected populations. In the event of non-compliance with the proposed plans, the beneficiary must present a process by which compliance and corrective actions will be carried out/undertaken within three months of the assessment.

4.10 Risk identification

In accordance with international best practices for environmental and social impact assessment (e.g., IFC Performance Standards, EBRD PR, ESIA Guidelines), this study applied a methodology to assess the risks of occurrence and manifestation of potential impacts associated with the proposed project activities. The risk assessment aimed to identify and characterize those impacts which, by their nature or probability, may significantly affect the environmental resources and socio-economic factors included in the scope of the study.

For each impact identified in the scoping stage, the probability of occurrence (from unlikely to very likely) and the potential severity of the consequences (from negligible to critical) were analyzed, resulting in a classification of risks in a risk matrix (see figure below). This approach allowed the prioritization of impacts relevant to the project implementation phase and provided a justified framework for selecting and scaling measures to avoid, reduce, or compensate for impacts, with a view to integrating them into the environmental and social management plan (ESMP).

Figure 24 : Risk matrix

Probability	Score 0.00	Severity					
		0	1	2	3	4	5
		No change	Very low	Low	Average	High	Very high
Almost certain: expected to happen	5	N	M	H	C	C	C
Probable: likely to happen	4	N	L	M	H	C	C
Possible: could happen in some circumstances	3	N	L	M	M	H	C
Unlikely: may happen at some point	2	N	L	L	M	M	H
Rare: only in exceptional circumstances	1	N	L	L	L	L	M
Impossible: cannot happen	0	N	N	N	N	N	N

Risk level considered:

Table 31: Risk matrix and risk assessment

Risk level		Score Risk
N	No risk	0
L	Low	1
M	Moderate	5
H	High	10
C	Critical	15

Risk = Probability x Severity (consequences of impact)

Probability of occurrence	Description	Probability
Almost certain	The impact is inevitable or already present.	80%-100
Likely	There is a high chance that the impact will occur, but it is not certain.	60%-80
Possible	The impact could occur, but there are uncertainties.	40%-60
Unlikely	Impact is possible, but with a low probability.	20%-40
Rare	Impact is unlikely.	0%-20

Risk areas analyzed

Risk areas
Asset deterioration/Engineering/Operational
Social Security and health
Environment
Financial (for a single extreme event or for an average annual impact)(**)
Reputation

4.11 Climate Change Assessment Methodology

The climate change impact assessment took into account Commission Communication No. 373/01/2021 Technical guidelines on climate change resilience of infrastructure for the period 2021-2027

The assessment process was based on two components:

- Climate change mitigation (climate neutrality)
- Adaptation to climate change.

4.7.1. Climate change mitigation (climate neutrality)

BESS (Battery Energy Storage System) projects themselves are not among the categories of projects that have an explicit obligation to calculate and report their carbon footprint, according to Romanian national legislation or standard European environmental regulations (e.g., EIA Directive 2011/92/EU amended by 2014/52/EU).

Battery energy storage systems (BESS) can contribute significantly to climate change mitigation by supporting the reduction of greenhouse gas (GHG) emissions. These systems facilitate the extensive integration of renewable energy sources into electricity grids and contribute to reducing dependence on fossil fuel-based generation units. Although there are emissions associated with the life cycle of BESS, particularly in the manufacturing phase, the net emissions balance at the energy system level tends to be positive due to their role in supporting a cleaner and more sustainable energy mix.

BESS systems allow surplus energy from renewable sources (solar and wind) to be stored during periods of low demand and released during periods of high demand. In this way, BESS helps to compensate for the intermittent nature of renewable sources and increase their share in the energy mix, reducing the need for fossil fuel power plants.

By providing energy during peak periods, BESS can reduce the need for peak power plants, which are typically less efficient and associated with high GHG emissions.

The emissions avoided through the use of BESS refer to the amount of GHG emissions (expressed in tCO_{2e}) that are no longer generated because the energy delivered from BESS replaces energy produced from more carbon-intensive sources (e.g., fossil fuel power plants).

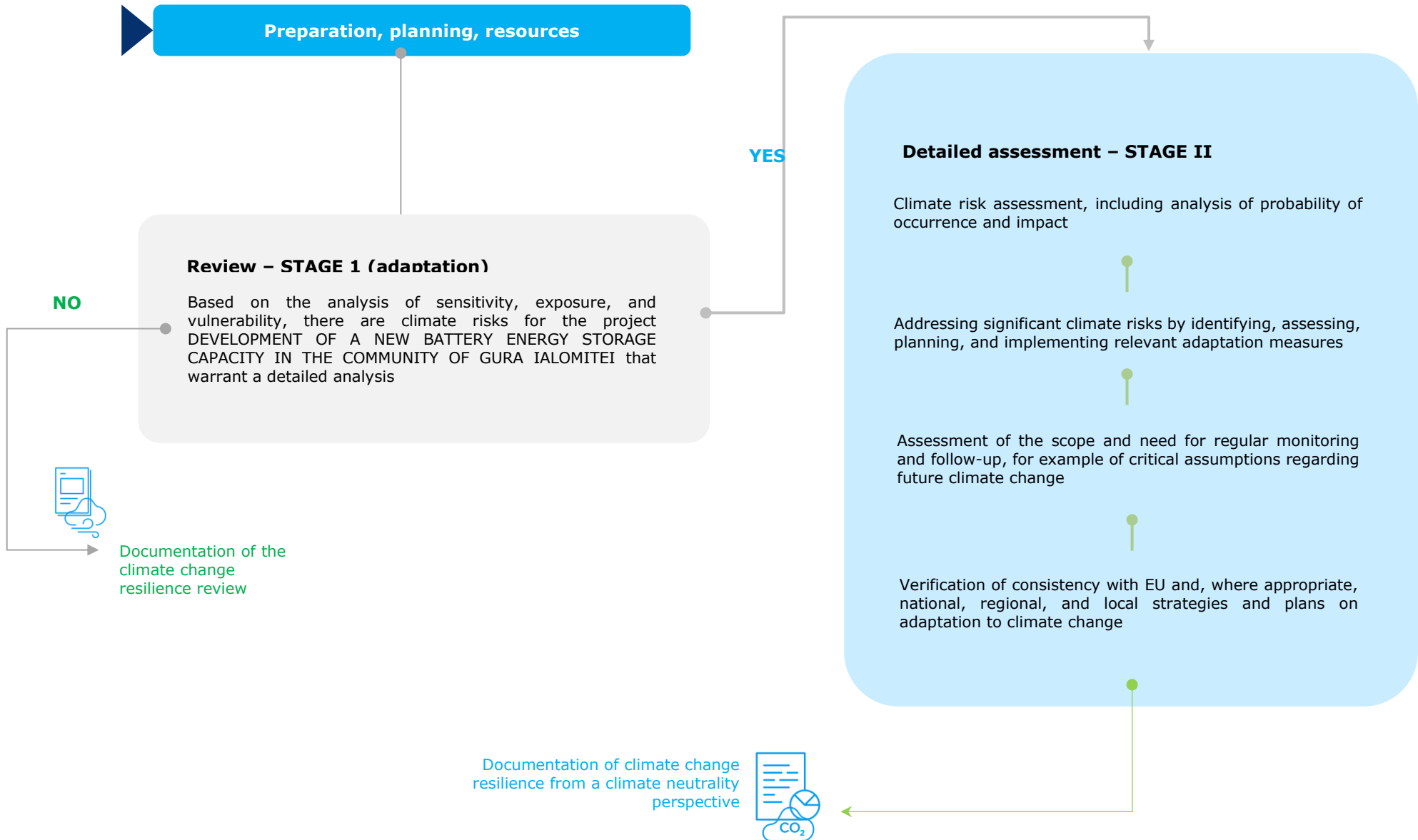
Estimates show an annual energy delivery of approximately 201,749.5 MWh/year, a reduction in greenhouse gas emissions of over 70,285 tonnes of CO₂ equivalent/year, and a reduction in network losses of approximately 3,413 MWh/year.

The manufacture of batteries, especially lithium-ion batteries such as those specific to this project, involves energy-intensive industrial processes that generate GHG emissions, mainly in the raw material extraction and component assembly phases.

During operation, BESS generates indirect emissions associated with charging and discharging processes, but these are generally insignificant compared to the emissions avoided through the increased use of renewable sources supported by these systems.

4.7.2. Climate change mitigation (climate neutrality)

In order to identify the climate risks to which the project will be exposed and to identify measures to adapt to climate change, two steps are taken:



Stage 1 (Review) - the analysis is divided into:

- Sensitivity Analysis;
- Risk Exposure Assessment;
- Vulnerability Analysis;

Regardless of the planned location of the project, the purpose of this stage is to assess the extent to which a type of infrastructure could be affected by a particular climate risk. This stage refers to the type of infrastructure proposed without taking into account the specific characteristics of the project location.

If the Sensitivity Analysis of the risk exposure assessment and Vulnerability Analysis reveals climate risks (potentially significant), then proceed to **stage 2**.

The list of climate risks taken into account is presented in the following table.

Table 32 : List of climate risks

Hazards in accordance with EU Taxonomy	BESS projects
CHRONIC	
Temperature change/Temperature variability	
Permafrost thawing	
Changing wind patterns	
Changing precipitation patterns/Precipitation or hydrological variability	
Sea level rise; Saline intrusion	
Coastal erosion/Soil erosion	
ACUTE	
Heat waves	
Cold wave/Frost	
Fires	
Extreme wind (including storm, hurricane, tornado)	
Drought	
Flooding/Storm surge/Heavy rainfall	
Landslides/Avalanches/Subsidence	

COMMISSION COMMUNICATION - *Technical guidance on climate-proofing infrastructure for 2021-2027* (2021/C 373/01) recommends four categories of sensitivity scores, as shown in the table below.

Table 33 : Sensitivity scoring system

Class	Score	Description
High sensitivity	High	3 Climate hazards could have a significant impact on assets and processes, inputs, outputs, and interdependencies as a result of climate risk arising the operation of the proposed investment will be interrupted for more than 2 days
Medium sensitivity	Moderate	2 Climate hazards could have a minor impact on assets and processes, inputs, outputs, and interdependencies as a result of climate risk. The operation of the proposed investments will be interrupted for 1-2 days.
Sensitivity Low	Low	1 Climate hazard has no impact (or has an insignificant impact) Operation of the proposed investments will be interrupted for up to 24 hours Non-critical assets/operations may temporarily lose functionality, but their repercussions are considered minimal
No sensitivity	No impact	0 No possible impact of climate hazards on any component of the project No impact on the ability to manage the infrastructure – under normal operating conditions

Environmental and Social impact assessment – „ Development of battery energy storage capacity” - Gura Ialomiței

The purpose of the exposure analysis is to identify hazards that are relevant to the location of the "Regional water and wastewater infrastructure development project in Vaslui County," regardless of the type of project.

The exposure analysis focuses on the location, while the sensitivity analysis focused on the type of project.

The exposure analysis is structured in two parts:

- **exposure to the current climate**
- **exposure to future climate.**

Historical and current data available for the project site were taken into account for the assessment of current and past exposure.

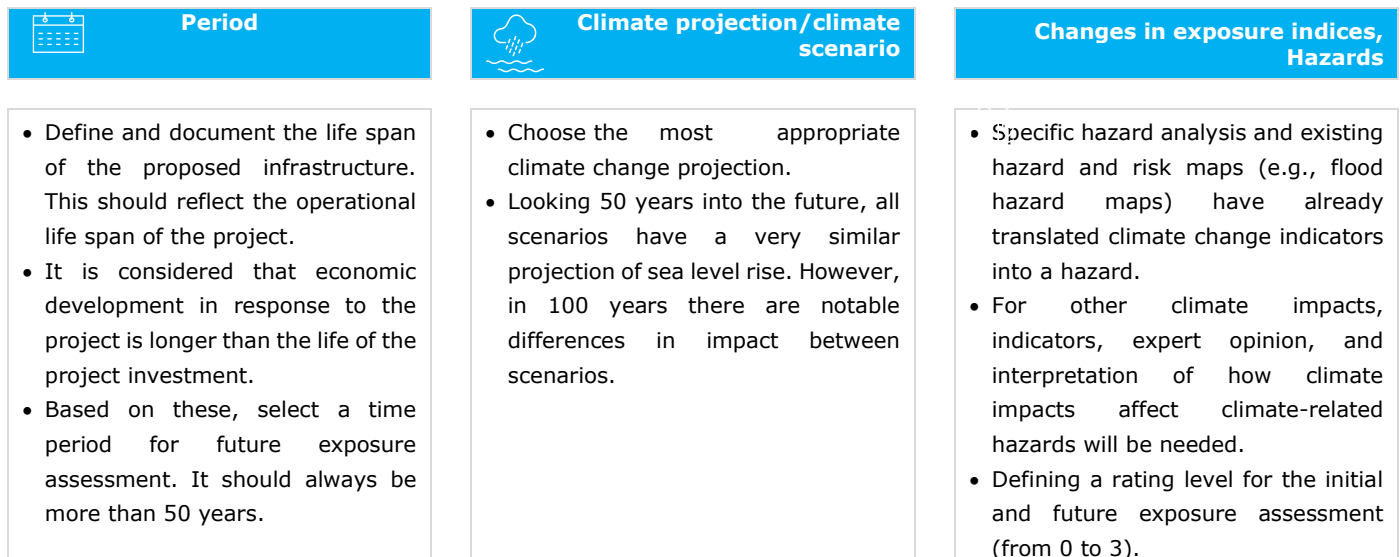
Given that the project development period began in 2018, data for this year was also analyzed to assess current exposure.

Climate model projections were analyzed to understand future exposure. Particular attention was paid to changes in the frequency and intensity of extreme weather events.

According to the "COMMISSION COMMUNICATION Technical guidelines on climate-proofing infrastructure for 2021-2027 (2021/C 373/01)", the projected increase in global average temperature is essential for selecting global and regional climate data sets. It is important to note that for a given project location, local climate variables may change differently than the global average.

The European Commission's technical guidance on integrating climate considerations requires examination (adaptation in phase 1) to cover exposure at the project site and other places where project interdependencies may be affected, e.g., water supply projects where water resources are distant from treatment and distribution facilities. This could be extended to cover a project's area of influence on climate hazards, as evidence to support cumulative impact assessment in the environmental impact assessment.

The specific steps of an exposure assessment are shown in the following diagram:



Climate projection of scenarios considered for assessment

The exposure assessment took into account the latest available IPCC reports (currently the 6th Assessment Report, AR6) in terms of shared socio-economic pathways (SSPs).

For Romania, data for the RCP (Representative Concentration Pathways) scenarios were available at the local level. These selected RCP scenarios are comparable to SSPs. RCP scenarios are used in climate change modeling to predict the impact of greenhouse gas emissions on the climate.

It is expected that BESS will continue to operate for a period of 15 years, so more extreme projections were taken into account.

The exposure assessment was based on the following climate projections:

- RCP 2.6 for current exposure (2026-2040) represents the stringent trajectory and assumes that CO2 emissions will start to decline from 2020, reaching 0 in 2100.
- RCP 4.5 for medium-term exposure (2041-2070) – in this scenario, emissions peak in 2040, followed by a slow decline thereafter
- RCP 8.5 for long-term exposure (2071-2100) – the most pessimistic scenario in which emissions continue to rise throughout the 21st century

The first year of project operation is expected to be in the middle of the short-term period (2026-2040) and therefore the conditions of a 1.5 °C warmer world will be used as current exposure data. If RCP 1-2.6 is followed, then this will also reflect the long-term future exposure of the project location.

RCP4.5 is considered a stabilization scenario, which means that it assumes that mitigation measures will be sufficient to stabilize radiative forcing at approximately 4.5 W/m² by the year 2100 (higher radiative forcing leads to a warmer climate). It assumes a moderate increase in greenhouse gas emissions over the coming decades, followed by a significant reduction over the course of the century, thanks to the adoption of clean energy technologies and effective environmental policy.

On the other hand, RCP8.5 is a high-emission scenario, sometimes described as a "business as usual" scenario, assuming that no major changes will be made to emissions policy, leading to a continuous increase in greenhouse gas emissions throughout the 21st century. This scenario projects a radiative forcing of approximately 8.5 W/m² by the end of the century, leading to significant increases in global temperature and severe climate change.

Data available on RO-ADAPT was used to assess future exposure. Up to 2005, the data is based on measurements made by the National Meteorological Administration. After 2005, the data are fully simulated using the RCP4.5 and RCP8.5 projection scenarios, as defined by the Intergovernmental Panel on Climate Change (IPCC).

Transposing climate change impact indices to exposure to climate hazards

Past and recent climate trends were not used to assess future exposure because the future trajectory of climate change impacts is often not captured. They were used to inform current exposure. Relying solely on trends to assess impact could lead to the development of projects that are not resilient to climate impacts across a range of plausible futures.

The following table presents the scoring system established for exposure assessment, the method used to assign exposure scores for each climate hazard.

Table 34 : Scoring system for exposure assessment

Exposure type	Scoring system		Description
High exposure	High	3	<ul style="list-style-type: none"> • Any hazard: has occurred (current exposure) or is expected to occur (future exposure) several times in five years • Flood hazard: For climate hazards for which hazard or risk mapping is available, this would be the exposure in maps with a high probability of occurrence [e.g., for flood hazard and risk maps, this may be 10% AEP (annual exceedance probability)]. • Extreme temperature: Region with very high average temperatures in summer (above 23 °C) and a large number of hot days (Tmax≥35 °C). Very high average temperatures in summer (above 23 °C). Heat waves have a frequency of ≥ 1 event per year
Average exposure	Moderate	2	<ul style="list-style-type: none"> • Any hazard: has occurred (current exposure) or is expected to occur (future exposure) twice in 10 years • Flood hazard: For climate hazards for which hazard or risk mapping is available, this would be the exposure in the medium probability maps (e.g., for flood hazard and risk maps, this may be 1% of AEP) • Extreme temperature: average summer temperature exceeds 20 °C. Heat waves occur once every 1-5 years
Low exposure	Low	1	<ul style="list-style-type: none"> • Any hazard: a hazard has occurred (current exposure) or is expected to occur (future exposure) once every 25 years • Flood hazard: For climate hazards for which hazard or risk mapping is available, this would be the exposure in low probability maps (e.g., for flood hazard and risk maps, this may be 0.1% of flood risk programs). • Extreme temperature: The average temperature during the summer has acceptable values (≤20 °C). Heat waves have a frequency of ≤ 1 event every 5 years.
There is no exposure	No exposure	0	<ul style="list-style-type: none"> • Any hazard: there is no possibility of the hazard occurring at the project location (e.g., an inland project cannot be exposed to coastal erosion)

Exposure type	Scoring system	Description
		<ul style="list-style-type: none"> • Flood risk: For climate hazards for which hazard or risk mapping is available, the project location is outside the low probability maps (e.g., for flood hazard and risk maps, this may be 0.1% of flood risk programs) • Extreme temperature: No heat waves are expected

For the current climate (i.e., the first year of operation of the proposed project), exposure was assessed by considering the recent history of the project site and where it has been affected by climate hazards such as floods, drought, high temperatures, or coastal erosion.

For climate hazards for which detailed hazard and risk mapping data were not available, the exposure level assigned to these climate hazards was based on the most exposed component of the project.

The purpose of the vulnerability analysis is to identify the climate hazards relevant to the specific type of project at the planned site. The vulnerability of a project is a combination of two aspects: how sensitive the project components are to climate hazards in general (sensitivity) and the likelihood of these hazards occurring at the project site now and in the future (exposure). These two aspects can be assessed separately or together.

An initial examination may focus on climate hazards classified as "high" in the sensitivity analysis and/or exposure analysis as input for the vulnerability assessment.

Vulnerability scoring is based on the methodology in the following figure.

Table 1 : Vulnerability matrix – scoring system

		Exposure Score				
		0.5	0	1	2	3
Sensitivity Score	0	0	0	0	0	0
	1	0	1	2	3	
	2	0	2	4	6	
	3	0	3	6	9	

Vulnerability = Sensitivity * Exposure		
Score	Vulnerability class	
≥6	High vulnerability	The project is vulnerable to this climate risk Move to detailed assessment (phase 2)
3÷5	medium vulnerability	The project may be vulnerable to this climate risk Consideration is given to moving to a detailed assessment (phase 2)
1	low vulnerability	The project is not vulnerable to this climate risk No transition to detailed assessment
0	Not vulnerable	0

The results of the vulnerability assessment are presented below.

The vulnerability analysis showed that the project has medium to high vulnerability to the climate hazards to which the site may be exposed now and in the future.

For this study, the vulnerability assessment considered the period 2025-2100.

- Current vulnerability (2026-2040),
- Medium-term vulnerability (2041-2070),
- Long-term vulnerability (2071-2100).

Stage 2 (Detailed Risk Analysis) - to quantify the impact of risk on the project under current and future climate conditions, the analysis involves:

- Probability Analysis;
- Impact Analysis;
- Risk Assessment.

If the Risk Assessment concludes that there are significant climate risks to the project, these will be managed and reduced to an acceptable level. For each significant risk identified, specific adaptation measures will be evaluated. The measures identified should then be integrated into the design and/or operation of the project to improve its resilience to climate change.

Risk assessment provides a structured method for analyzing climate hazards and their impact on the proposed project. This process works by assessing the probabilities and severity of the impact associated with the hazards identified in the vulnerability assessment (or in the initial examination of relevant hazards) and by assessing the importance of the risk to the success of the project.

The acceptable level of risk will be determined in order to identify climate change adaptation measures so that all risks can be managed at an acceptable level. Some acceptable risks may already be defined in construction/design standards and are therefore already taken into account in the project. The acceptable level of risk varies depending on the climate hazard and is identified in climate change scenarios or described in a qualitative manner.

The approach used to assess risk and establish appropriate measures to mitigate and improve the potential impact that climate change and its adverse effects may have on the works proposed in this project is presented below.

Probability of occurrence

The probability of occurrence represents the probability of an event occurring in the area where the proposed works are located. To assess the probability of a hazard occurring, a rating scale from 1 to 5 is used, the meanings of which are shown in the table below.

Table 35 : Risk exposure probability assessment scale

Rating system	
5	<p>Almost certain</p> <ul style="list-style-type: none"> • The incident is very likely to occur, even repeatedly • 95% probability over the lifetime of the project • The project component is shown to be exposed in risk/hazard maps with a high probability of occurrence (e.g., current/future map with 10% AEP of flood hazard)
4	<p>Probable</p> <ul style="list-style-type: none"> • The incident is likely to occur • 80% probability of occurrence over the project lifetime • The project component is presented as being exposed in risk/hazard maps with a medium probability of occurrence (e.g., current/future map with 2% AEP of flood hazard)
3	<p>Possible</p> <ul style="list-style-type: none"> • The incident occurred in another country with similar climatic characteristics • 50% probability of occurrence during the project lifetime

Rating system	
	<ul style="list-style-type: none"> The project component is presented as being exposed in risk/hazard maps with medium probability of occurrence (e.g., current/future map with 1% AEP of flood hazard)
2	Unlikely
	<ul style="list-style-type: none"> Considering current practices and procedures, this incident is unlikely to occur 20% probability of occurrence during the project lifetime The project component is presented as being exposed in risk/hazard maps with medium probability of occurrence (e.g., current/future map with 0.1% AEP of flood hazard)
1	Rare
	<ul style="list-style-type: none"> Very unlikely to occur 5% probability of occurrence during the project lifetime The project component is not presented as being exposed in risk/hazard maps with medium probability of occurrence (e.g., current/future map with less than 0.1% AEP of flood hazard)

Risk areas and severity for BESS

Risk area	Severity
RA1: Asset damage/Process disruption	Physical damage: Battery cells, inverters, and control systems may fail or malfunction when exposed to extreme temperatures or water. The structural cell of the BESS may be severely damaged when exposed to extreme wind gusts and large ground movements (e.g., landslides/subsidence).
RA2: Safety and health	Personnel: The risk of explosion can pose a direct threat to personnel working with or near the systems. Health risks can arise from exposure to hazardous chemicals or gases released during a thermal event (e.g., a wildfire), affecting both workers and nearby communities.
RA3: Environment	Pollution: The release of pollutants and toxic materials from damaged batteries during thermal events can lead to soil and water contamination, posing risks to ecosystems and local water sources. End-of-life concerns: Extreme temperatures can reduce battery life, exacerbating environmental concerns about battery disposal and recycling.
RA4: Social	Social implications: Disruptions in battery energy storage systems can affect critical services and industries that rely on a stable and resilient energy supply. These include medical institutions, data centers, and emergency services, where disruptions can jeopardize patient care, data integrity, and public safety.
RA5: Financial impact	O&M costs: Extreme weather events will increase repair costs (for damaged components). Increased operating costs may result from: (i) chronic changes in weather patterns that reduce the projected lifespan of batteries, leading to increased replacement frequency; (ii) increased air conditioning and server maintenance requirements; (iii) fluctuations in charging costs.
RA6: Reputation	Reliability and trust: Repeated outages or safety incidents in battery energy storage systems can damage the reputation of facility operators. Investors and customers may lose confidence in the reliability and safety of energy storage solutions. Environmental responsibility and public perception: Environmental concerns, such as battery disposal and recycling practices, can also affect the reputation of the technology and its manufacturers, as well as brand image.

Based on the hazards identified in the examination stages, levels from 1 to 5 are used to assess the severity of exposure of the designed works to these hazards, the meanings of which are shown in the table below.

Table 36 Table: Magnitude of consequences

Magnitude of consequences					
Risk areas	1 Insignificant	2 Minor	3 Moderate	4 Major	5 Catastrophic
Damage of assets/Engineering /Operational	Impact can be absorbed through normal activity	An adverse event that can be absorbed by taking business continuity measures	A serious event requiring additional emergency actions for business continuity	A critical event requiring extraordinary/emergency action emergency action to business continuity	Catastrophe with potential to lead to shutdown or crash or loss of the asset/network
Safety and health	First aid kit	Minor injury to staff medical treatment	Serious injury to personnel – long-term treatment	Serious injury to staff – hospitalization, hospitalizations Improper water treatment – adverse effects on the health of the population, hospitalizations benefiting from water supply services	Events resulting in deaths among staff Improper water treatment – adverse effects on the health of the population, deaths among the population benefiting from water supply services
Environment	No impact on the reference environment reference. Located in the source area. No recovery recovery	Located within the site boundaries. Measurable recovery within one month of impact	Moderate damage, with possible wider effects. Recovery within one year	Significant damage with local effects. Recovery longer than one year. Non-compliance with environmental regulations/authorization	Significant damage with widespread effects. Recovery longer than one year. Limited prospects for full recovery
Social	No negative social impact	Localized, temporary social impacts Localized, temporary	Localized, long-term social impacts	Failure to protect disadvantaged or vulnerable communities (*). Long-term national social impact	Loss of operating license Community protests
Financial (for a single extreme event or for an average annual impact) (**)	x % IRR(***) < 2% of turnover	x % IRR 2-10% of turnover	x % IRR 10-25% of turnover	x % IRR 25-50% of turnover	x % IRR > 50% of turnover
Reputation	Localized and temporary impact on public opinion	Localized, short-term impact on public opinion	Local, long-term impact on public opinion, with	Short-term national impact on public opinion	Long-term national impact, with the potential to affect government stability

Environmental and Social impact assessment – „Development of battery energy storage capacity” - Gura Ialomitei

Magnitude of consequences					
Risk areas	1 Insignificant	2 Minor	3 Moderate	4 Major	5 Catastrophic
			negative local media coverage	; negative negative national media coverage	

(*): Including groups that depend on natural resources for their income/livelihood and cultural heritage (even if they are not considered poor) and groups considered poor and vulnerable (and often with reduced adaptive capacity), as well as persons with disabilities and older persons. (**): Illustrative indicators — other indicators that can be used, including costs for: immediate/long-term emergency measures; asset restoration; environmental restoration; indirect costs to the economy; indirect social costs.

(***): Internal rate of return (IRR).

According to the Guide to Climate Change Adaptation and Risk Assessment in the Danube Macroregion (SEERISK, 2014), the methodological steps of a risk analysis are:

- establishing the context and identifying the risk;
- developing scenarios with the determination of the probability of occurrence of a particular hazard;
- assessing the impact of this specific hazard on the selected element subject to risk;
- defining risk levels/risk classification (quantitative or qualitative).

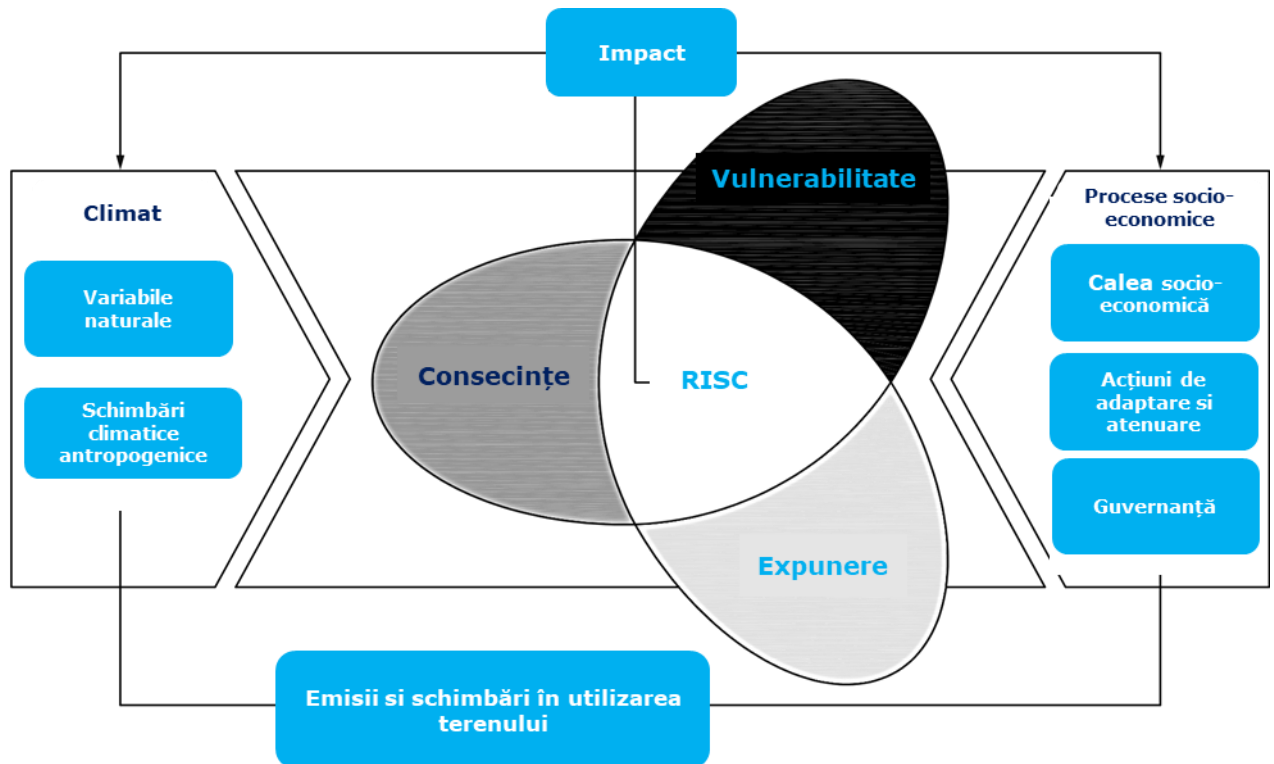


Figure 25 : Illustrative diagram for defining risk
Source: IPCC, AR5

In this case, risk is assessed as a function of the probability of damage occurring and the likely consequences/severity, and is thus understood as a measure of the magnitude of a natural hazard. In this context, the identified risk has the meaning presented below.

Table 37 : Risk assessment matrix

		Probability x Severity = RISK					
		Probability Score					
Severity Score		Rare	Unlikely	Possible	Probably	Almost certain	
		1	2	3	4	5	
	Not significant	1	1	2	3	4	5
	Minor	2	2	4	6	8	10
	Moderate	3	3	6	9	12	15
	Major	4	4	8	12	16	20
Catastrophic	5	5	10	15	20	25	

RISK		Description
1-3	Negligible risk	No adaptation plan is likely to be necessary for these risks
4-6	Low risk	Monitoring of these risks should be part of the project adaptation plan.
8-10	Medium	Measures to mitigate major risks to the project should be considered. Monitoring these risks may be sufficient.
12	High risk	Measures to mitigate major risks to the project should be considered.
20	Extreme risk	Measures to mitigate major risks to the project should be considered.

The overall risk category for each climate hazard and component is derived using the matrix in the figure above and tabulated where the risk assessment for each hazard with medium or high vulnerability will be presented. Components are grouped together to simplify the assessment process. These risk assessment tables include details on the probability and severity scoring approach, relevant built-in resilience measures, proposed adaptation strategies, and the resulting residual risk.

Adaptation measures

All risks with a medium, high, or extreme risk score must be managed to an acceptable level through climate change adaptation measures. Appropriate climate change adaptation measures are described in the risk assessment tables and assigned to a responsible party for implementation. Where these adaptation measures are to be implemented as part of the project investment, the costs of these measures are listed and these costs have been included in the proposed project.



5. Environmental and social impact assessment

5.1 Environmental impact assessment

5.1.1 Definition of the area of influence

The area of influence (AoI) is the geographical extent within which a project's activities may generate **direct or indirect, temporary or permanent impacts** on the environment and local communities. Correctly establishing this area is an essential step in the Environmental and Social Impact Assessment (ESIA) process, as it determines the scope of baseline studies, public consultations, and impact analysis.

5.1.1.1 Components of the Area of Influence

The direct area of influence is the area where the effects of the project are felt, such as land occupation and change of land use, noise, vibrations, air pollutant emissions, artificial lighting, dispersal of invasive species, and pollutant emissions into water and soil. This area of influence was established based on modeling of the types of interventions proposed, the size and location of the project, the degree of mobility and persistence of pollutants or disturbances (e.g., air or water dispersion, fauna migration), and the dependence of communities on local resources (water, forest, soil). data from the literature for similar works and based on expert opinion (precautionary approach).

Construction phase

Environmental impact	Description	Estimated area of influence
Air quality deterioration (dust and exhaust emissions)	Earthworks and heavy machinery transport will generate suspended particulate matter (PM10, PM2.5) and exhaust emissions, leading to a temporary increase in local air pollutant concentrations https://ondrl.gov.md/impacturile-sociale-si-de-mediu-al-subproiectului-extension-and-improvement-of-water-supply-services-in-the-prut-cluster-riscani-district-assessment-and-mitigation-measures/ . However, these effects are limited to the construction period and the vicinity of the construction site.	Locally, around the construction site (within a radius of ~100-200 m, depending on wind and terrain); effects diminish rapidly with distance from the source.
Noise and vibrations	Construction equipment (excavators, trucks, compactors) and excavation and concrete pouring activities will produce high levels of intermittent noise and local vibrations. These may temporarily affect the comfort of residents in the area and may disturb the activity of local fauna sensitive to sound https://ondrl.gov.md/impacturile-sociale-si-de-mediu-al-subproiectului-extinderea-si-imbunatatirea-serviciilor-de-alimentare-cu-apa-in-clusterul-prut-raionul-riscani-assessment-and-mitigation-measures/ .	In the immediate vicinity of the construction site (100 m or more, depending on the topography and vegetation barrier). The nearest residential areas may experience noise increases, and vibrations are felt within a radius of ~50 m from the works.
Soil and water pollution (accidental spills of hazardous substances)	The operation of machinery and storage of fuels/oils involves the risk of accidental spills of fuels, oils, or other chemicals (e.g., paints, concrete additives). These spills can contaminate the soil at the site of the incident and, through infiltration or drainage, can pollute groundwater or surface water. Although the event is accidental and isolated, the impact can be significant if prompt action is not taken.	Locally, at the site (work areas and substance storage areas). Contamination is usually limited to a few meters around the source, but pollutants can migrate vertically in the soil to the water table; potential impact on nearby surface waters (no watercourses within <500 m).

Environmental impact	Description	Estimated area of influence
Soil erosion and water sedimentation (turbidity from storm water runoff)	Excavation and grading expose soil layers and remove protective vegetation, increasing the risk of erosion. Heavy rains can carry sediment from the site into nearby watercourses, increasing their turbidity and depositing sediment in riverbeds. This can affect water quality and aquatic habitats downstream in the short term.	Watercourses or drainage channels in the vicinity of the site (up to several hundred meters downstream, depending on the hydrographic network and the slope of the terrain). The effect is temporary, occurring during heavy rainfall during construction.
Generation of construction waste	Construction activities will produce solid waste, including inert waste (surplus excavated soil, rubble, concrete/asphalt debris), non-hazardous waste (packaging, wood, metal, plastic), and potentially some hazardous waste (used oils, filters, contaminated materials). Without proper management, this waste can cause soil and water pollution (through leaching) and degrade the aesthetics of the area.	The site (temporary waste storage areas) and the final disposal location (authorized landfill). Direct local impact within the construction site perimeter; potential diffuse impact if the waste were to be abandoned in the surrounding environment.
Impact on local biodiversity	Construction works may cause temporary disturbance to local fauna and flora. The vegetation on the site will be partially removed, which means loss of habitat for local species (e.g., small mammals, reptiles, birds on agricultural land). Noise, vibrations, and intense human presence may scare away wildlife from the construction site area https://ondrl.gov.md/impacturile-social-and-environmental-impact-assessment-of-the-subproject-extension-and-improvement-of-water-supply-services-in-the-prut-cluster-riscani-district-assessment-and-mitigation-measures/ , and any night work with strong lights may disturb nocturnal species.	The footprint of the construction site (the area occupied by the project and the immediate surrounding area). Wildlife in the vicinity (within a radius of ~100 m) may avoid the area during the works. Potential impact on habitats outside the site.

Operational phase

Effect on the environment	Description	Estimated area of influence
Air quality – emissions during operation	Under normal operating conditions, the BESS system does not generate emissions of pollutants into the atmosphere, as it does not involve combustion processes or gas discharges. It is electrically powered, so its impact on air quality is practically zero during operation (no NOx, SO2, dust, etc. emissions). Its indirect contribution is positive, facilitating the storage of renewable energy.	The entire implementation area and neighboring communities (benefiting from the absence of any local sources of air pollution).
Noise emissions during operation	BESS installations (transformers, inverters, fan cooling systems) produce moderate background noise. The sounds include a low-frequency "hum" from the transformer and tonal components from the inverters (50-100 Hz and harmonics), as well as the aerodynamic noise of the cooling fans. The level of these noises is relatively constant over time and can be heard outside the enclosure, especially at night when ambient background noise is low.	75 dB at the source, near noise sources: at the boundary of the BESS site (usually fenced), the sound level can be estimated at around 65 dB(A) depending on the design, falling below 50 dB(A) at a distance of ~100 m (in compliance with legal requirements). Residential areas or other sensitive receptors located >100-200 m away should not be significantly affected, but perception depends on local conditions (natural shielding, wind).
Visual and landscape impact	The location of the BESS station introduces an industrial element (e.g., battery containers, control cabin, transformer, perimeter fence) into a potentially rural or natural environment, altering the aesthetics of the local landscape. The structures can reach heights of several meters and may be visible from a distance, especially if the terrain is flat and open. At night, any security	Areas where the transformer station or BESS are directly visible (unobstructed sightlines). In general, the visual impact is felt within a radius of up to 500 m - 1 km, depending on the terrain and vegetation. The change in landscape can be observed from nearby public roads (located approximately 30 m from the

Effect on the environment	Description	Estimated area of influence
	lighting may create low-intensity light pollution, visible in the vicinity.	site boundary), although the impact is less noticeable to human observers at greater distances.
Risk of accidental pollution during operation (fire or spills)	Although under normal operating conditions the BESS system does not generate significant pollution risks, the presence of a considerable amount of lithium-ion batteries and electrical equipment implies the potential for accidents with major environmental consequences. In the event of a fire in the storage units, smoke containing toxic substances (such as fluorine compounds and carbon monoxide) and fine particles may be generated, and the use of water for extinguishing may promote the migration of chemical compounds into the soil. In addition, electrolyte leaks from damaged batteries or dielectric oil leaks from transformers can lead to soil and groundwater contamination in the absence of effective containment and control systems. Such events, although unlikely to occur, can have a significant impact on the affected environmental components.	The area directly affected is located at the site and can extend up to 500 m from the site boundary. Air emissions in the event of a fire are usually limited to the site perimeter and immediate vicinity (a few hundred meters), dissipating relatively quickly. Soil/water contamination would be mainly local, within the site or at its base, if there is a spill of substances (regional impact is unlikely).
Hazardous waste from operation (used batteries)	During the lifetime of the BESS system, certain components will need to be replaced (e.g., degraded lithium-ion battery modules, protection systems, aged dielectric oil from transformers). These end-of-life components become hazardous waste, containing reactive chemicals and heavy metals. Without proper management, there is a risk that this waste will release pollutants into the environment (corrosive electrolytes, toxic metals) or pose a fire hazard.	The BESS site (temporary storage location for decommissioned components) and the waste management chain (transport, final disposal). Local impact occurs if waste is not handled correctly on site (e.g., spills on the ground) or during transport. On a larger scale, the impact depends on the final disposal method (ideally specialized recycling – minimal impact).
Impact on local biodiversity during operation	After commissioning, the impact on ecosystems is very low. The occupied site (~38.7 ha) remains fenced and anthropized, inaccessible to most wildlife species – in practice, the previous habitat is permanently lost on that area. Local fauna can adapt to the situation by avoiding the enclosure; however, some effects may persist: for example, security lighting at night may attract insects or disorient certain species, and continuous background noise may be perceived by animals, causing them to avoid the area.	Within the perimeter of the site (habitat removed on the built-up area) and the immediate vicinity (a few dozen meters outside the fence, where fauna may feel human presence – light, noise). In the long term, terrestrial species and birdlife will readjust to adjacent areas, using the surrounding habitat; the significant impact is limited to the interior of the enclosure and the immediate vicinity.

5.1.1.2 Mapping and Documentation

The area of influence is typically represented by geospatial mapping tools, with clear boundaries for each of the areas mentioned. These maps are accompanied by a narrative description and justifications based on scientific data, field observations, or technical expertise. Detailed documentation ensures the transparency of the process and allows for its validation by stakeholders and competent authorities.

Considering the above, the actual footprint of the project is 38,756 m² plus the area temporarily occupied by the 1.6 km cable route.

The area of direct influence of the project is represented by the areas potentially affected by the proposed works.

During the assessment process, the following maximum distances of potential influence of the project were established, depending on the nature of the estimated effects:

- 100–500 m – in the case of interventions involving digging and excavation works, representing the possible area of dispersion of invasive plant species through hydrochore and anemochore mechanisms, around the work fronts;
- 250 m – for the area of influence associated with the dispersion of pollutants into the atmosphere under normal operating conditions;
- 100 m – estimated distance for the propagation of noise from specific construction and operating activities;
- 500 m – maximum area of influence associated with accidental scenarios with potential environmental impact;
- 50 m – for possible localized contamination of soil and surface or groundwater in the event of accidental spills or operational deficiencies.

These reference distances were used to delimit the areas of direct and indirect influence in the assessment of the impact on environmental and social factors.

The area of indirect impact was mainly delimited at the level of the road transport infrastructure in the vicinity of the site, given the anticipated changes in traffic volume generated in particular during the construction and decommissioning phases. Apart from this, the development of the project is not likely to cause any other significant changes in the structure of economic or functional activities in the area, as no interference with existing land uses or local socio-economic dynamics is expected.

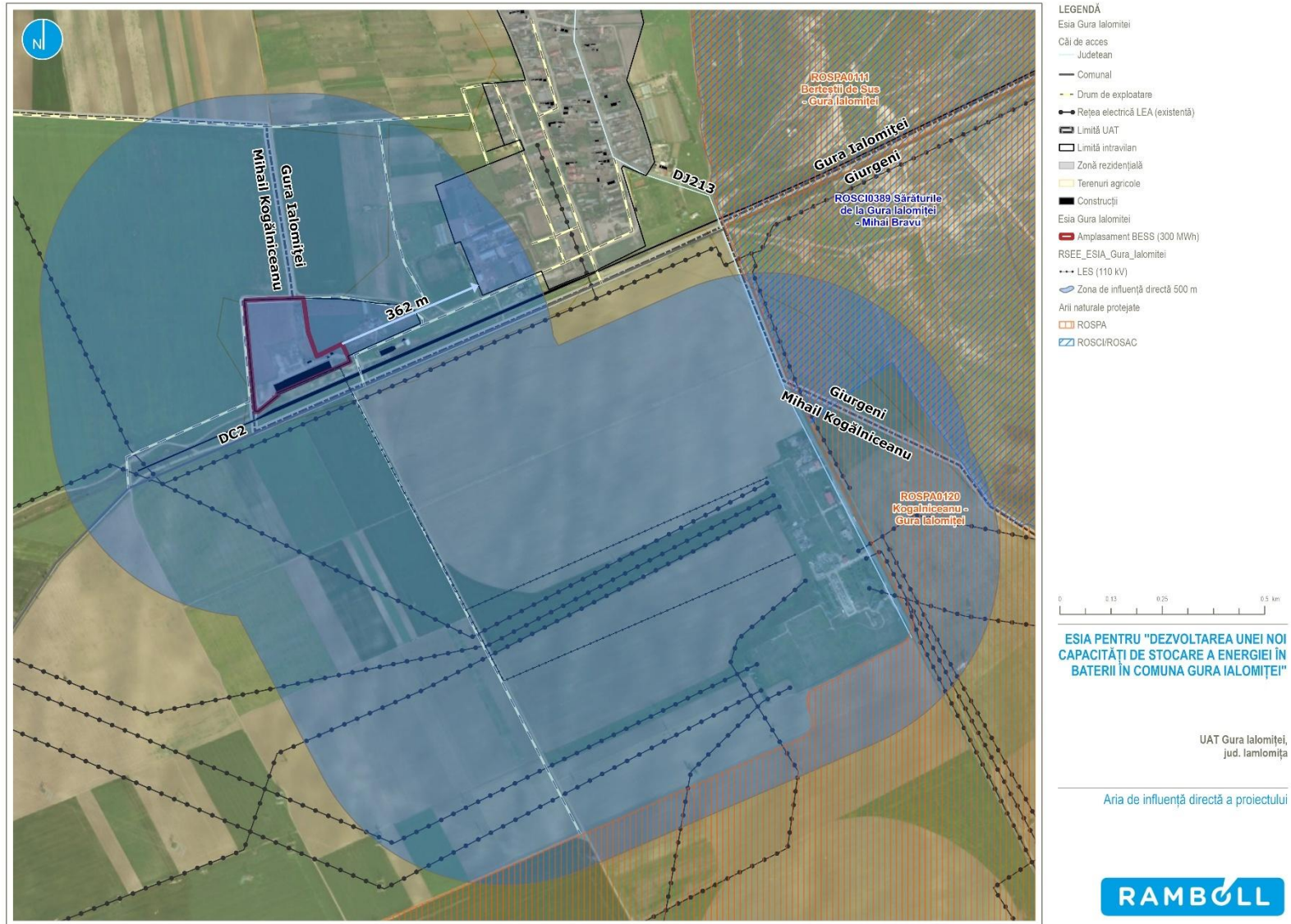


Figure 26 Area of direct influence

5.1.2 Results of the environmental impact assessment

In order to identify the environmental factors likely to be affected by the project, the following were analysed:

- all activities necessary for the implementation of the project;
- all components of the receiving environment, i.e., the environment that will bear the effects of the project;
- the current state of the receiving environmental factor (quality of the environmental factor);
- all possible interactions between activities and environmental components.

The average lifespan of the proposed investments is 10-15 years.

When decommissioning the proposed investments, the activities that may generate emissions into the environment and may have an impact on the environment are similar to those specific to construction activities.

This project has been subject to an environmental impact assessment procedure, but no environmental permit had been issued at the time of writing this report.

5.1.2.1 Estimates of the type of waste and emissions expected

Types of waste likely to be generated during the execution/decommissioning and operation phases:

Project stage	Type of waste	Waste code	Classification	Origin/Source
Execution/decommissioning	Paper/cardboard packaging	15 01 01	Non-hazardous	Packaging equipment and materials (cardboard boxes, paper)
Execution/decommissioning	Plastic packaging	15 01 02	Non-hazardous	Packaging equipment and materials (foil, wrapping, bags, etc.)
Execution/decommissioning	Wooden packaging (pallets, crates)	15 01 03	Non-hazardous	Transport packaging for equipment and materials
Execution/decommissioning	Metal waste (iron, steel)	17 04 05	Non-hazardous	Construction site work – metal scraps and fabrications (reinforcements, metal profiles, etc.)
Execution/decommissioning	Waste electrical cables	17 04 11	Non-hazardous	Electrical installation – waste electrical cables and conductors
Execution/decommissioning	Wood waste (uncontaminated scraps)	17 02 01	Non-hazardous	Construction work – formwork and unusable wood scraps
Construction/decommissioning	Plastic waste (plastics)	17 02 03	Non-hazardous	Construction work – plastic waste (pipes, PVC profiles, etc.)
Construction/decommissioning	Inert construction waste (concrete, brick, ceramics)	17 01 07	Non-hazardous	Concrete and finishing works – rubble (concrete fragments, bricks, tiles, ceramics)
Construction/decommissioning	Excavated soil and stones (uncontaminated)	17 05 04	Non-hazardous	Foundation excavations, cable trenches, land levelling (surplus soil)
Construction/decommissioning	Household waste (mixed)	20 03 01	Non-hazardous	Personal consumption on site – mixed household waste (food scraps, packaging)

Project stage	Type of waste	Waste code	Classification	Origin/Source
Execution/decommissioning	Waste mineral oils (engine oil, hydraulic oil)	13 02 08	Hazardous	Construction site equipment maintenance – oil changes and accidental oil spills
Execution/decommissioning	Absorbent material, cloths, contaminated protective equipment	15 02 02	Hazardous	Spill cleanup and equipment maintenance – absorbent material, rags, equipment contaminated with oil/hazardous substances
Execution/decommissioning	Contaminated packaging (with hazardous residues)	15 01 10	Hazardous	Containers and packaging that have contained paint, adhesives, fuel, etc. (contaminated with hazardous substances)
Execution/decommissioning	Paint/solvent waste (containing hazardous substances)	08 01 11	Hazardous	Finishing/protection work – paint, varnish, used solvent residues (containing hazardous compounds)
Execution/decommissioning	Contaminated soil (in case of spills of hazardous substances)	17 05 03	Hazardous	Soil from construction site incidents – contamination with oils, fuels, etc.
Operation	Paper/cardboard packaging	15 01 01	Non-hazardous	Spare parts and consumables packaging (cardboard boxes, paper)
Handling	Plastic packaging	15 01 02	Non-hazardous	Spare parts and equipment packaging (foil, plastic packaging)
Operation	Household waste (mixed)	20 03 01	Non-hazardous	Maintenance staff – occasional household waste (e.g., food scraps, packaging)
Operation	Waste electrical and electronic equipment	16 02 13	Hazardous	End-of-life equipment (inverters, control units, electrical apparatus)
Operation	Waste electrical cables (used)	17 04 11	Non-hazardous	Repair/replacement work – dismantled cable segments
Operation	Used Li-Ion batteries (BESS modules)	16 06 05	Hazardous	Replaced or defective (Li-ion) batteries at the end of their service life
Operation	Used/collected electrolytes from batteries	16 06 06	Hazardous	Electrolyte fluid extracted from batteries (collected separately during spills or disposal)
Operation	Used dielectric oil (transformer)	13 03 07	Hazardous	Transformer maintenance – used insulating oil (mineral), removed from equipment
Operation	Absorbent material/contaminated filters	15 02 02	Hazardous	BESS maintenance – absorbents, filters impregnated with oil or hazardous substances (from spills, cleaning)

Waste management shall comply with the provisions of GEO 92/2021 on waste management, with all subsequent amendments and additions.

Recyclable waste shall be collected and stored separately according to the nature of the materials, ensuring the necessary conditions for temporary storage (specially designed space) and hygiene and sanitation, until their collection and recovery.





Other types of waste identified will be managed and disposed of on the site of the future plant in accordance with the legislation in force and handed over to authorized operators for the disposal of these types of waste.

A construction waste management plan (part of the ELG 'Environmental Management Plan for the Project) will be developed before construction work begins. The key objectives of any construction waste management plan are as follows:

- Minimising the amount of waste generated by the project
- Maximizing the amount of material sent for reuse, recycling, or reprocessing
- Minimizing the amount of material sent to landfill.

Within the project, construction waste generated during the execution period will be managed in such a way as to achieve a level of preparation for reuse, recycling, and other material recovery operations, including backfilling operations that use waste to replace other materials, of at least 70% of the mass of non-hazardous waste from construction activities, with the exception of natural geological materials defined in category 17 05 04 of the Annex to the Commission Decision of 18 December 2014 amending Decision 2000/532/EC establishing a list of wastes pursuant to Directive 2008/98/EC of the European Parliament and of the Council.

During the operating period, all waste will be collected selectively. The waste management method is described in the ESMP. To prevent and reduce the amount of waste generated, the following good practice rules are recommended:

	<p>Reduction at source</p>	<ul style="list-style-type: none"> • Choosing products that generate less waste: less packaging material, for example. • Choosing suppliers who take back empty containers for refilling (cleaning products); returning gas cylinders to the supplier for refilling. • Waste prevention: during care, for example, or cleaning activities. • Choosing reusable equipment, such as washable tableware, rather than disposable tableware.
	<p>Procurement policy aimed at minimizing risks</p>	<ul style="list-style-type: none"> • Purchase of PVC-free equipment (choosing PET, PE, or PP) • Purchasing equipment without components that could potentially harm the environment and people • Opting for the least toxic products (such as cleaning products).
	<p>Recycling</p>	<ul style="list-style-type: none"> • Recycling batteries, paper, glass, metals, and plastic. • Composting vegetable waste (collected from green areas within the group's premises). • Recovering energy for water heating
	<p>Inventory management/Centralized purchasing.</p>	<ul style="list-style-type: none"> • Management of chemical stocks required for the energy production process to avoid the accumulation of expired or unused items: "first in, first out" stock management, monitoring of expiry dates. • Choosing suppliers based on how promptly they deliver small quantities and whether unused goods can be returned

Use of chemicals

The following chemicals and preparations will be used during the execution period:

- paints and solvents
- liquid fuels (diesel for electric generators, vehicles, and machinery)
- oils (vehicles and equipment)
- protective and welding gases (argon, nitrogen, CO₂)

The effects of these substances depend on the route of entry, the site of exposure, and the duration of exposure.

No other chemicals or hazardous substances shall be used in the technological processes, except for fuels for the machinery and equipment to be mobilized.

Fuels will be purchased from fuel stations, transported to the site by tankers, and distributed locally (at the work front) using a small-capacity self-propelled fuel station.

During the operational phase, the project does not involve the active use of chemicals in open processes, but it does involve the presence and management of potentially hazardous substances integrated into the BESS system equipment. These include:

- Electrolytes in Li-ion batteries: each storage module contains sealed liquid electrolytes based on organic solvents (e.g., ethylene carbonate, dimethyl carbonate) and lithium salts (e.g., lithium hexafluorophosphate – LiPF₆). Under normal conditions, these are not released, but in the event of a malfunction, they can generate flammable leaks or, following a fire, the release of toxic gases (e.g., fluorides, carbon monoxide).
- Dielectric oil: Power transformers are filled with insulating mineral oil or synthetic ester, used for cooling and electrical insulation. Accidental spills can cause soil or groundwater contamination if not properly contained.
- Fire extinguishing agents (if installed): in the case of automatic extinguishing systems, inert gases (e.g., CO₂, nitrogen) or fluorinated agents may be used, with the potential to release harmful compounds during thermal decomposition.
- Auxiliary substances used in maintenance: maintenance of electrical equipment may involve the occasional use of substances such as contact sprays, technical lubricants, dielectric grease, or industrial cleaning solvents, handled in a controlled manner by authorized personnel.

Although under normal operating conditions the substances present in a BESS system are integrated into sealed equipment and do not pose a risk of release into the environment, certain situations of failure, malfunction, or fire may lead to the accidental release of these substances and, implicitly, to negative effects on environmental factors and human health.

Overall, the potential effects of the substances involved in BESS operation are significant in accident or fire scenarios, but can be effectively controlled by applying the prevention and response measures provided for in the operational plans (emergency plans, hazardous substance management plan,

preventive maintenance). The implementation of retention, detection, and local isolation systems are essential measures for preventing environmental and health impacts.

Sources of emissions

The main sources of emissions during the execution , and operation phases are presented in the following tables.

The sources of emissions during the decommissioning period are similar to those during the execution period.

Quantitative estimates of emissions into the environment for the construction and operation phases are presented in the following sections.

Table 38 : Sources of emissions during the construction phase

Environmental factor	Emission sources	Pollutants generated	Estimated level / Frequency
Water	Domestic wastewater from ecological toilets used in the organization of construction sites/work fronts	Suspended solids, NH3, Ammonium, Nitrates, Nitrites, Phosphates	Temporary (during execution); accidental in case of failure
	Accidental spills of fuels, lubricants from vehicles and machinery involved in the execution of works	Especially petroleum products	Temporary (during execution); accidental in case of failure
	Improper storage and management of potentially contaminated soil	Heavy metals	Temporary (during execution); accidental in case of uncontrolled waste storage
	Improper waste storage	Various chemicals contained therein depending on characteristics	Temporary (during execution); accidental in case of uncontrolled storage
Soil	Improper management of wastewater generated During the execution of works (domestic wastewater).	Ammonia, Nitrates, Nitrites, Phosphates	Temporary (during execution); accidental in case of failure
	Improper maintenance of equipment, refueling in unimproved areas, accidents that can cause fuel and lubricant spills directly on the soil, which can lead to changes in soil characteristics;	Petroleum products in particular	Temporary (during execution); accidental in case of failure
	Traffic from vehicles and machinery involved in carrying out the works. Due to air pollution, there is a possibility that a certain amount of atmospheric pollutants will settle on the ground, which may lead to changes in its characteristics.	Residues from fuel combustion in internal combustion engines.	Temporary (during the execution period)
	Improper management of waste generated during the execution period, as well as household waste generated by the personnel involved in the execution of the works.	Cannot be estimated, depends on their nature and composition	Temporary (during the execution period); accidental in case of uncontrolled storage
	Inadequate management of potentially contaminated soil	Heavy metals	Temporary (during the execution period); accidental in case of uncontrolled storage
Air	During the execution of the works proposed for the achievement of the objective, these are represented by earthmoving activities (stripping, excavation, filling, levelling, loading - unloading, transport) for the development of the site and demolition works on existing buildings/platforms	Emissions of suspended particles.	Temporary (during the execution period) and discontinuous

Environmental factor	Emission sources	Pollutants generated	Estimated level / Frequency
	Operation of vehicles transporting materials necessary for the execution of the works (mobile road sources), waste generated	Nitrogen oxides (NOX), non-methane volatile organic compounds (NMVOC), methane (CH4), carbon oxides (CO, CO2), ammonia (NH3), sulfur dioxide (SO2), particulate matter (PM10 and PM2.5)	Temporary (during the execution period)
	Operation of equipment/machinery (mobile non-road sources) necessary for the execution of construction works		Temporary (during the execution period)
	Generator engine - site organization	Particulate matter (PM10 and PM2.5)	Temporary (during execution)
Climate change	Greenhouse gas emissions from the operation of vehicles transporting materials necessary for the execution of works, waste generated Greenhouse gas emissions from the operation of equipment/machinery necessary for the execution of construction works	CH4, CO2, N2O, nitrogen oxides (NOX), non-methane volatile organic compounds (NMVOC), SO2, methane (CH4), carbon oxides (CO, CO2)	Temporary (during execution) and intermittent
Noise/Vibrations	Activities involving the handling of earth masses (stripping, digging, filling, leveling, loading, unloading, transport), construction materials, and waste resulting from construction and demolition activities	Equivalent noise level during the day/Acoustic power	Temporary (during execution) discontinuous (during and
	Operation of vehicles transporting materials necessary for the execution of works, waste generated		
	Operation of machinery necessary for the execution of construction works.		
	Demolition activities (breaking slabs/concrete)		
	Operation of drilling equipment (guided drilling for cable laying)		
	Assembly and welding activities		
	Pipe handling		
Operation of the concrete mixer—pouring concrete			

Table 39: Sources of emissions during operation

Affected environmental component	Emission sources	Types of emissions generated	Associated pollutants	Estimated level/frequency
Air	Cooling systems (HVAC, fans), accidental evaporation of dielectric oil	Thermal emissions, Air pollutant emissions	VOCs (in accidental cases), heat, aerosols	Permanent (operation); accidental in case of failure
Soil	Containers, retention tanks, oil transformers, LFP batteries	Electrolyte leaks, oils	electrolytes, organic compounds, mineral oil	Accidental scenarios (rare)
Groundwater	Septic tanks, infiltration through cracks in the platform in the event of an incident	Emissions of organic/inorganic pollutants into water	Nitrates, phosphates, organic compounds (potentially)	Occasionally, only in case of defect
Noise	HVAC system, inverter, main transformer	Continuous noise	Equivalent daytime noise level/Acoustic power	Permanent Up to 75 dB(A) at source, possibly perceptible at 65–10-20 m from source and falling below 50 dB(A) at ~100 m distance (in compliance with legal requirements).

Affected environmental component	Emission sources	Types of emissions generated	Associated pollutants	Estimated level/frequency
Biodiversity	Perimeter safety lighting	Local light pollution		Nocturnal, active in safety mode
	Cooling systems (HVAC, fans), accidental dielectric oil evaporation	Noise	Equivalent daytime noise level/Acoustic power	Permanent Up to 75 dB(A) at source, may be perceived at 65–55 dB(A) at 10-20 m from source
Climate change	Indirect energy consumption, maintenance materials	Indirect GHG emissions (low)	CO ₂ , CH ₄ , N ₂ O (indirect)	Reduced, occasional

Investments that may have a potential impact on the environment					Environmental factors								Impacts, risks, and risk management mechanisms						
Stage	Intervention	Location	Activity	Environmental effects	Surface water	Groundwater	Air	Noise	Soil/subsoil	Biodiversity	Cultural heritage	Landscape	Climate change	Potential Direct Impact	Potential Indirect Impact	Associated risks	Risk management mechanisms		
Construction	Demolition of existing structures on site	Project site (Gura Ialomiței)	Demolition of non-functional buildings	Generation of emissions into the atmosphere (NOx, CO2, CO, PM2.5, PM10, including asbestos)		•	•	•	•	•				Air quality impairment	Discomfort to the population Temporary impact on local flora	Suspension/delay in implementation (e.g., due to social opposition, lawsuits, complaints) Additional costs (fines)	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan		
				Increased noise and vibration levels				•		•						Discomfort to the population, illness, or deterioration of the population's health	Disruption of wildlife species activity	Suspension/delay in implementation (e.g., due to social opposition, lawsuits, complaints) Additional costs (fines)	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan
				Waste generation							•	•				Impairment of soil quality in the area in the event of improper storage improper storage	Change in air quality (generation of odors) Impact on human health Landing of natural habitat, attracting invasive species	Cessation/delay in implementation (complaints) Additional costs (fines)	Impact on soil quality in the area in the event of improper storage improper storage
				Increased noise and vibration levels						•	•				•	Discomfort to the population, illness, or deterioration of the population's health	Disruption of wildlife species activity	Suspension/delay in implementation (e.g., due to social opposition, lawsuits, complaints) Additional costs (fines)	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan
	Construction site traffic (vehicles and machinery)				Transmission of vibrations to buildings through the ground										Material damage (damage to neighboring buildings/structures)	Suspension/delay in implementation (e.g. due to social opposition, lawsuits, complaints) Additional costs (fines)	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan		
					Generation of emissions into the atmosphere (NOx, CO2, CO, PM2.5, PM10 including asbestos)		•	•		•	•						Air quality impairment	Discomfort to the population Temporary impact on local flora	Suspension/delay in implementation (e.g., due to social opposition, lawsuits, complaints) Additional costs (fines)
	Works for site organization	Project location (Gura Ialomiței)	Land and access road development Development of workers' facilities (offices, changing rooms) Site demarcation		Temporary land occupation					•	•		•		Reducing the aesthetic value of the landscape	Alteration of the habitat	Halting/delaying implementation (e.g., through social opposition, lawsuits, complaints) Additional costs (fines) Damage to image	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan	
					Removal of topsoil and vegetation						•	•				Habitat alteration Loss of soil productivity	Disruption of wildlife species activity	Cessation/delay in implementation (e.g., due to social opposition, lawsuits, complaints) Additional costs (fines)	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan
					Soil compaction						•					Changes in soil structure due to mechanical pressure caused by various	Reduced soil permeability Impairment of spontaneous	Long-term decline in soil quality, with an impact on local biodiversity	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan

Investments that may have a potential impact on the environment					Environmental factors								Impacts, risks, and risk management mechanisms					
Stage	Intervention	Location	Activity	Environmental effects	Surface water	Groundwater	Air	Noise	Soil/subsoil	Biodiversity	Cultural heritage	Landscape	Climate change	Potential Direct Impact	Potential Indirect Impact	Associated risks	Risk management mechanisms	
														activities (storage, vehicle traffic)	vegetation development due to soil structure deterioration	Hindered vegetation recovery after completion of works		
				Waste generation			•		•	•		•	•	Generation of solid, liquid, and hazardous waste (packaging, construction waste, batteries)	Possible contamination of soil and groundwater in the event of improper management	Soil and groundwater pollution following accidental spills of hazardous substances Attraction of pests or proliferation of insects in temporary storage areas	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan	
				Physical blocking or interruption of ecological corridors						•				Fragmentation of natural habitats Increased mortality through isolation or collision with infrastructure	-	Reduction in genetic diversity of wildlife populations through isolation	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan	
				Introduction of invasive species						•				Possibility of introduction and spread of invasive plant or animal species through	Modification of natural habitat structures Reducing local biodiversity	Loss of natural habitats through the expansion of invasive species	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan	
			Construction site traffic vehicles/operation of necessary equipment site layout and organization	Air pollutant emissions NOx and PM10/PM2.5, Greenhouse gases (CO2, N2O)		•	•		•	•			•	Air quality impairment	Discomfort to the population Temporary impact on local flora	Suspension/delay in implementation (complaints)	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan	
				Increased noise and vibration levels				•		•					Discomfort to the population, illness, or deterioration of the population's health	Disruption of wildlife species activity	Cessation/delay in implementation (e.g., due to social opposition, lawsuits, complaints) Additional costs (fines)	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan
				Wildlife collisions with traffic vehicles on access roads/machinery in the work area							•				Transmission of vibrations to buildings through the ground	Material damage (damage to neighbouring buildings/structures)	Suspension/delay in implementation (e.g., due to social opposition, lawsuits, complaints) Additional costs (fines)	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan
															Reduction in population numbers	Increased risk of collisions during periods of intense activity (dawn, dusk)	Halt/delay in implementation (e.g., due to social opposition, lawsuits, complaints)	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan
			Ensuring utilities during the execution period	Occurrence of pollutant emissions into soil/water	•	•		•	•					Contamination of soil and/or surface or groundwater as a result of accidental spills of fuel, oil, hazardous substances from machinery and equipment, and improper storage of hazardous materials on site	Degradation of the quality of natural habitats through soil contamination	Impairment of biodiversity through alteration of natural habitats Impairment of human health through contamination of drinking water resources	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan	
				Emissions of odor-generating pollutants (eco-friendly toilets)			•	•							Air quality impairment	Discomfort to the population	Suspension/delay in implementation (e.g., due to social opposition, lawsuits, complaints) Additional costs (fines)	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan

Investments that may have a potential impact on the environment					Environmental factors								Impacts, risks, and risk management mechanisms						
Stage	Intervention	Location	Activity	Environmental effects	Surface water	Groundwater	Air	Noise	Soil/subsoil	Biodiversity	Cultural heritage	Landscape	Climate change	Potential Direct Impact	Potential Indirect Impact	Associated risks	Risk management mechanisms		
				Emissions of pollutants into the atmosphere (generator operation)			•						•	Impact on air quality	Discomfort to the population Temporary impact on local flora	Halting/delay in implementation (e.g., due to social opposition, lawsuits, complaints) Additional costs (fines)	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan		
				Modification of the landscape structure						•			•		Alteration of the local landscape/Decrease in aesthetic value	Discomfort of the population	Suspension/delay in implementation (e.g., due to social opposition, lawsuits, complaints) Additional costs (fines)	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan	
			Storage of materials needed for construction/waste and construction site equipment	Occurrence of surface morphological processes (collapses, landslides)												Uneven soil compaction, which may promote differential settlement and micro-slides;	Compromise of project infrastructure (foundations, platforms, access roads)	Additional costs for land consolidation or restoration of affected infrastructure	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan
				Generation of air pollutants (PM10 and PM2.5 particulate matter)		•	•				•	•		•	•	Air quality impairment	Discomfort to the population Temporary impact on local flora	Suspension/delay in implementation (e.g., due to social opposition, lawsuits, complaints) Additional costs (fines)	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan
				Generation of soil pollutants								•	•			Accidental spills of fuel, oil, hydraulic fluid, or other hazardous substances from machinery Improper handling of batteries or technical components containing toxic substances	Possible contamination of groundwater through the infiltration of pollutants from the soil Indirect effects on local fauna and biodiversity.	Loss of physical, chemical, and biological qualities of the soil	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan
				Permanent occupation of land areas												Permanent loss of land areas due to the installation of fences and other auxiliary structures, the construction of permanent access roads and technical platforms, BESS stations, and related infrastructure	Landscape impact on the area	Loss of ecological functions of the land	Measures to avoid and reduce the impact Complaint resolution procedure Environmental management plan
			Works for the construction of access roads and BESS platforms	Soil stripping/trenching/excavation Earthmoving activities (soil stripping, digging, filling, levelling, loading, unloading, transport) Compaction/leveling Structural works: formwork, reinforcement, concrete pouring for the foundation and formwork removal								•	•			Loss of fertile layer, degraded structure, decreased retention capacity Minor landslides or instability of slopes and supporting infrastructure Damage to soil microfauna (earthworms,	Loss of valuable arable land in the vicinity of construction sites or roads	Reduced infiltration capacity → surface water accumulation	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan

Investments that may have a potential impact on the environment					Environmental factors								Impacts, risks, and risk management mechanisms				
Stage	Intervention	Location	Activity	Environmental effects	Surface water	Groundwater	Air	Noise	Soil/subsoil	Biodiversity	Cultural heritage	Landscape	Climate change	Potential Direct Impact	Potential Indirect Impact	Associated risks	Risk management mechanisms
														bacteria, fungi) essential for fertility			
				Generation of pollutant emissions into the atmosphere caused by earthworks (PM2.5, PM10)		•	•		•	•				Air quality impairment	Discomfort to the population Temporary impact on local flora	Suspension/delay in implementation (e.g. due to social opposition, lawsuits, complaints) Additional costs (fines)	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan
				Occurrence of surface morphological processes (landslides, mudslides)							•			Uneven soil compaction, which may promote differential settlement and micro-slides;	Compromise of project infrastructure (foundations, platforms, access roads)	Additional costs for land consolidation or restoration of affected infrastructure	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan
				Temporary modification of natural drainage	•	•			•	•				Disruption of natural water flow → uncontrolled accumulation or stagnation Temporary flooding or excessive drying of adjacent areas	Unfiltered runoff → sediment, nutrients, or pollutants entering waterways Imbalance in temporary habitats (e.g., ponds, natural channels, ditches)	Accidental transport of pollutants with rainwater	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan
	Connection to utilities		Works to ensure utilities (water supply, sewerage, electricity supply)	Noise and vibrations				•		•				Auditory stress, sleep disorders, irritability, increased blood pressure Transmission of vibrations to buildings → cracks, structural damage Changes in soil structure, local differential settlement Disturbance of sensitive species (birds, bats, amphibians) → displacement or migration	Complaints and discomfort among the nearby population	Structural damage to nearby buildings → compensation or additional work Exceeding legal limits according to Law 121/2019 and OMS 119/2014 for the protection of public health	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan
				Accidental spills into soil and water	•	•				•	•					Accidental spills of fuel, oil, hydraulic fluids, or other hazardous substances from machinery Leakage of chemicals or hazardous substances from technical equipment or storage containers	Pollution of the water table or nearby water bodies Degradation of soil and water quality

Investments that may have a potential impact on the environment					Environmental factors								Impacts, risks, and risk management mechanisms						
Stage	Intervention	Location	Activity	Environmental effects	Surface water	Groundwater	Air	Noise	Soil/subsoil	Biodiversity	Cultural heritage	Landscape	Climate change	Potential Direct Impact	Potential Indirect Impact	Associated risks	Risk management mechanisms		
	Transportation and installation of BESS systems		Transport of BESS containers	Emissions of pollutants into the atmosphere (generator operation)			•						•	Impact on air quality	Discomfort to the population Temporary impact on local flora	Suspension/delay in implementation (e.g., due to social opposition, lawsuits, complaints) Additional costs (fines)	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan		
			Installation of BESS containers, inverters, and HVAC systems Installation of transformers, medium/low voltage cables	Accidental spills of petroleum products from machinery – emissions of pollutants into water – emissions of pollutants into water	•	•	•	•	•	•						Accidental spills of fuel, oil, hydraulic fluids, or other hazardous substances from machinery Leakage of chemicals or hazardous substances from technical equipment or storage containers	Pollution of the water table or nearby water bodies Degradation of soil and water quality	Damage to local ecosystems and biodiversity	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan
				Noise and vibration generation					•		•					Auditory stress, sleep disturbances, irritability, increased blood pressure Transmission of vibrations to buildings → cracks, structural damage Changes in soil structure, local differential settlement Disturbance of sensitive species (birds, bats, amphibians) → displacement or migration	Complaints and discomfort among the nearby population	Structural damage to nearby buildings → compensation or additional work Exceeding the legal limits according to Law 121/2019 and OMS 119/2014 for the protection of public health	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan
				Waste generation							•	•				Generation of solid, liquid, and hazardous waste (packaging, construction waste, batteries)	Possible contamination of soil and groundwater in the event of improper management	Soil and groundwater pollution following accidental spills of hazardous substances Attraction of pests or proliferation of insects in temporary storage areas	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan
			Connection of systems to EMS (Energy Management System) – handling of equipment that may contain dielectric oils and technical liquids	Accidental spills of petroleum products from machinery – emissions of pollutants into water – emissions of pollutants into water	•	•	•	•	•	•						Accidental spills of fuel, oil, hydraulic fluids, or other hazardous substances from machinery Leakage of hazardous chemicals or h s from technical equipment or storage containers	Pollution of the water table or nearby bodies of water Degradation of soil and water quality	Damage to local ecosystems and biodiversity	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan
	Internal electrical network works		Laying cables between equipment (AC and DC)	Waste generation				•		•	•		•	•	Spread of powdery waste in the implementation area	-	Air contamination with suspended particles Deposition on soil and vegetation Impact on human health (breathing, irritation)	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan	
			Installation of electrical panels, command and control equipment	Waste generation	•	•				•					Generation of waste containing heavy metals (lead, mercury, cadmium),	Infiltration of toxic substances (phthalates, heavy metals, brominated	Chemical contamination through improper storage → soil, air, water	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan	

Investments that may have a potential impact on the environment					Environmental factors								Impacts, risks, and risk management mechanisms						
Stage	Intervention	Location	Activity	Environmental effects	Surface water	Groundwater	Air	Noise	Soil/subsoil	Biodiversity	Cultural heritage	Landscape	Climate change	Potential Direct Impact	Potential Indirect Impact	Associated risks	Risk management mechanisms		
														circuit boards, plastics, treated glass	compounds) in case of improper disposal				
	Installation of security and safety systems		Installation of fire detection systems (sensors, automatic extinguishing)	Noise generation				•		•				Discomfort, illness, or deterioration in the health of the population Disruption of species activity	-	Risk of disruption to local wildlife species and the quality of life of residents in the project implementation area	Measures to avoid and reduce the impact Complaint resolution procedure Environmental management plan		
Accidental spills of pollutants				•	•		•	•	•			•	Health impairment - illnesses	Soil/water contamination	Generation of non-recyclable or poorly biodegradable substances. Modern fluorinated agents can have a high GWP (Global Warming Potential).	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan			
Nighttime light pollution															Disorientation of nocturnal fauna Disruption of natural behaviors	-	Decline in insect populations Affected food chain	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan	
Connection to the electricity grid (SEN)	Outside the site (built-up and non-built-up areas of the municipalities of Gura Ialomiței and		Cable route marking and preparation	Temporary removal of vegetation				•	•	•		•	•	Decline in local biodiversity Increased soil erosion Noise and air pollution Soil compaction	Ecological imbalances Impact on agriculture or grazing in the area Landscape degradation	Desertification	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan		
			Mechanized excavation for cable laying/Crossings Installation of medium voltage LES cables	Generation of air pollutant emissions				•							Air quality impairment	Discomfort to the population Temporary impact on local flora	Suspension/delay in implementation (e.g., due to social opposition, lawsuits, complaints) Additional costs (fines)	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan	
				Noise generation						•						Discomfort, illness, or deterioration in the health of the population Disruption of species activity	-	Risk of disruption to local wildlife species and the quality of life of residents in the project implementation area	Measures to avoid and reduce the impact Complaint resolution procedure Environmental management plan
				Accidental spills of pollutants into the soil				•			•					Possible accidental damage to equipment, causing liquid spills into the soil Accidental spills of fuel, oil, or other technical liquids from equipment used for excavation	Infiltration of pollutants into the lower soil layer and possible migration to the water table Long-term damage to soil quality, with an impact on vegetation and microfauna	The need for decontamination of the affected soil	Measures to avoid and reduce the impact Complaint resolution procedure Environmental management plan
			Restoration of land affected by construction works	Soil compaction; use of fill material				•	•	•	•	•			Loss of soil productivity Destruction of the habitat of microorganisms and invertebrates in the soil Dust and exhaust emissions from machinery	Impairment of groundwater quality through possible changes in flow or filtration direction, especially in low-lying areas	Possible change in local soil quality and properties Blockage of natural drainage leads to waterlogging and soil degradation	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan	

Investments that may have a potential impact on the environment					Environmental factors								Impacts, risks, and risk management mechanisms					
Stage	Intervention	Location	Activity	Environmental effects	Surface water	Groundwater	Air	Noise	Soil/subsoil	Biodiversity	Cultural heritage	Landscape	Climate change	Potential Direct Impact	Potential Indirect Impact	Associated risks	Risk management mechanisms	
														(bulldozers, compactors)				
	Building (headquarters) rehabilitation		Structural reinforcement of the building	Air emissions										Impact on air quality	Discomfort to the population Temporary impact on local flora	Suspension/delay in implementation (e.g. due to social opposition, lawsuits, complaints) Additional costs (fines)	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan	
Waste generation							•	•	•	•					Soil pollution Air pollution Water pollution Visual impact and unpleasant odors	Biodiversity degradation	Spread of microplastics, resulting in contamination of the food chain, including human consumption	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan
Interior renovation works (painting, installations)			Pollutant emissions						•		•	•			Release of volatile organic compounds (VOCs)	Contribution to climate change Degradation of ecosystems	Risk of water contamination through washing of tools or spills. Persistence of certain pigments and additives (heavy metals, organohalogen compounds) in the environment.	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan
			Waste generation	•	•	•	•	•	•	•	•		•		Soil pollution Air pollution Water pollution Visual impact and unpleasant odors	Biodiversity degradation	Spread of microplastics, resulting in contamination of the food chain, including human consumption	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan
	Restoration of areas affected by BESS construction works	Location (Gura Ialomiței)	Restoration of temporarily affected land areas: waste disposal, leveling, grass planting	Waste generation	•	•	•	•	•					Risk of accidental soil or water pollution if waste is not managed properly	Possibility of attracting pests (rodents, insects) in the case of uncontrolled waste storage	Environmental degradation through waste abandonment or improper management	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan	
Introduction of invasive species				•	•	•	•	•	•						Risk of introduction and spread of invasive species during the ecological restoration process as a result of the use of contaminated plant material (seeds, grass, soil, or plant material containing seeds or vegetative parts of invasive species)	Subsequent spread of invasive species into neighboring natural habitats	Loss of local biodiversity and degradation of ecosystems	Measures to avoid and reduce the impact Complaint resolution procedure Environmental management plan
Emissions into the atmosphere									•						Air quality impact	Discomfort to the population Temporary impact on local flora	Suspension/delay in implementation (e.g., due to social opposition, lawsuits, complaints) Additional costs (fines)	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan
	33kV/110kV transformer station		Platform construction Assembly operations (including the execution of foundations)	Permanent occupation of land					•	•				Loss of biodiversity Soil erosion	Water pollution	Impervious surfaces increase the risk of flooding because rainwater cannot infiltrate the soil and accumulates on paved surfaces	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan	

Investments that may have a potential impact on the environment				Environmental factors										Impacts, risks, and risk management mechanisms					
Stage	Intervention	Location	Activity	Environmental effects	Surface water	Groundwater	Air	Noise	Soil/subsoil	Biodiversity	Cultural heritage	Landscape	Climate change	Potential Direct Impact	Potential Indirect Impact	Associated risks	Risk management mechanisms		
				Noise				•		•				Discomfort, illness, or deterioration in the health of the population Disruption of species activity	-	Risk of disruption to local wildlife species and the quality of life of residents in the project implementation area	Measures to avoid and reduce the impact Complaint resolution procedure Environmental management plan		
				Air pollutant emissions		•	•		•	•		•	•	Air quality impairment	Discomfort to the population Temporary impact on local flora	Suspension/delay in implementation (e.g., due to social opposition, lawsuits, complaints) Additional costs (fines)	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan		
				Waste generation										Localized pollution from oil, paint, wood varnish, or metal leaks Aesthetic degradation of the area due to accumulations of abandoned materials Risk of accidents, cuts, punctures, poisoning Abandoned materials can become traps for animals	-	Mechanical injuries to workers and visitors Painted metals, varnishes, solvents → infiltration into soil and groundwater	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan		
Operation	BESS operation	Site BESS (Gura Ialomiței)	Electricity storage in batteries Maintenance and control activities	Infiltration of hazardous substances into the soil	•	•			•	•				Immediate soil contamination: Destruction of local flora Danger to soil fauna	Contamination of groundwater Migration of pollutants by wind or water Damage to neighbouring ecosystems	Long-term destruction of soil fertility High costs for soil remediation (excavation, bioremediation, isolation). Indirect ingestion through consumption of vegetables/fruit grown on contaminated soil.	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan		
				Waste generation	•	•		•	•	•		•			Immediate environmental pollution Creation of visual and olfactory discomfort Attracting pests Immediate chemical or biological hazard (for hazardous waste)	Chain contamination of ecosystems Cumulative effects on human health:	Spills or leaks of hazardous substances into soil and water. Fires and explosions caused by chemical reactions or flammable materials. Fines and penalties for non-compliance with environmental legislation.	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan	
				Air pollutant emissions												Impact on air quality	Discomfort to the population Temporary impact on local flora	Suspension/delay in implementation (e.g., due to social opposition, lawsuits, complaints) Additional costs (fines)	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan
				Noise generation													Continuous or intermittent noise generation due to the operation of cooling equipment (fans, air conditioning systems) and the operation of transformers and inverters;	Acoustic discomfort for residents in the vicinity of the site Disturbance of wildlife habitats and behavior, especially for noise-sensitive species	Complaints from local communities

Investments that may have a potential impact on the environment					Environmental factors								Impacts, risks, and risk management mechanisms						
Stage	Intervention	Location	Activity	Environmental effects	Surface water	Groundwater	Air	Noise	Soil/subsoil	Biodiversity	Cultural heritage	Landscape	Climate change	Potential Direct Impact	Potential Indirect Impact	Associated risks	Risk management mechanisms		
	Operation of the transformer station Maintenance and servicing activities		Existence of contact elements contact elements that pose a risk of electrocution	Electrocution of birds						•				Immediate death of birds Serious injury to birds Decline in local bird populations Impact on protected species	Ecological imbalance Loss of ecosystem services	Local extinction of rare species Fines and legal sanctions	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan		
Decommissioning	Site layout and organization	Location	Land development					•	•	•		•	•	Decline in local biodiversity Increased soil erosion Noise and air pollution Soil compaction	Ecological imbalances Impact on agriculture or grazing in the area Landscape degradation	Desertification	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan		
			Topsoil removal	Removal of topsoil and vegetation					•	•	•		•	•	Decline in local biodiversity Increased soil erosion Noise and air pollution Soil compaction	Ecological imbalances Impact on agriculture or grazing in the area Landscape degradation	Desertification	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan	
			Storage of stripped soil	Generation of pollutants into the atmosphere				•		•	•				Air quality impairment	Discomfort to the population Temporary impact on local flora	Suspension/delay in implementation (e.g., due to social opposition, lawsuits, complaints) Additional costs (fines)	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan	
			Ballast layer laying works	Atmospheric emissions atmospheric			•	•	•		•			•	Air quality impairment	Discomfort to the population Temporary impact on local flora	Suspension/delay in implementation (e.g., due to social opposition, lawsuits, complaints) Additional costs (fines)	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan	
			Compaction/leveling works	Temporary modification of natural drainage	•	•				•	•				Disruption of natural water flow → uncontrolled accumulation or stagnation Temporary flooding or excessive drying of adjacent areas	Unfiltered runoff → sediment, nutrients, or pollutants entering waterways Imbalance in temporary habitats (e.g., ponds, natural channels, ditches)	Accidental transport of pollutants with rainwater	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan	
			Construction site traffic/operation of machinery necessary for the works	Intense traffic of heavy and light machinery	•	•	•	•	•	•	•	•				Significant emissions of NO _x , CO ₂ , PM (dust, soot) Constant noise from engines and brakes – affects wildlife and communities Soil compaction and damage to unprotected areas	Disturbance to nearby residents (noise, dust, vibrations, traffic) Damage to nearby habitats through fragmentation and noise disturbance Indirect GHG emissions through high diesel consumption	Loss of oil, fuel, or hydraulic fluids → soil/water contamination Damage to underground networks (water, gas, sewage) if access is not controlled	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan
				Increased noise and vibration levels						•		•				Discomfort, illness, or deterioration in the health of the population	-	Risk of disruption to local wildlife species and the quality of life of residents in the project implementation area	Measures to avoid and reduce the impact Complaint resolution procedure Environmental management plan

Investments that may have a potential impact on the environment					Environmental factors								Impacts, risks, and risk management mechanisms																					
Stage	Intervention	Location	Activity	Environmental effects	Surface water	Groundwater	Air	Noise	Soil/subsoil	Biodiversity	Cultural heritage	Landscape	Climate change	Potential Direct Impact	Potential Indirect Impact	Associated risks	Risk management mechanisms																	
														Disruption of species activity																				
	Dismantling of BESS systems	Location	Dismantling of all facilities	Increased noise and vibration levels				•		•				Discomfort, illness, or deterioration in the health of the population Disruption of species activity	-	Risk of disruption to local wildlife species and the quality of life of residents in the project implementation area	Measures to avoid and reduce the impact Complaint resolution procedure Environmental management plan																	
				Air pollutant emissions		•	•			•	•		•	•	Air quality impairment	Discomfort to the population Temporary impact on local flora	Suspension/delay in implementation (e.g., due to social opposition, lawsuits, complaints) Additional costs (fines)	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan																
	Decommissioning of technological platforms and foundations	Site	Vegetation clearance works	Temporary removal of vegetation				•	•	•		•	•	Decline in local biodiversity Increased soil erosion Noise and air pollution Soil compaction	Ecological imbalances Impact on agriculture or grazing in the area Landscape degradation	Desertification	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan																	
			Topsoil stripping works	Temporary removal of soil	•	•	•			•	•				Loss of topsoil Immediate damage to vegetation and fauna	Degradation of the natural landscape Disruption of ecological processes Change in water regime	Accidental contamination of stored soil Delay or impossibility of soil restoration Accelerated erosion and instability	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan																
			Storage of stripped soil	Dust and mud generation					•	•	•	•			Particulate matter (PM ₁₀ , PM _{2.5}) in dust – affects human health Formation of mud puddles, slippery surfaces	-	Inhalation of dust → irritation, allergic reactions, respiratory diseases Slipping, skidding, or falling on muddy surfaces	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan																
			Foundation demolition works	Noise						•		•				Discomfort, illness, or deterioration in the health of the population Disruption of species activity	-	Risk of disruption to local wildlife species and the quality of life of residents in the project implementation area	Measures to avoid and reduce the impact Complaint resolution procedure Environmental management plan															
																				Air pollutant emissions		•	•			•	•		•	•	Air quality impairment	Discomfort to the population Temporary impact on local flora	Suspension/delay in implementation (e.g., due to social opposition, lawsuits, complaints) Additional costs (fines)	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan
																				Waste (including hazardous waste)		•	•				•	•		•	•	Spread of powdery waste in the implementation area	-	Air contamination with suspended particles Deposition on soil and vegetation Impact on human health (breathing, irritation)
			Compaction/leveling works	Air pollutant emissions					•		•	•		•	•	Air quality impairment	Discomfort to the population Temporary impact on local flora	Suspension/delay in implementation (e.g., due to social opposition, lawsuits, complaints) Additional costs (fines)	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan															

Investments that may have a potential impact on the environment					Environmental factors								Impacts, risks, and risk management mechanisms					
Stage	Intervention	Location	Activity	Environmental effects	Surface water	Groundwater	Air	Noise	Soil/subsoil	Biodiversity	Cultural heritage	Landscape	Climate change	Potential Direct Impact	Potential Indirect Impact	Associated risks	Risk management mechanisms	
				Noise emissions				•		•				Discomfort, illness, or deterioration in the health of the population Disruption of species activity	-	Risk of disruption to local wildlife species and the quality of life of residents in the project implementation area	Measures to avoid and reduce the impact Complaint resolution procedure Environmental management plan	
			Construction site vehicle traffic/operation of machinery necessary for the works	Accidental spills of pollutants on the ground	•	•	•	•	•	•				Immediate soil contamination: Destruction of local flora Danger to soil fauna	Contamination of groundwater Migration of pollutants by wind or water Damage to neighbouring ecosystems	Long-term destruction of soil fertility High costs for soil remediation (excavation, bioremediation, isolation). Indirect ingestion through consumption of vegetables/fruit grown on contaminated soil.	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan	
	Decommissioning of electrical connections and removal of underground cables	Site	Vegetation clearing works	Removal of vegetation				•	•	•		•	•	Decline in local biodiversity Increased soil erosion Noise and air pollution Soil compaction	Ecological imbalances Impact on agriculture or grazing in the area Landscape degradation	Desertification	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan	
Topsoil stripping works			Temporary removal of soil	•	•	•		•	•					Loss of topsoil Immediate damage to vegetation and fauna	Degradation of the natural landscape Disruption of ecological processes Change in water regime	Accidental contamination of stored soil Delay or impossibility of soil restoration Accelerated erosion and instability	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan	
Trench digging works			Noise						•		•				Discomfort, illness, or deterioration in the health of the population Disruption of species activity	-	Risk of disruption to local wildlife species and the quality of life of residents in the project implementation area	Measures to avoid and reduce the impact Complaint resolution procedure Environmental management plan
			Emissions of suspended particulate matter from earthworks (PM10, PM2.5)		•	•				•	•		•	•	Air quality impairment	Discomfort to the population Temporary impact on local flora	Suspension/delay in implementation (e.g., due to social opposition, lawsuits, complaints) Additional costs (fines)	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan
Storage of soil from excavations			Temporary occupation of additional land areas additional land	•	•				•	•	•				Loss of natural habitats Soil degradation	Water pollution	Temporary damage to local flora	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan
			Temporary landscape disturbance							•	•		•		Visual modification of the area Removal of existing vegetation Creation of visual and physical barriers	Disturbance of local fauna	Risk of erosion or land instability	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan
			Emissions of suspended particulate matter from earthworks (PM10, PM2.5)		•	•					•		•	•	Air quality impairment	Discomfort to the population Temporary impact on local flora	Suspension/delay in implementation (e.g., due to social opposition, lawsuits, complaints) Additional costs (fines)	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan

Investments that may have a potential impact on the environment					Environmental factors								Impacts, risks, and risk management mechanisms						
Stage	Intervention	Location	Activity	Environmental effects	Surface water	Groundwater	Air	Noise	Soil/subsoil	Biodiversity	Cultural heritage	Landscape	Climate change	Potential Direct Impact	Potential Indirect Impact	Associated risks	Risk management mechanisms		
			Removal of electrical cables	Waste		•		•	•	•		•		Immediate environmental pollution Creation of visual and olfactory discomfort Attracting pests Immediate chemical or biological hazard	Chain contamination of ecosystems Cumulative effects on human health:	Spills or leaks of hazardous substances into soil and water. Fires and explosions caused by chemical reactions or flammable materials. Fines and penalties for non-compliance with environmental legislation.	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan		
			Filling ditches and leveling the ground	Air pollutants				•		•	•		•	•	Impact on local air quality	Deposits on the soil surface and local flora	Temporary damage to local flora Temporary impact on local climate patterns	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan	
			Restoration of vegetation cover	Spread of invasive plant species								•			•	Replacement of native species Alteration of natural habitats Prevention of natural regeneration	Disruption of the food chain Increased risk of fires	Possible local extinction of rare or endemic species Some invasive species are toxic (e.g., ragweed—causes severe allergies) Rapid spread on cultivated land leads to lower yields and additional costs	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan
			Construction site traffic/operation of machinery necessary to carry out the work	Emissions of pollutants into the atmosphere (NOx, SO2, CO, GHG, PM2.5, PM10)		•	•	•	•	•					•	Air quality impairment	Discomfort to the population Temporary impact on local flora	Suspension/delay in implementation (e.g., due to social opposition, lawsuits, complaints) Additional costs (fines)	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan
	Increased noise and vibration levels							•		•				Discomfort, illness, or deterioration in the health of the population Disruption of species activity	-	Risk of disruption to local wildlife species and the quality of life of residents in the project implementation area	Application of sound insulation solutions that may remain as local improvements		
	Decommissioning of access roads	Site	Stripping of topsoil, storage and handling of earth masses Removal of ballast layer Compaction/leveling works	Localized emission of suspended particles (PM2.5 and PM10)		•	•	•	•	•					Air quality impairment	Discomfort to the population Temporary impact on local flora	Suspension/delay in implementation (e.g. due to social opposition, lawsuits, complaints) Additional costs (fines)	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan	
				Increased noise and vibration levels												Immediate noise and discomfort	Destruction of local ecosystems		Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan
			Construction site traffic/operation of machinery necessary for the works	Emissions of pollutants into the atmosphere (NOx, SO2, CO, GHG, PM2.5, PM10)		•	•	•	•	•					•	Impact on local air quality	Deposits on the soil surface and local flora	Temporary damage to local flora Temporary impact on local climate patterns	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan
				Increased noise and vibration levels						•	•	•				Discomfort, illness, or deterioration in the health of the population Disruption of species activity		Risk of disruption to the activity of local fauna species and the quality of life of residents in the project implementation area	Measures to avoid and reduce the impact Complaint resolution procedure Environmental management plan

Investments that may have a potential impact on the environment				Environmental factors									Impacts, risks, and risk management mechanisms					
Stage	Intervention	Location	Activity	Environmental effects	Surface water	Groundwater	Air	Noise	Soil/subsoil	Biodiversity	Cultural heritage	Landscape	Climate change	Potential Direct Impact	Potential Indirect Impact	Associated risks	Risk management mechanisms	
	Land restoration works upon completion of construction	Location (Gura Ialomiței and Mihail Kogălniceanu)	Restoration of the site where the works were carried out and rehabilitation of the temporarily used areas Clearing of all installations, machinery, and waste, and reinstallation of topsoil on areas that were temporarily used	Spread of invasive plant species						•			•	Replacement of native species Alteration of natural habitats Prevention of natural regeneration	Disruption of the food chain Increased risk of fires	Disruption of the food chain Increased risk of fires	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan	
		Location (Gura Ialomiței and Mihail Kogălniceanu)		Spread of invasive plant species							•			•	Replacement of native species Alteration of natural habitats Prevention of natural regeneration	Disruption of the food chain Increased risk of fires	Possible local extinction of rare or endemic species Some invasive species are toxic (e.g., ragweed— causes severe allergies) Rapid spread on cultivated land leads to lower yields and additional costs	Measures to avoid and reduce impact Complaint resolution procedure Environmental management plan
		Location (Gura Ialomiței and Mihail Kogălniceanu)		Waste generation				•			•					Spread of powdery waste in the implementation area	-	Air contamination with suspended particles Deposition on soil and vegetation Impact on human health (breathing, irritation)

The measures currently shown in the table are overarching, framework-level controls that apply across multiple impact pathways (i.e., they are “umbrella” commitments such as impact avoidance/minimisation, a grievance/complaints procedure, and the Environmental Management Plan).

The integrated analysis of the effects generated by the electricity storage project (BESS) highlights that the impact on environmental factors is generally **localized, temporary, and controllable**, with a moderate potential severity in the absence of management measures.

5.1.2.2 Sensitivity of receptors in the project implementation area

The starting point for determining the sensitivity of the area is the current state of environmental factors in the project area. For the area proposed for the construction and operation of the power plant, the environmental factors considered in the environmental impact assessment have the following sensitivity:

Receptor sensitivity	Surface water	Groundwater	Air	Noise	Soil/subsoil	Biodiversity	Cultural heritage	Landscape
	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Very low	Low
	Two relevant surface water bodies have been identified in the project's extended area of influence: RORW11-1_B9 – the lower section of the Ialomița River, located approximately 4.8 km south of the site, and RORW14-1_B4 – the Chiciu-Isaccea section of the Danube, located approximately 7.1 km away. Both water bodies are classified as being in good overall chemical status, but are under specific anthropogenic pressures: diffuse and point source pollution in the case of the Ialomița, and hydrotechnical interventions in the case of the Danube. However, the significant distances from the project site and the lack of direct hydrological connectivity significantly reduce the potential for direct or indirect impact.	In the BESS site area, there are groundwater bodies of regional importance (ROAG12, RODL07, ROIL09), which are in good chemical condition and are used for drinking water and process water supply. Due to the porous-permeable nature of the aquifers and the shallow depth of the water table (~8–10 m, with fluctuations of ±2 m), the area has medium to high hydrogeological sensitivity. Potential risks during construction and operation include groundwater contamination from accidental electrolyte or fuel spills.	Air quality in the project area is good, with average annual concentrations of air pollutants below the limits set by legislative regulations (Law 104/2011). The sensitivity of the area is moderate, determined by diffuse emissions from residential heating and agricultural activities. From the perspective of the BESS project development, air sensitivity is considered to be low, provided that a controlled operating regime is maintained, emissions are limited during the construction phase, and accumulation with other sources is avoided.	The project site has moderate acoustic sensitivity, as it is located in an area with high potential for quietness, specific to rural areas with low traffic and no major industrial activities. This context requires increased attention to possible new sources of noise generated by the project.	The analyzed site has moderate sensitivity to risks related to soil quality and functionality. In the absence of previous industrial activities with contamination potential, according to Law 74/2019, the site is not considered a potentially contaminated site, which excludes major risks of historical pollution. However, the biological functions of the soil may be threatened in the absence of appropriate adaptation measures, particularly in the context of climate change and impermeabilisation processes.	The BESS project site is located in an area predominantly used for agriculture, on previously anthropized land, with no evidence of species or habitats of conservation interest. However, its immediate proximity (less than 200 m) to two Natura 2000 sites (ROSCI0389 and ROSPA0120) means that it is highly sensitive from an ecological point of view. In this context, although the project does not involve direct impacts on these protected areas, a cautious approach is required, including specific measures to prevent indirect effects (such as night lighting, noise during the construction phase, risks of accidental pollution). The implementation of these measures is essential to ensure the maintenance of the ecological integrity of nearby natural habitats and their functionality.	The project site is located in an area of low sensitivity in terms of cultural heritage, with no evidence of archaeological sites or historical monuments in the immediate vicinity. The nearest heritage sites are located more than 500 meters from the boundary of the analyzed site.	The analyzed site has low sensitivity in terms of landscape and culture, being located in a heavily anthropized area, dominated by intensively used agricultural land and lacking remarkable natural, historical, or visual elements in the immediate vicinity.

The sensitivity analysis of relevant receptors in the project's area of influence indicates a variable level of vulnerability to potential pressures generated by the proposed activities. The assessment was carried out for each environmental component separately, based on their physical, ecological, and functional characteristics, as well as their capacity to adapt and absorb the impact.

- Receptors such as **landscape and cultural heritage** were characterized by **low sensitivity**, suggesting a limited risk of significant impact under appropriate management conditions.
- Other components, such as **surface water, air, soil, biodiversity, landscape, and noise**, show **moderate sensitivity**, reflecting a partial capacity to adapt, but with a risk of visible impact in the absence of effective control and monitoring measures.

This ranking of environmental receptor sensitivity provides a solid basis for prioritizing protective actions and appropriately scaling mitigation measures to maintain ecological balance and reduce pressure on the environment.

5.1.2.3 Magnitude of changes resulting from the project

The following table shows the magnitude of environmental changes resulting from the implementation of the project during the construction/decommissioning and operation phases.

The assessment of the magnitude of the environmental impact is carried out according to the methodology described in Chapter 4, by adapting the impact classification to the specific characteristics of the environmental components analysed. The magnitude is estimated according to the characteristics of the effect (intensity, duration, extent and reversibility), without taking into account, at this stage, the sensitivity of the affected receptor.

This assessment applies to all relevant environmental factors, such as:

- Air quality;
- Water quality (surface and groundwater);
- Soil and subsoil;
- Biodiversity;
- Landscape;
- Natural heritage;
- Noise and vibrations;
- Climate change.

$$\text{Magnitude/Severity} = (\text{Nature of impact} \times \text{Temporal extent} \times \text{Spatial extent} \times \text{Reversibility})/4$$

Magnitude reflects the potential intensity of the effect, estimating the extent of changes to the environment, regardless of the vulnerability of the receiving elements.

Table 40 : Magnitude assessment

Magnitude of impact according to environmental factor				
Environmental factor	Impact magnitude during the execution period		Impact magnitude during the operation period	
Surface water	No changes	No activities are expected to influence the hydrological regime or the quality of surface waters. The lack of direct sources of pollution and the absence of hydrotechnical works excludes the generation of an impact in this phase.	No changes	No permanent sources of pollutants are generated by the operation of the project. The natural regime of surface waters remains unchanged.
Groundwater	Low	There is a low risk of accidental infiltration, especially during earthworks or material storage. However, the depth and geological protection provide a natural barrier, and preventive measures limit the effects.	No changes	After completion of construction, no permanent sources of contamination are expected. Negligible impact risk during the operational phase.
Air	Medium	Temporary dust and gas emissions from traffic and machinery may affect air quality. The reversible nature and short duration justify the moderate level.	No changes	After completion, the activities no longer generate significant emissions. Air quality returns to its initial state.
Noise	Medium	Mechanized works, traffic, and equipment generate intense local noise. Although temporary, it can cause discomfort and disturb wildlife.	No changes	The project's ongoing activities do not generate high noise levels. The impact becomes insignificant after execution.
Soil/subsoil	Medium	The soil is affected by excavations, compaction, and potential pollution. These are direct and localized, with controllable effects.	Low	After land stabilization and in the absence of intervention activities, the effects on the soil are reduced, remaining residual and reversible.
Biodiversity	Medium	Common species may be affected by noise, vibrations, and construction activities. The lack of protected habitats and the temporary nature of the project reduce the severity.	Low	Affected habitats can regenerate, and exposure of fauna is reduced. In the absence of continuous pressure, the impact becomes low.
Cultural	Very low	There are no heritage sites in the work area.	No changes	The project does not involve interventions on the cultural landscape or protected sites. No impact estimated.
Landscape	Medium	Temporary installations, equipment, and structures may affect the visual appearance of the area. The changes are visible but reversible.	Very low	After completion of the works, the temporary visual elements are removed and the integration into the landscape mitigates the impact.
Climate change	Low	GHG emissions from machinery and transport contribute marginally to climate change. The absence of major sources reduces the impact.	Low	Operational emissions are insignificant in a regional or global context. The impact remains low and indirect.

The assessment of the magnitude of the project's impacts was carried out separately for each environmental factor, in relation to two main stages: **the construction period and the operation period**. For **the decommissioning period**, the magnitude will be similar to that of the execution period. The results indicate a **predominantly low to medium** magnitude during the execution (decommissioning) stage, while during the operation period, the estimated impacts are generally **insignificant or absent**.

- During the **construction** (decommissioning) phase, factors such as **air, soil, noise, and biodiversity** are most frequently affected, with a medium magnitude associated with temporary activities such as excavation, transportation, use of mechanized equipment, and generation of emissions. These impacts are localized, reversible, and can be managed through standard mitigation measures.
- The impact on **groundwater and surface water** is assessed as **unchanged or low**, reflecting a limited risk of accidental pollution and a good absorption capacity of the natural system under normal operating conditions.
- For **landscape, cultural heritage, and climate change** factors, the magnitude of the impact is very **low or absent**, indicating a low level of intervention or modification of these components.

During the **operating** period, the impacts are **significantly reduced**, falling into the **low or unchanged** magnitude classes. This evolution reflects the limited nature of the continuous pressure exerted by the project on the environment, in the absence of permanent sources of pollution or ecological disturbance.

In conclusion, the project generates low-intensity impacts on the environment, with a temporal concentration in the execution (decommissioning) stage and a clear tendency to return to normal conditions during the operating period. This characteristic provides favorable conditions for controlling and mitigating impacts, provided that effective environmental measures are implemented in the initial phase of the project.

5.1.2.4 Significance of the impact

The assessment of the significance of the impact was carried out taking into account all relevant environmental components identified in the study (air, water, soil, biodiversity, landscape, natural heritage, climate change, etc.). The analysis is based on the classification of the severity (magnitude) of the impact, correlated with its probability of occurrence, resulting in an estimated risk score in the absence of mitigation measures according to the methodology described in section

4. It should be noted that the project underwent an environmental impact assessment procedure, which concluded with the scoping decision no. 272/28.10.2024, and was not subject to an appropriate assessment procedure. This is because the project is located in an anthropized area and the characteristics of the land do not include any sensitive ecological elements or habitats of conservation interest.

Table 41: Assessment of the significance of the impact

Project phase	Intervention	Activity	Effect generated	Potential impact	Impact characteristics										Risk without implementation of project measures	
					Nature of impact	Type of impact	Cumulative	Reversible	Spatial expansion	Temporal expansion	Receptor sensitivity	Magnitude	Significance of impact	Justification		Probability of occurrence
Construction	Demolition of existing structures on site	Demolition of non-functional buildings	Generation of emissions into the atmosphere (NOx, CO2, CO, PM2.5, PM10, including asbestos)	Possible effect on air quality	Negative	Direct	Cumulative impact	Reversible	Local	Short term (<1 year)	Moderate	Low	Insignificant	The expected impact is low and local, due only to the demolition of existing structures on the site.	Possible	M
			Increased noise and vibration levels	Possible acoustic effect on the area of influence	Negative	Direct	Cumulative impact	Reversible	At the site level	Short term (<1 year)	High	Low	Insignificant	The expected impact is very low, due only to the demolition of existing structures on the site, with the impact being local at the project site level.	Possible	M
			Waste generation	Possible acoustic effect on the area of influence	Negative	Direct	Residual impact	Reversible	At the site level	Short term (<1 year)	Low	Very low	Insignificant	These types of waste will only be generated during the construction phase and will be removed and disposed of from the site by specialized companies.	Almost certain	M
		Construction site traffic (vehicles and machinery)	Increased noise and vibration levels	Possible acoustic effect on the area of influence	Negative	Direct	Cumulative impact	Reversible	At the site level	Short term (<1 year)	Low	Low	Insignificant	The expected impact is very low, local, due only to the demolition of existing structures on site and the machinery involved in this activity.	Possible	M

Project phase	Intervention	Activity	Effect generated	Potential impact	Impact characteristics										Risk without implementation of project measures
					Nature of impact	Type of impact	Cumulative	Reversible	Spatial expansion	Temporal expansion	Receptor sensitivity	Magnitude	Significance of impact	Justification	
Works for the arrangement of the construction site	Landscaping and access roads Setting up spaces for workers (offices, changing rooms) Site demarcation	Generation of emissions into the atmosphere (NOx, CO2, CO, PM2.5, PM10 including asbestos)	Possible effect on air quality	Negative	Direct	Cumulative impact	Reversible	Local	Short term (<1 year)	Moderate	Low	Insignificant	The expected impact is low, due only to the demolition of existing structures on the site and the machinery involved in this activity.	Possible	M
		Temporary occupation of land	Temporary restriction of land use	Negative	Direct	Residual impact	Reversible	At site level	Short term (<1 year)	Low	Very low	Insignificant	Temporary land occupation is determined by the location of the facilities necessary for the project and will only occur during the project implementation period, without irreversibly altering soil quality.	Almost certain	L
		Removal of topsoil and vegetation	Potential low-intensity impact on the environment	Negative	Direct	Residual impact	Reversible	At the site level	Short term (<1 year)	Low	Very low	Insignificant	Modification of the topsoil will only be necessary for the installation of temporary facilities related to the implementation phase. It should be noted that removal must be carried out properly without affecting the biodiversity elements in the site area	Almost certain	M
		Soil compaction	Temporary physical changes to the soil layer	Negative	Direct	Residual impact	Reversible	At the site level	Short term (<1 year)	Low	Very low	Insignificant	The impact will be local, at the site organization level, and will subsequently disappear	Almost certain	M
		Waste generation	Waste generation	Negative	Direct	Residual impact	Reversible	At site level	Short term (<1 year)	Low	Very low	Insignificant	These types of waste will only be generated during the construction phase and will be removed and disposed of from the site by specialized companies.	Almost certain	M
		Physical barrier or interruption of ecological corridors	Potential low-intensity impact on the environment	Negative	Direct and indirect	Cumulative and residual impact	Irreversible	Local	Medium term (< 5 years)	Low	Low	Insignificant	Land development, access road construction, and site demarcation activities may cause temporary habitat fragmentation and discontinuity of ecological corridors. Given the limited spatial and temporal nature of the works, the low sensitivity of receptors, and the possibility of implementing protective measures, the impact is local and reversible.	Possible	M
		Introduction of invasive species	Potential low-intensity effect on the environment	Negative	Direct and indirect	Cumulative and residual	Irreversible	Local	Medium term (< 5 years)	Low	Low	Insignificant	Seeds may be dispersed by wind up to 500 m from the works, given that the vicinity of the site is home to habitats where invasive species can easily penetrate.	Possible	M
		Construction site traffic vehicles/operation of machinery necessary	Air pollutant emissions NOx and PM10/PM2.5, Greenhouse gases (CO2, N2O)	Negative	Direct	Cumulative impact	Reversible	Local	Short term (<1 year)	Moderate	Low	Insignificant	Given the temporary and local nature of the activities, the short transport distances, and the fact that the emission sources are point sources and mobile, the impact on air quality in the area of influence is expected to be limited.	Possible	M

Project phase	Intervention	Activity	Effect generated	Potential impact	Impact characteristics										Risk without implementation of project measures	
					Nature of impact	Type of impact	Cumulative	Reversible	Spatial expansion	Temporal expansion	Receptor sensitivity	Magnitude	Significance of impact	Justification		Probability of occurrence
		site organization	Increased noise and vibration levels	Possible acoustic effect on the area of influence	Negative	Direct	Cumulative Impact	Reversible	At the site level	Short term (<1 year)	Low	Low	Insignificant	Given the location, the short duration of the activities, and the fact that the noise sources are mobile and controllable, the acoustic impact is estimated to be limited, without exceeding the thresholds allowed at the perimeter of the work site.	Possible	M
			Collision of wildlife with traffic vehicles on access roads/machinery in the work front area	Occurrence of accidental victims	Negative	Direct	Cumulative Impact	Irreversible	At the site level	Short term (<1 year)	Moderate	Low	Insignificant	The traffic of machinery and vehicles on access roads and in the work area may increase the risk of collision with wildlife, especially mobile species. Given the temporary nature of the works, the low speed imposed on site traffic and the possibility of applying preventive measures (signaling, speed restrictions, limiting traffic at night), no significant impact is expected.	Possible	M
		Provision of utilities during the execution period	Occurrence of pollutant emissions into soil/water	Temporary physical changes to the soil layer	Negative	Direct	Cumulative Impact	Reversible	At the site level	Short term (<1 year)	Moderate	Low	Insignificant	There is a risk of accidental release of pollutants into soil and water, particularly through spills or improper handling of fuels, oils, or materials associated with temporary networks.	Probably	M
			Emissions of odor-generating pollutants (eco-friendly toilets)	Potential low-intensity effect on the environment	Negative	Direct	Cumulative Impact	Reversible	At site level	Short term (<1 year)	Low	No change	Insignificant	Given the temporary nature of the construction site, the controlled location of sanitary facilities, as well as regular emptying and maintenance in accordance with hygiene and sanitary standards, the impact is insignificant.	Almost certain	N
			Emissions of pollutants into the atmosphere (generator operation)	Potential low-intensity effect on the environment	Negative	Direct	Cumulative Impact	Reversible	Local	Short term (<1 year)	Moderate	Low	Insignificant	Given the temporary nature of their use, the location of the operating points within the construction site perimeter, and the application of technical maintenance measures for the equipment, the impact is insignificant.	Possible	M
		Storage of materials needed for construction / waste and equipment	Modification of the landscape structure	Potential low-intensity impact on the environment	Negative	Direct	Cumulative Impact	Reversible	Local	Short term (<1 year)	Low	Low	Insignificant	Specific works may cause temporary disruption to the landscape due to the presence of machinery, storage of materials, and temporary changes to the terrain, having a reversible negative impact on the visual perception of the area.	Almost certain	H
			The occurrence of surface morphological processes (collapses, landslides)	Potential low-intensity effect on the environment	Negative	Direct	Cumulative Impact	Reversible	At site level	Short term (<1 year)	Low	Low	Insignificant	The potential risk of landslides may lead to the accidental capture of local fauna individuals, thus impacting this component	Possible	M
			Generation of air pollutants (PM10 and PM2.5 particulate matter)	Potential low-intensity effect on the environment	Negative	Direct	Cumulative Impact	Reversible	Local	Short term (<1 year)	Moderate	Low	Insignificant	Given the static and temporary nature of storage, the location within the construction site perimeter, and the application of protective measures (covering powdery materials, wetting surfaces), the impact is insignificant.	Possible	M

Project phase	Intervention	Activity	Effect generated	Potential impact	Impact characteristics										Risk without implementation of project measures	
					Nature of impact	Type of impact	Cumulative	Reversible	Spatial expansion	Temporal expansion	Receptor sensitivity	Magnitude	Significance of impact	Justification		Probability of occurrence
			Generation of pollutants in the soil	Temporary physical changes to the soil layer	Negative	Direct and indirect	Cumulative and residual	Reversible	Local	Short term (<1 year)	Low	High	Significant	Construction site activities involving temporary storage of materials, handling of fuels, or operation of equipment may lead to soil pollution through accidental spills of hazardous substances (fuels, oils, chemicals).	Unlikely	M
	Works for the construction of access roads and BESS platforms	Soil stripping/digging/excavation Earthmoving activities (excavation, digging, filling, leveling, loading, unloading, transport) Compaction/leveling Structural work: formwork, reinforcement, concrete pouring for foundations and formwork removal	Removal of vegetation	Temporary physical changes to the soil layer	Negative	Indirect	Cumulative impact	Reversible	At the site level	Short term (<1 year)	Low	Very low	Insignificant	Given the low value of the biotic factor for the proposed site, which is currently a former industrial site with an almost flat topography, soil erosion, even if it occurs, will be almost negligible.	Probable	L
Generation of pollutant emissions into the atmosphere caused by the handling of earth masses (PM2.5, PM10)			Possible effect on air quality	Negative	Direct	Cumulative impact	Reversible	Local	Short term (<1 year)	Low	Very low	Very low	Insignificant	The accumulation of dust generated by the implementation of the project, combined with the current local situation, will only occur in the event of strong winds, and mud will only form if the work schedule overlaps with a period of precipitation.	Possible	L
The occurrence of surface morphological processes (collapses, landslides)			Potential low-intensity effect on the environment	Negative	Direct	Cumulative impact	Reversible	At the site level	Short term (<1 year)	Low	Low	Low	Insignificant	The potential risk of landslides may lead to the accidental capture of local fauna individuals, thus impacting this component	Possible	M
Temporary change in natural drainage			Potential low-intensity effect on the environment	Negative	Direct	Cumulative impact	Reversible	At the site level	Short term (<1 year)	Low	Very low	Very low	Insignificant	Soil drainage will only be temporarily affected during this period, but given that the area is already subject to severe drought, this will not significantly affect the contribution to groundwater bodies.	Possible	L
					Noise and vibrations	Possible acoustic effect on the area of influence	Negative	Direct	Cumulative impact	Reversible	At the site level	Short term (<1 year)	Low	Low	Insignificant	The expected impact is very low, due only to the demolition of existing structures on the site
	Connection to utilities	Works to ensure utilities (water supply, sewerage, electricity supply)	Accidental infiltration into soil and water	Temporary physical changes to the soil layer	Negative	Direct and indirect	Cumulative and residual	Reversible	Local	Short term (<1 year)	Low	High	Significant	In the event of improper operation of the hydrocarbon separator, water infiltration potentially contaminated with hydrocarbons may occur, affecting soil quality and, implicitly, the quality of the groundwater aquifer in the project area.	Possible	H
					Emissions of pollutants into the atmosphere (generator operation)	Potential low-intensity effect on the environment	Negative	Direct	Cumulative impact	Reversible	Local	Short term (<1 year)	Moderate	Low	Insignificant	Given the temporary nature of their use, the location of the operating points within the construction site perimeter, and the application of technical maintenance measures for the equipment, the impact is insignificant.

Project phase	Intervention	Activity	Effect generated	Potential impact	Impact characteristics										Risk without implementation of project measures	
					Nature of impact	Type of impact	Cumulative	Reversible	Spatial expansion	Temporal expansion	Receptor sensitivity	Magnitude	Significance of impact	Justification		Probability of occurrence
		Installation of BESS containers, inverters, and HVAC systems Installation of transformers, medium/low voltage cables	Accidental spills of petroleum products from machinery – pollutant emissions into water – pollutant emissions into water	Temporary physical changes to the soil layer	Negative	Direct and indirect	Cumulative and residual impact	Reversible	Local	Short term (<1 year)	Low	High	Significant	The use of heavy machinery and lifting equipment may lead to accidental spills of petroleum products (fuels, oils), with the potential to pollute groundwater bodies.	Possible	H
			Noise and vibration generation	Possible effect on air quality	Negative	Direct	Cumulative impact	Reversible	At site level	Short term (<1 year)	Low	Low	Insignificant	Even if noise levels will be increased during the construction period, the high values will not significantly affect sensitive receptors in the area, given the temporary nature and reversibility of this potential impact.	Possible	M
			Waste generation	Waste generation with local impact	Negative	Direct	Cumulative impact	Reversible	At site level	Short term (<1 year)	Low	Low	Insignificant	Waste generation, storage, and improper disposal may lead to a potential negative impact on sensitive receptors at the site and in its immediate vicinity.	Possible	M
		Connection of systems to the EMS (Energy Management System) – handling of equipment that may contain dielectric oils and technical liquids	Accidental spills of petroleum products from equipment – emissions of pollutants into water – emissions of pollutants into water	Negative	Direct and indirect	Cumulative and residual impact	Reversible	Local	Short term (<1 year)	Low	High	Significant	In the event of an accidental crack, fuel leakage may occur, which can infiltrate the soil and groundwater if rapid and prompt action is not taken.	Unlikely	M	
	Internal electrical work	Laying cables between equipment (AC and DC) Installation of electrical panels, command and control equipment	Waste generation	Temporary physical changes to the soil layer	Negative	Direct	Cumulative impact	Reversible	At the site level	Short term (<1 year)	Low	Low	Insignificant	Waste generation, storage, and improper disposal may lead to a potential negative impact on sensitive receptors at the site and in its immediate vicinity.	Possible	M
			Waste generation	Waste generation with local impact	Negative	Direct	Cumulative impact	Reversible	At site level	Short term (<1 year)	Low	Low	Insignificant	Waste generation, storage, and improper disposal may lead to a potential negative impact on sensitive receptors at the site and in its immediate vicinity.	Possible	M
	Installation of security and safety systems	Installation of fire detection systems (sensors, automatic extinguishing)	Noise generation during testing	Possible acoustic effect on the area of influence	Negative	Direct	Cumulative impact	Reversible	At the site level	Short term (<1 year)	Low	Low	Insignificant	Even if the noise level will increase temporarily, the high values will not significantly influence the sensitive receptors in the area, given the temporary nature and reversibility of this potential impact.	Possible	M

Project phase	Intervention	Activity	Effect generated	Potential impact	Impact characteristics										Risk without implementation of project measures	
					Nature of impact	Type of impact	Cumulative	Reversible	Spatial expansion	Temporal expansion	Receptor sensitivity	Magnitude	Significance of impact	Justification		Probability of occurrence
			Accidental spills of pollutants	Potential low-intensity effect on the environment	Negative	Direct and indirect	Cumulative and residual	Reversible	Local	Short term (<1 year)	Low	High	Significant	In the event of an incident requiring intervention and the use of fire extinguishers, excessive use combined with a period of strong winds may disperse substances at ground level and into the local flora.	Unlikely	M
			Nighttime light pollution	Potential low-intensity effect on the environment	Negative	Direct	Cumulative and residual	Reversible	Local	Long term (>5 years)	Low	Low	Insignificant	The use of lighting systems that are not attractive to flying invertebrates (and therefore have an impact on bats and birds) may have a local impact on the local fauna.	Probable	M
	Connection to the electricity grid (SEN)	Marking and preparing the route on agricultural land	Temporary removal of vegetation	Potential low-intensity impact on the environment	Negative	Direct	Residual impact	Reversible	At the site level	Short term (<1 year)	Low	Very low	Insignificant	It must be ensured that disposal is carried out properly without affecting biodiversity elements in the site area.	Almost certain	M
			Generation of air pollutant emissions	Possible effect on air quality	Negative	Direct	Cumulative impact	Reversible	Local	Short term (<1 year)	Low	Very low	Insignificant	The accumulation of dust generated by the implementation of the project, combined with the current local situation, will only occur in the event of strong winds, and mud will only form if the work schedule overlaps with a period of precipitation.	Possible	L
		Mechanized excavation for cable laying/Crossings Installation of medium voltage LES cables	Noise generation	Possible acoustic effect on the area of influence.	Negative	Direct	Cumulative impact	Reversible	At the site level	Short term (<1 year)	Low	Low	Insignificant	The expected impact is very low, due only to mechanized excavation for cable laying.	Probable	M
			Accidental spills of pollutants into the soil	Temporary physical changes to the soil layer	Negative	Direct and indirect	Cumulative and residual	Reversible	Local	Short term (<1 year)	Low	High	Significant	In the event of an accidental crack, fuel leakage may occur, which can infiltrate the soil and groundwater if rapid and prompt action is not taken.	Unlikely	M
			Restoration of land affected by construction works	Soil compaction; use of fill material	Temporary physical changes to the soil layer	Negative	Direct	Residual impact	Reversible	At the site level	Short term (<1 year)	Low	Very low	Insignificant	Activity will only take place during the construction phase, after which it will cease, affecting only the area required for the construction site	Almost certain
	Building renovation (headquarters)	Structural reinforcement of the building	Generation of air emissions	Possible effect on air quality	Negative	Direct	Cumulative impact	Reversible	At the site level	Short term (<1 year)	Low	Low	Insignificant	Waste generation, storage, and improper disposal may lead to a potential negative impact on sensitive receptors at the site and in its immediate vicinity.	Possible	M
			Waste generation	Temporary physical changes to the soil layer	Negative	Direct	Cumulative impact	Reversible	At the site level	Short term (<1 year)	Low	Low	Insignificant	Waste generation, storage, and improper disposal may lead to a potential negative impact on sensitive receptors at the site and in its immediate vicinity.	Possible	M

Project phase	Intervention	Activity	Effect generated	Potential impact	Impact characteristics										Risk without implementation of project measures	
					Nature of impact	Type of impact	Cumulative	Reversible	Spatial expansion	Temporal expansion	Receptor sensitivity	Magnitude	Significance of impact	Justification		Probability of occurrence
		Interior work (painting, installations)	Pollutant emissions	Possible effect on air quality	Negative	Direct	Cumulative impact	Reversible	At site level	Short term (<1 year)	Low	Low	Insignificant	The use of paints, especially solvent-based ones, can generate emissions of volatile organic compounds (VOCs), with a temporary negative impact on air quality	Possible	M
			Waste generation	Generation of waste with local impact	Negative	Direct	Cumulative impact	Reversible	At site level	Short term (<1 year)	Low	Low	Insignificant	Waste generation, storage, and improper disposal may lead to a potential negative impact on sensitive receptors at the site and in its immediate vicinity.	Possible	M
	Restoration of areas affected by BESS construction works	Restoration of temporarily affected land areas: waste disposal, leveling, grass planting	Waste generation	Potential low-intensity impact on the environment	Negative	Direct	Cumulative impact	Reversible	At site level	Short term (<1 year)	Low	Low	Insignificant	The removal of construction debris may generate emissions of suspended particulate matter (PM10/PM2.5) and dust as a result of material handling and vehicle traffic, having a temporary negative impact on local air quality	Almost certain	H
			Introduction of invasive species	Potential low-intensity effect on the environment	Negative	Direct and indirect	Cumulative and residual	Irreversible	Local	Medium term (< 5 years)	Low	Low	Insignificant	Seeds may be dispersed by wind up to 500 m from the works, given that the vicinity of the site is home to habitats where invasive species can easily penetrate.	Possible	M
			Emissions into the atmosphere	Possible effect on air quality	Negative	Direct	Cumulative impact	Reversible	At site level	Short term (<1 year)	Moderate	Low	Insignificant	Land restoration works, including waste removal, surface levelling and grass planting, may generate temporary emissions of dust and suspended particles (PM10, PM2.5) through the handling of materials and the stirring up of dust by machinery.	Likely	M
	33kV/110kV transformer station	Platform construction Assembly operations (including the execution of foundations)	Permanent occupation of the land	Possible effect on air quality	Negative	Direct and indirect	Residual impact	Reversible	At site level	Short term (<1 year)	Moderate	Low	Insignificant	The artificialization of soil surfaces by covering them with impermeable materials causes the loss of the ecological functions of the soil, with a permanent negative impact on water infiltration, soil biodiversity, and natural regeneration capacity.	Almost certain	H
			Noise	Possible acoustic effect on the area of influence	Negative	Direct	Cumulative impact	Reversible	At the site level	Short term (<1 year)	Low	Low	Insignificant	Even if noise levels will be increased during the construction period, the high values will not significantly affect sensitive receptors in the area, given the temporary nature and reversibility of this potential impact.	Probable	M
			Air pollutants	Potential low-intensity effect on the environment	Negative	Direct	Cumulative impact	Reversible	Local	Short term (<1 year)	Moderate	Low	Insignificant	The expected impact is low, due only to the installation and foundation works.	Possible	M
			Waste generation	Potential low-intensity impact on the environment	Negative	Direct	Cumulative impact	Reversible	At site level	Short term (<1 year)	Low	Low	Insignificant	The platform construction and assembly activities, including foundation works, will generate limited amounts of waste, consisting mainly of construction debris, packaging, and inert waste.	Almost certain	H

Project phase	Intervention	Activity	Effect generated	Potential impact	Impact characteristics										Risk without implementation of project measures	
					Nature of impact	Type of impact	Cumulative	Reversible	Spatial expansion	Temporal expansion	Receptor sensitivity	Magnitude	Significance of impact	Justification		Probability of occurrence
Operation	BESS operation	Electricity storage in batteries Maintenance and control activities	Infiltration of hazardous substances into the soil	Temporary physical changes to the soil layer	Negative	Direct and indirect	Cumulative and residual	Reversible	Local	Short term (<1 year)	Low	High	Significant	In the event of an accidental crack, fuel leakage may occur, which can infiltrate the soil and groundwater if rapid and prompt action is not taken.	Unlikely	M
			Waste generation	Waste generation with local impact	Negative	Direct	Cumulative impact	Reversible	At the site level	Short term (<1 year)	Low	Low	Insignificant	Waste generation, storage, and improper disposal may lead to a potential negative impact on sensitive receptors at the site and in its immediate vicinity.	Possible	M
			Air pollutant emissions	Possible effect on air quality	Negative	Direct	Cumulative impact	Reversible	At site level	Short term (<1 year)	Low	Low	Insignificant	The process of storing electricity in batteries, as well as the associated maintenance and control activities, may generate insignificant emissions of atmospheric pollutants, mainly as a result of the auxiliary operation of equipment and periodic technical interventions.	Possible	M
			Noise generation	Possible acoustic effect on the area of influence	Negative	Direct	Cumulative impact	Reversible	At the site level	Short term (<1 year)	Low	Low	Insignificant	Equipment associated with the electricity storage system, as well as maintenance and control activities, may generate a low and occasional level of noise, mainly during the operation of ventilation equipment or technical interventions.	Likely	M
	Transformer station operation Maintenance and servicing activities	Existence of contact elements contact elements that pose a risk of electrocution	Electrocution of birds	Potential low-intensity effect on the environment	Negative	Direct	Cumulative impact	Irreversible	At site level	Long term (>5 years)	Moderate	Low	Insignificant	The presence of overhead power lines may lead to the risk of electrocution of birds, especially large species, generating a potential negative impact on birdlife.	Unlikely	L
Decommissioning	Site organization	Land development	Vegetation clearance	Potential low-intensity impact on the environment	Negative	Direct	Residual impact	Reversible	At the site level	Short term (<1 year)	Low	Very low	Insignificant	It must be ensured that disposal is carried out properly without affecting biodiversity elements in the site area	Almost certain	M
		Removal of topsoil	Removal of topsoil and vegetation	Temporary physical changes to the soil layer	Negative	Direct	Cumulative impact	Reversible	At the site level	Short term (<1 year)	Low	Very low	Insignificant	Removing topsoil and vegetation generates emissions of particulate matter (PM10/PM2.5) through dust suspension and the use of machinery, having a temporary negative impact on air quality in the work area.	Almost certain	M
		Storage of stripped soil	Generation of pollutants into the atmosphere	Possible effect on air quality	Negative	Direct	Cumulative impact	Reversible	Local	Short term (<1 year)	Low	Very low	Insignificant	The accumulation of dust generated by the implementation of the project, combined with the current local situation, will only occur in the event of strong winds, and mud will only form if the work schedule overlaps with a period of precipitation.	Possible	L

Project phase	Intervention	Activity	Effect generated	Potential impact	Impact characteristics										Risk without implementation of project measures		
					Nature of impact	Type of impact	Cumulative	Reversible	Spatial expansion	Temporal expansion	Receptor sensitivity	Magnitude	Significance of impact	Justification		Probability of occurrence	
		Ballast layer laying works	Atmospheric emissions	Possible effect on air quality	Negative	Direct	Cumulative Impact	Reversible	At site level	Short term (<1 year)	Low	Very low	Insignificant	Ballast layer laying works generate emissions of suspended particles (PM10/PM2.5) through the resuspension of dust and the use of machinery, having a temporary negative impact on air quality in the work area.	Almost certain	M	
		Compaction/levelling works	Temporary modification of natural drainage	Potential low-intensity effect on the environment	Negative	Direct	Cumulative Impact	Reversible	At site level	Short term (<1 year)	Low	Very low	Insignificant	Soil drainage will only be temporarily affected during this period, but given that the area is already subject to severe drought, this will not significantly influence the contribution to groundwater bodies.	Possible	L	
		Construction site traffic/operation of machinery necessary to carry out the works	Intense traffic of heavy and light machinery	Potential low-intensity impact on the environment	Negative	Direct	Cumulative Impact	Reversible	Local	Short term (<1 year)	Moderate	Low	Low	Insignificant	The project will lead to an increase in the number of machines and vehicles, having a cumulative impact on existing local activities (mainly agricultural), but this will only be characteristic of the construction period.	Almost certain	H
			Increased noise and vibration levels	Possible acoustic effect on the area of influence	Negative	Direct	Cumulative Impact	Reversible	At the site level	Short term (<1 year)	Low	Low	Low	Insignificant	Even if noise levels will be increased during the construction period, the high values will not significantly affect sensitive receptors in the area, given the temporary nature and reversibility of this potential impact.	Probable	M
	Dismantling of BESS systems	Dismantling of all facilities	Increase in noise and vibration levels	Possible acoustic effect on the area of influence	Negative	Direct	Cumulative Impact	Reversible	At the site level	Short term (<1 year)	Low	Low	Low	Insignificant	Even though noise levels will be elevated during the construction period, the high values will not significantly affect sensitive receptors in the area, given the temporary nature and reversibility of this potential impact.	Probable	M
			Air pollutant emissions	Potential low-intensity effect on the environment	Negative	Direct	Cumulative Impact	Reversible	Local	Short term (<1 year)	Low	Low	Low	Insignificant	Demolition works generate emissions of particulate matter (PM10/PM2.5) and nitrogen oxides (NOx) as a result of material handling and heavy machinery operation, having a temporary negative impact on air quality	Possible	M
	Decommissioning of technological platforms and foundations	Vegetation clearance works	Temporary removal of vegetation	Potential low-intensity impact on the environment	Negative	Direct	Residual Impact	Reversible	At the site level	Short term (<1 year)	Low	Very low	Insignificant	It must be ensured that disposal is carried out properly without affecting biodiversity elements in the site area.	Almost certain	M	
		Stripping of the topsoil layer	Temporary removal of soil	Temporary physical changes to the soil layer	Negative	Direct	Cumulative Impact	Reversible	At the site level	Short term (<1 year)	Low	Very low	Insignificant	Temporary removal of soil generates emissions of suspended particles (PM10/PM2.5) through the resuspension of dust and the use of machinery, having a temporary negative impact on air quality in the work area.	Almost certain	M	
		Storage of stripped soil	Generation of dust and mud	Possible effect on air quality	Negative	Direct	Cumulative Impact	Reversible	Local	Short term (<1 year)	Low	Very low	Insignificant	The accumulation of dust generated by the implementation of the project, combined with the current local situation, will only occur in the event of strong winds, and mud will only form if the work schedule overlaps with a period of precipitation.	Possible	L	

Project phase	Intervention	Activity	Effect generated	Potential impact	Impact characteristics										Risk without implementation of project measures		
					Nature of impact	Type of impact	Cumulative	Reversible	Spatial expansion	Temporal expansion (<1 year)	Receptor sensitivity	Magnitude	Significance of impact	Justification		Probability of occurrence	
	Foundation demolition works	Noise		Possible acoustic effect on the area of influence.	Negative	Direct	Cumulative Impact	Reversible	At the site level	Short term (<1 year)	Low	Low	Insignificant	Even if noise levels will be increased during the construction period, the high values will not significantly affect sensitive receptors in the area, given the temporary nature and reversibility of this potential impact.	Probable	M	
		Air pollutant emissions		Potential low-intensity effect on the environment	Negative	Direct	Cumulative Impact	Reversible	Local	Short term (<1 year)	Low	Low	Insignificant	Demolition works generate emissions of particulate matter (PM10/PM2.5) and nitrogen oxides (NOx) as a result of material handling and heavy machinery operation, having a temporary negative impact on air quality	Possible	M	
		Waste (including hazardous waste)		Generation of waste with local impact	Negative	Direct	Cumulative Impact	Reversible	At site level	Short term (<1 year)	Low	Low	Insignificant	Waste generation, storage, and improper disposal may lead to a potential negative impact on sensitive receptors at the site and in its immediate vicinity.	Possible	M	
		Air pollutant emissions	Possible effect on air quality	Negative	Direct	Cumulative Impact	Reversible	Local	Short term (<1 year)	Low	Low	Insignificant	Compaction works generate emissions of particulate matter (PM10/PM2.5) and nitrogen oxides (NOx) as a result of material handling and heavy machinery operation, having a temporary negative impact on air quality	Possible	M		
													Noise emissions	Possible effect on air quality	Negative	Direct	Cumulative Impact
		Construction site vehicle traffic/operation of machinery necessary for the works	Accidental spills of pollutants on the ground		Temporary physical changes to the soil layer	Negative	Direct and indirect	Cumulative and residual impact	Reversible	At the site level	Short term (<1 year)	Moderate	High	Significant	Accidental spills of pollutants on the ground can lead to chemical contamination of the surface layer, affecting soil quality, edaphic biodiversity, and potentially groundwater, with a negative impact at the point of impact.	Rare	L
			Vegetation clearing work	Removal of vegetation	Potential low-intensity impact on the environment	Negative	Direct	Residual Impact	Reversible	At the site level	Short term (<1 year)	Low	Very low	Insignificant	It must be ensured that disposal is carried out properly without affecting biodiversity elements in the site area	Almost certain	M
		Decommissioning of electrical connections and removal of underground cables	Removal of the topsoil layer	Temporary removal of soil	Temporary physical changes to the soil layer	Negative	Direct	Cumulative Impact	Reversible	At the site level	Short term (<1 year)	Low	Very low	Insignificant	Temporary removal of soil generates emissions of suspended particles (PM10/PM2.5) through the resuspension of dust and the use of machinery, having a temporary negative impact on air quality in the work area.	Almost certain	M
			Trench digging works	Noise	Possible acoustic effect on the area of influence	Negative	Direct	Cumulative Impact	Reversible	At the site level	Short term (<1 year)	Low	Low	Insignificant	Even if noise levels will be increased during the construction period, the high values will not significantly affect sensitive receptors in the area, given the temporary nature and reversibility of this potential impact.	Probable	M

Project phase	Intervention	Activity	Effect generated	Potential impact	Impact characteristics										Risk without implementation of project measures		
					Nature of impact	Type of impact	Cumulative	Reversible	Spatial expansion	Temporal expansion	Receptor sensitivity	Magnitude	Significance of impact	Justification		Probability of occurrence	
			Emissions of suspended particulate matter from earthworks (PM10, PM2.5)	Potential low-intensity effect on the environment	Negative	Direct	Cumulative Impact	Reversible	Local	Short term (<1 year)	Low	Low	Insignificant	Trench digging works generate emissions of particulate matter (PM10/PM2.5) and nitrogen oxides (NOx) as a result of material handling and heavy machinery operation, having a temporary negative impact on air quality	Possible	M	
		Storage of soil from excavations	Occupation of additional land areas	Possible effect on air quality	Negative	Direct and indirect	Cumulative Impact	Reversible	Local	Short term (<1 year)	Low	Low	Low	Insignificant	The occupation of additional land areas involves the reduction of natural habitats and the temporary or permanent loss of soil ecological functions, generating a negative impact on the landscape and local biodiversity.	Almost certain	H
			Temporary landscape disturbance	Potential low-intensity environmental impact	Negative	Direct	Cumulative Impact	Reversible	Local	Short term (<1 year)	Low	Low	Low	Insignificant	Specific works may cause temporary disruption to the landscape due to the presence of machinery, storage of materials, and temporary changes to the terrain, having a reversible negative impact on the visual perception of the area.	Almost certain	H
			Emissions of suspended particulate matter from earthworks (PM10, PM2.5)	Possible effect on air quality	Negative	Direct	Cumulative Impact	Reversible	Local	Short term (<1 year)	Low	Low	Low	Insignificant	Temporary storage of soil may cause a temporary negative impact on air quality during periods of strong winds	Possible	M
			Removal of electrical cables	Waste	Generation of waste with local impact	Negative	Direct	Cumulative Impact	Reversible	At site level	Short term (<1 year)	Low	Low	Low	Insignificant	Waste generation, storage, and improper disposal may lead to a potential negative impact on sensitive receptors at the site and in its immediate vicinity.	Possible
		Filling ditches and leveling the ground	Air pollutants	Potential low-intensity impact on the environment	Negative	Direct	Cumulative Impact	Reversible	Local	Short term (<1 year)	Low	Low	Low	Insignificant	Filling trenches and leveling the ground generates emissions of particulate matter (PM10/PM2.5) and nitrogen oxides (NOx) as a result of handling materials and operating heavy machinery, having a temporary negative impact on air quality.	Possible	M
		Restoration of vegetation cover	Spread of invasive plant species	Potential low-intensity impact on the environment	Negative	Direct and indirect	Cumulative and residual	Irreversible	Local	Medium term (< 5 years)	Low	Low	Low	Insignificant	Seeds may be dispersed by wind up to 500 m from the works, given that the vicinity of the site is home to habitats where invasive species can easily penetrate.	Possible	M
		Construction site traffic/operation of machinery necessary for the works	Emissions of pollutants into the atmosphere (NOx, SO2, CO, GHG, PM2.5, PM10)	Possible effect on air quality	Negative	Direct	Cumulative Impact	Reversible	At site level	Short term (<1 year)	Moderate	Low	Low	Insignificant	Impact generated only by traffic related to the organization of the construction site for the decommissioning phase	Probable	M
			Increased noise and vibration levels	Possible acoustic effect on the area of influence	Negative	Direct	Cumulative Impact	Reversible	At the site level	Short term (<1 year)	Low	Low	Low	Insignificant	Even if noise levels will be increased during the construction period, the high values will not significantly affect sensitive receptors in the area, given the temporary nature and reversibility of this potential impact.	Probable	M

Project phase	Intervention	Activity	Effect generated	Potential impact	Impact characteristics										Risk without implementation of project measures		
					Nature of impact	Type of impact	Cumulative	Reversible	Spatial expansion	Temporal expansion	Receptor sensitivity	Magnitude	Significance of impact	Justification		Probability of occurrence	
	Decommissioning of access roads	Works to remove the topsoil layer, storage and handling of earth masses	Localized emission of suspended particles (PM2.5 and PM10)	Possible effect on air quality	Negative	Direct	Cumulative Impact	Reversible	Local	Short term (<1 year)	Moderate	Low	Insignificant	Dust generation may be compounded by existing local activities, mainly agricultural ones	Possible	M	
		Removal of the ballast layer	Increased noise and vibration levels	Immediate noise and discomfort	Negative	Direct	Cumulative Impact	Reversible	At the site level	Short term (<1 year)	Low	Low	Insignificant	Even if noise levels will be increased during the construction period, the high values will not significantly affect sensitive receptors in the area, given the temporary nature and reversibility of this potential impact.	Probable	M	
		Compaction/levelling works	Emissions of pollutants into the atmosphere (NOx, SO2, CO, GHG, PM2.5, PM10)	Possible effect on air quality	Negative	Direct	Cumulative Impact	Reversible	At site level	Short term (<1 year)	Moderate	Low	Low	Insignificant	Impact generated only by traffic related to the organization of the construction site for the decommissioning phase	Probable	M
		Construction site traffic/operation of machinery necessary for the works	Increase in noise and vibration levels	Increase in noise and vibration levels	Negative	Direct	Cumulative Impact	Reversible	At the site level	Short term (<1 year)	Low	Low	Low	Insignificant	Even if noise levels will be increased during the construction period, the high values will not significantly affect sensitive receptors in the area, given the temporary nature and reversibility of this potential impact.	Probable	M
	Land restoration works upon completion of construction	Restoration of the site where the works were carried out and rehabilitation of the temporarily used areas	Spread of invasive plant species	Potential low-intensity impact on the environment	Negative	Direct and indirect	Cumulative and residual	Irreversible	Local	Medium term (< 5 years)	Low	Low	Low	Insignificant	Seeds may be dispersed by wind up to 500 m from the works, given that the vicinity of the site is home to habitats where invasive species can easily penetrate.	Possible	M
		Removal of all installations, equipment, and waste, and reinstallation of the topsoil on the areas that were temporarily used	Waste generation	Waste generation with local impact	Negative	Direct	Cumulative Impact	Reversible	At site level	Short term (<1 year)	Low	Low	Low	Insignificant	Waste generation, storage, and improper disposal may lead to a potential negative impact on sensitive receptors at the site and in its immediate vicinity.	Possible	M

Conclusions

Following a systematic assessment of the project's impacts, a significant number of direct and indirect effects were identified, distributed across all major implementation stages (construction, operation, and decommissioning). These effects concern multiple environmental components—including air, soil, water, and biodiversity—and are analyzed in correlation with the potential risks associated with each activity described.

- **Air (air quality)**

The project activities, especially those associated with the construction phase (demolition, transport, material handling), generate emissions of dust and suspended particles (PM10, PM2.5), as well as gaseous pollutants (NO_x, CO). The direct impacts on air quality are significant at the site level, with indirect effects also identified, such as deposits on nearby vegetation. It is recommended to integrate good air management practices that can contribute to the creation of a replicable model for similar projects.

- **Noise and vibrations**

The main sources of noise identified are construction equipment and road transport. The direct impacts concern the discomfort felt by the local population and, indirectly, the possible impact on wildlife. The analysis reveals clear risks regarding exposure to high noise levels, especially during the execution phase. The use of quiet technologies or the installation of dual-function noise barriers (noise reduction + ecological barriers) should be considered.

- **Soil and subsoil**

Interventions on the soil (excavations, compaction, material storage) can lead to temporary or permanent loss of fertility and changes in the structure of the geological substrate. Direct impacts on the physical degradation of the soil and, in some situations, risks of contamination are highlighted. The possibilities for ecological soil reconstruction or the restoration of affected areas must be considered as part of a restoration program.

- **Surface and groundwater**

The use of water resources and possible accidental contamination during the execution of works are the main sources of impact. It is recommended that water efficiency and rainwater harvesting measures be included as positive elements in the environmental plan.

- **Biodiversity**

Impacts on flora and fauna are mainly indirect, being generated by possible habitat fragmentation, noise, vibrations, and the presence of heavy equipment. The integration of active conservation measures could transform part of the pressure exerted by the project into a real contribution to habitat restoration.

- **Landscape**

Landscape changes are generally temporary, but may visually affect areas adjacent to the site.

- **Cultural heritage**

No direct impacts on heritage sites have been identified, but the analysis reveals potential risks related to accidental archaeological discoveries.

- **Climate**

The project's contributions to GHG emissions are estimated indirectly through transport and operation activities.

The activities carried out during the construction phase of the project generate low-impact impacts with a moderate probability of occurrence, which translates into a moderate level of potential risk. The impacts are localized at the site and are predominantly temporary, being mainly associated with demolition, excavation, dust generation, noise, vibrations, and waste handling.

These effects can be effectively managed by applying standard prevention and control measures, without requiring major corrective interventions.

Negative impact - High risk (warnings):

- Dust and airborne particles released near inhabited areas
- Noise and vibrations from heavy equipment and transport
- Temporary damage to soil quality due to excavation and compaction

Positive impact (opportunities created)

- Creation of temporary jobs for the local population
- Possibility of using low-carbon materials
- Implementation of sustainable practices for site organization (efficient waste management, reuse of resources)
- Improvement of local infrastructure in the short term

Risk matrix during the construction phase							
Probability	Severity/Magnitude						
	Score	0	1	2	3	4	5
		No change	Very low	Low	Average	High	Very high
Almost certain: expected to happen	5	N	M	H	C	C	C
Probable: likely to happen	4	N	L	M	H	C	C
Possible: could happen in some circumstances	3	N	L	M	M	H	C
Unlikely: may happen at some point	2	N	L	L	M	M	H
Rare: only in exceptional circumstances	1	N	L	L	L	L	M
Impossible: cannot happen	0	N	N	N	N	N	N

During the operational phase, the project generates negative environmental impacts, but with a low probability of occurrence, indicating a moderate risk profile. The impacts are associated with the operation of fixed equipment and installations, with predominantly isolated and controllable effects under normal operating conditions.

The benefits associated with the efficient and reliable operation of the system overlap with a limited set of technical or environmental risks, which can be effectively managed through maintenance and continuous monitoring.

Negative impact – high risk (warnings):

- Possible equipment malfunctions (e.g., leaks, overloads)
- Point source emissions (noise, vibrations, GHG) under abnormal operating conditions
- Low risk of technical incidents with local environmental impact

Opportunities created:

- Stable operation with increased energy efficiency
- No continuous generation of waste or major emissions
- Positive contribution to reducing the carbon footprint
- Reduced need for corrective interventions under normal conditions

Risk matrix during the operational phase							
Probability	Severity/Magnitude						
	Score	0	1	2	3	4	5
		No change	Very low	Low	Average	High	Very high
Almost certain: expected to happen	5	N	M	H	C	C	C
Probable: likely to happen	4	N	L	M	H	C	C
Possible: could happen in some circumstances	3	N	L	M	M	H	C
Unlikely: may happen at some point	2	N	L	L	M	M	H
Rare: only in exceptional circumstances	1	N	L	L	L	L	M
Impossible: cannot happen	0	N	N	N	N	N	N

Decommissioning involves very low intensity impacts, but with a high probability of occurrence, as it involves planned and predictable operations (e.g., dismantling, cleaning, removal of materials). The environmental effects are minor and reversible, localized exclusively at the site. These do not pose significant risks to environmental components, and the overall risk profile remains moderate, easily manageable through standard measures.

Negative impacts – high risk (warnings):

- Generation of waste resulting from decommissioning (non-hazardous but bulky)
- Dust resulting from dismantling work
- Need for good organization for handling and transporting materials

Positive impacts – opportunities:

- Possibility of recycling recovered materials
- Temporary reuse of site infrastructure
- Return of the area to a natural ecological state or its conversion
- Elimination of potential sources of post-exploitation pollution

Risk matrix during the decommissioning phase							
Probability	Severity/Magnitude						
	Score	0	1	2	3	4	5
		No change	Very low	Low	Average	High	Very high
Almost certain: expected to happen	5	N	M	H	C	C	C
Probable: likely to happen	4	N	L	M	H	C	C
Possible: could happen in some circumstances	3	N	L	M	M	H	C
Unlikely: may happen at some point	2	N	L	L	M	M	H
Rare: only in exceptional circumstances	1	N	L	L	L	L	M
Impossible: cannot happen	0	N	N	N	N	N	N

5.1.2.5 Measures to prevent and reduce impact

The following table summarises the measures to avoid, reduce and compensate for the environmental impacts identified following the assessment of the activities proposed in the project. For each potential environmental effect generated, specific mitigation measures have been established, correlated with the characteristics of the effect (duration, reversibility, severity, probability) and with the sensitivity of the affected receptors. This plan aims to ensure compliance with legal environmental requirements and the application of best available practices in the field of environmental impact management.

Table 42 : Assessment of the significance of residual impact

Project phase	Activities	Effects generated	Potential impact	Significance of impact	Risks generated	Measures
Construction	Demolition of non-functional buildings	Generation of fine dust and particles (including asbestos)	Possible effect on air quality	Insignificant	M	Wetting exposed surfaces and access roads. Transporting dusty materials in covered containers. Avoiding demolition work on windy days.
		Noise from machinery	Possible acoustic effect on the area of influence	Insignificant	M	Use of quiet equipment and regular maintenance. Limiting noisy work to the period between 8:00 a.m. and 6:00 p.m. Installation of sound-absorbing panels around the construction site.
		Vibrations	Possible acoustic effect on the area of influence	Insignificant	N	Monitoring of vibrations with specific equipment. Use of technologies with low impact on the ground.
	Debris removal	Deposition of wet debris on access roads	Potential low-intensity impact on the environment	Insignificant	M	Good general environmental protection practices will be applied in accordance with national regulations.
		Noise and vibrations during loading/unloading	Possible acoustic effect on the area of influence	Not really	M	Use of quiet equipment and regular maintenance. Limitation of noisy work to the period between 08:00 and 18:00. Installation of sound-absorbing panels around the construction site. Monitoring of vibrations with specific equipment. Use of technologies with low impact on the ground.
	Location of workers' barracks (offices, changing rooms, living quarters)	Temporary land occupation	Temporary limitation of land use	Insignificant	L	General good environmental protection practices will be applied in accordance with national regulations.
		Soil levelling and compaction	Temporary physical changes to the soil layer	Not really	M	Impermeable work platforms with gutters for collecting runoff will be set up. Fuels and hazardous materials will be stored in secure, covered, and sealed areas.
		Waste generation	Waste generation with local impact	Insignificant	M	General good environmental protection practices will be applied in accordance with national regulations.
	Transport of materials for construction	NOx and PM10/PM2.5 emissions	Possible effect on air quality	Not really	M	General good environmental protection practices will be applied in accordance with national regulations.
		Noise	Possible acoustic effect on the area of influence	Not a big deal	M	Use of quiet equipment and regular maintenance. Limitation of noisy work to the period between 8 a.m. and 6 p.m. Installation of sound-absorbing panels around the construction site.
	Installation of eco-friendly toilets	Need for regular emptying	Potential low-intensity impact on the environment	Insignificant	N	General good environmental protection practices will be applied in accordance with national regulations.
		Possible release of odors	Potential low-intensity effect on the environment	Not really	N	General good environmental practices will be applied in accordance with national regulations.
	Barriers/temporary fencing	Delimitation of the work area	Potential low-intensity impact on the environment	Not significant	N	Good general environmental protection practices will be applied in accordance with national regulations.
		Generation of metal and wood waste	Generation of waste with local impact	Insignificant	M	General good environmental protection practices will be applied in accordance with national regulations.
		Temporary change to the landscape	Potential low-intensity effect on the environment	Not really	M	General good environmental practices will be applied in accordance with national regulations.
	Storage of materials needed for construction / waste and equipment	Zoning on pallets/containers	Potential low-intensity impact on the environment	Insignificant	M	General good environmental protection practices will be applied in accordance with national regulations.
		Local dust generation	Possible effect on air quality	Not really	M	Wetting exposed surfaces and access roads. Transporting dusty materials in covered containers. Avoiding demolition work on windy days.
		Possible blowing of light materials	Potential low-intensity effect on the environment	Insignificant	M	Good general environmental protection practices will be applied in accordance with national regulations.
	Land clearing (removal of vegetation, preparation of flat surfaces)	Removal of weeds/plant debris	Potential low-intensity impact on the environment	Insignificant	M	Good general environmental protection practices will be applied in accordance with national regulations.
	Construction site vehicle traffic/operation of machinery	Dust and pollen generation	Possible effect on air quality	Not really	M	Wetting exposed surfaces and access roads. Transporting dusty materials in covered containers. Avoiding demolition work on windy days.
		Heavy and light machinery traffic	Potential low-intensity effect on the environment	Insignificant	H	Good general environmental protection practices will be applied in accordance with national regulations.
		Emissions and prolonged noise	Possible effect on air quality	Not really	M	Use of quiet equipment and regular maintenance. Limitation of noisy work to the period between 8 a.m. and 6 p.m. Installation of sound-absorbing panels around the construction site.
	Removal of vegetation	Exposure of soil to erosion	Temporary physical changes to the soil layer	Insignificant	L	Impermeable work platforms with gutters for collecting runoff will be set up. Fuels and hazardous materials will be stored in secure, covered, and sealed areas.
	Excavations and backfills	Dust and mud generation	Possible effect on air quality	Insignificant	L	Wetting exposed surfaces and access roads. Transporting dusty materials in covered containers. Avoiding demolition work on windy days.
	Leveling/compaction	Temporary modification of natural drainage	Potential low-intensity effect on the environment	Insignificant	L	Good general environmental protection practices will be applied in accordance with national regulations.

Project phase	Activities	Effects generated	Potential impact	Significance of impact	Risks generated	Measures
	Road structure construction and finishing	Continuous noise and ground vibrations	Possible acoustic effect on the area of influence	Insignificant	M	Use of quiet equipment and regular maintenance. Limitation of noisy work to the period between 8:00 a.m. and 6:00 p.m. Installation of sound-absorbing panels around the construction site. Monitoring of vibrations with specific equipment. Use of technologies with low impact on the ground.
	Roads within the premises	Aggregate and ballast layer	Potential low-intensity impact on the environment	Insignificant	H	Good general environmental protection practices will be applied in accordance with national regulations.
		Waste generation	Waste generation with local impact	Not really	M	General good environmental practices will be applied in accordance with national regulations.
		Noise and vibrations	Possible acoustic effect on the area of influence	Insignificant	M	Use of quiet equipment and regular maintenance. Limitation of noisy work to the period between 8 a.m. and 6 p.m. Installation of sound-absorbing panels around the construction site. Monitoring of vibrations with specific equipment. Use of technologies with low impact on the soil.
	Works to ensure utilities (water supply, sewerage, electricity supply)	Accidental soil contamination due to improper operation of the hydrocarbon separator	Temporary physical changes to the soil layer	Significant	H	Sealing storage areas with impermeable membranes. Regular inspection of containers and tanks. Implementation of a spill response plan.
		Accidental seepage into the soil following the appearance cracks in the buried tank for the diesel generator	Temporary physical changes to the soil layer	Significant	M	Sealing storage areas with impermeable membranes. Regular inspection of containers and tanks. Implementation of a spill response plan.
	Construction of foundations for battery containers, inverters, and other equipment	Soil excavation	Temporary physical changes to the soil layer	Insignificant	H	Waterproof working platforms with gutters for collecting runoff will be set up. Fuels and hazardous materials will be stored in secure, covered, and sealed areas.
		Dust and vibration generation	Possible effect on air quality	Not a big deal	M	Wetting exposed surfaces and access roads. Transporting dusty materials in covered containers. Avoiding demolition work on windy days. Monitoring vibrations with specific equipment. Using technologies with low impact on the soil.
	Identification of cracks, corrosion, or damage	Additional waterproof layer	Potential low-intensity effect on the environment	Insignificant	L	Good general environmental protection practices shall be applied in accordance with national regulations.
		Granular material consumption	Potential low-intensity environmental impact	Not really	L	General good environmental practices shall be applied in accordance with national regulations.
	Cable ducts/drainage	Mud and standing water	Possible interaction with water resources	Not really	M	Waterproof working platforms with gutters for collecting runoff will be set up. Fuels and hazardous materials will be stored in secure, covered, and sealed areas.
		Potential risk of slipping during excavation	Potential low-intensity impact on the environment	Insignificant	M	General good environmental protection practices will be applied in accordance with national regulations.
	Delivery and handling of battery and PCS containers	Mud and stagnant water	Possible interaction with water resources	Not really	M	Waterproof work platforms with gutters for collecting runoff will be installed. Fuels and hazardous materials will be stored in secure, covered, and sealed areas.
	Installation of BESS containers, inverters, and HVAC systems	TIR truck and crane traffic	Potential low-intensity impact on the environment	Insignificant	H	General good environmental protection practices will be applied in accordance with national regulations.
		Noise and emissions during unloading	Possible effect on air quality	Not a big deal	M	Use of quiet equipment and regular maintenance. Limitation of noisy work to the period between 8:00 a.m. and 6:00 p.m. Installation of sound-absorbing panels around the construction site.
	Installation of transformers, medium/low voltage cables	Generation of metal waste and cut cables	Generation of waste with local impact	Insignificant	M	General good environmental protection practices will be applied in accordance with national regulations.
		High need for PPE equipment	Potential low-intensity impact on the environment	Not really	N	General good environmental practices will be applied in accordance with national regulations.
	Connection of systems to EMS (Energy Management System)	Handling heavy equipment	Potential low-intensity effect on the environment	Insignificant	M	General good environmental practices shall be applied in accordance with national regulations.
		Possible leakage of insulating oil	Potential low-intensity effect on the environment	Significant	M	General good environmental practices shall be applied in accordance with national regulations.
	Laying cables between equipment (AC and DC)	Waste generation (excavated soil, packaging)	Temporary physical changes to the soil layer	Not really	M	Waterproof working platforms with gutters for collecting runoff will be set up. Fuels and hazardous materials will be stored in secure, covered, and sealed areas.
	Installation of electrical panels, command and control equipment	Use of sensitive materials	Potential low-intensity effect on the environment	Insignificant	M	Good general environmental protection practices shall be applied in accordance with national regulations.
		Generation of electronic waste if equipment is defective	Generation of waste with local impact	Not really	M	General good environmental practices will be applied in accordance with national regulations.
	Installation of fire detection systems (sensors, automatic extinguishing)	Noise generation during testing	Possible acoustic effect on the area of influence	Insignificant	M	Use of quiet equipment and regular maintenance. Limitation of noisy work to the period between 8:00 a.m. and 6:00 p.m. Installation of sound-absorbing panels around the construction site.
		Dispersion of chemicals in fire extinguishers	Potential low-intensity effect on the environment	Significant	M	Good general environmental protection practices will be applied in accordance with national regulations.
	Installation of video surveillance systems (CCTV), perimeter lighting	Permanent energy consumption	Potential low-intensity impact on the environment	Insignificant	M	General good environmental protection practices will be applied in accordance with national regulations.
		Nighttime light pollution	Potential low-intensity impact on the environment	Not really	M	General good environmental practices will be applied in accordance with national regulations.

Project phase	Activities	Effects generated	Potential impact	Significance of impact	Risks generated	Measures
	Route marking and preparation on agricultural land	Temporary removal of vegetation	Potential low-intensity impact on the environment	Insignificant	M	Good general environmental protection practices will be applied in accordance with national regulations.
	Mechanized excavation for cable laying	Dust and mud generation	Possible effect on air quality	Not really	L	Wetting exposed surfaces and access roads. Transporting dusty materials in covered containers. Avoiding demolition work on windy days.
		Intense mechanical noise	Possible acoustic effect on the area of influence	Insignificant	M	Use of quiet equipment and regular maintenance. Limitation of noisy work to the period between 8:00 a.m. and 6:00 p.m. Installation of sound-absorbing panels around the construction site.
	Installation of medium voltage LES cables	Excavation work for cable positioning in trenches	Potential low-intensity effect on the environment	Insignificant	H	Good general environmental protection practices will be applied in accordance with national regulations.
	Backfilling and restoration of land to its original condition	Soil compaction; use of fill material	Temporary physical changes to the soil layer	Not significant	M	Waterproof working platforms with gutters for collecting runoff will be set up. Fuels and hazardous materials will be stored in secure, covered, and sealed areas.
	Setting up the connection point in the station	Generation of construction waste	Generation of waste with local impact	Insignificant	M	General good environmental protection practices will be applied in accordance with national regulations.
	Power-up and synchronization with the grid	Noisy testing of equipment	Possible acoustic effect on the area of influence	Insignificant	M	Use of quiet equipment and regular maintenance. Restriction of noisy work to the hours between 8 a.m. and 6 p.m. Installation of sound-absorbing panels around the construction site.
	Structural reinforcement of the building	Generation of dust and masonry waste	Possible effect on air quality	Insignificant	M	Wetting exposed surfaces and access roads. Transporting dusty materials in covered containers. Avoiding demolition work on windy days.
	Interior work (painting, installations)	Emissions from paints	Possible effect on air quality	Insignificant	M	General good environmental protection practices will be applied in accordance with national regulations.
		Generation of household waste and materials	Generation of waste with local impact	Not really	M	General good environmental practices will be applied in accordance with national regulations.
	Restoration of temporarily affected land areas: waste disposal, leveling, grass planting	Removal of construction debris	Potential low-intensity impact on the environment	Insignificant	H	General good environmental protection practices will be applied in accordance with national regulations.
		Levelling and planting of grass/local species	Potential low-intensity impact on the environment	Not really	M	General good environmental practices will be applied in accordance with national regulations.
		Moderate compaction to protect the soil	Temporary physical changes to the soil layer	Not really	M	Impermeable work platforms with gutters for collecting runoff will be set up. Fuels and hazardous materials will be stored in secure, covered, and sealed areas.
	Permanent land occupation	Artificialization of soil surfaces	Possible effect on air quality	Insignificant	H	Wetting exposed surfaces and access roads. Transporting dusty materials in covered containers. Avoiding demolition work on windy days.
	Assembly operations (including the construction of foundations)	Noise	Possible acoustic effect on the area of influence	Insignificant	M	Use of quiet equipment and regular maintenance. Limitation of noisy work to the period between 8:00 a.m. and 6:00 p.m. Installation of sound-absorbing panels around the construction site.
		Air pollutants	Potential low-intensity effect on the environment	Insignificant	M	Good general environmental protection practices will be applied in accordance with national regulations.
Operation	Periodic visual inspection of containers and cables	Infiltration of hazardous substances into the soil	Temporary physical changes to the soil layer	Significant	M	Sealing storage areas with impermeable membranes. Periodic inspection of containers and tanks. Implementation of a spill response plan.
	Battery maintenance (cycle tests, replacement of defective cells)	Waste generation (including hazardous waste)	Generation of waste with local impact	Insignificant	M	General good environmental practices will be applied in accordance with national regulations.
	Cleaning and maintenance of HVAC/cooling systems	Waste generation (including hazardous waste)	Waste generation with local impact	Not really	M	General good environmental practices will be applied in accordance with national regulations.
	Hazardous waste management (used batteries)	Pollution caused by improper storage and collection	Potential low-intensity impact on the environment	Not really	M	General good environmental practices will be applied in accordance with national regulations.
	Existence of contact elements contact elements posing a risk of electrocution	Electrocution of birds	Potential low-intensity effect on the environment	Not really	L	General good environmental protection practices will be applied in accordance with national regulations.
Decommissioning	Land development	Vegetation clearance	Potential low-intensity impact on the environment	Insignificant	M	Controlled disposal of plant waste. Avoidance of deforestation during the wildlife breeding season. Protection of native or rare species identified in the area.
	Removal of topsoil	Removal of topsoil and vegetation	Temporary physical changes to the soil layer	Insignificant	M	Impermeable work platforms with gutters for collecting runoff will be set up. Fuels and hazardous materials will be stored in secure, covered, and sealed areas.
	Storage of stripped soil	Dust and mud generation	Possible effect on air quality	Insignificant	L	Wetting exposed surfaces and access roads. Transporting dusty materials in covered containers. Avoiding demolition work on windy days.
	Ballast layer laying works	Atmospheric and noise emissions	Possible effect on air quality	Insignificant	M	Use of quiet equipment and regular maintenance. Limitation of noisy works to the period between 8 a.m. and 6 p.m. Installation of sound-absorbing panels around the construction site.
	Compaction/leveling work	Temporary modification of natural drainage	Potential low-intensity effect on the environment	Insignificant	L	Good general environmental protection practices will be applied in accordance with national regulations.
	Construction site traffic of vehicles/operation of machinery necessary to carry out the works	Heavy and light machinery traffic	Potential low-intensity impact on the environment	Insignificant	H	General good environmental protection practices will be applied in accordance with national regulations.
High level of prolonged noise		Possible acoustic effect on the area of influence	Not really	M	Use of quiet equipment and regular maintenance. Limitation of noisy work to the period between 08:00 and 18:00. Installation of sound-absorbing panels around the construction site.	

Project phase	Activities	Effects generated	Potential impact	Significance of impact	Risks generated	Measures
Dismantling of all facilities		Increase in noise level	Possible acoustic effect on the area of influence	Insignificant	M	Use of quiet equipment and regular maintenance. Limitation of noisy work to the period between 8:00 a.m. and 6:00 p.m. Installation of sound-absorbing panels around the construction site.
		Air pollutants	Potential low-intensity effect on the environment	Insignificant	M	Good general environmental protection practices will be applied in accordance with national regulations.
Vegetation clearing works	Temporary removal of vegetation	Potential low-intensity impact on the environment	Not really	M	Good general environmental protection practices will be applied in accordance with national regulations.	
Topsoil stripping	Temporary removal of soil	Temporary physical changes to the soil layer	Not significant	M	Impermeable work platforms with gutters for collecting runoff will be set up. Fuels and hazardous materials will be stored in secure, covered, and sealed areas.	
Storage of stripped soil	Dust and mud generation	Possible effect on air quality	Insignificant	L	Wetting exposed surfaces and access roads. Transporting dusty materials in covered containers. Avoiding demolition work on windy days.	
Foundation demolition work		Noise	Possible acoustic effect on the area of influence	Insignificant	M	Use of quiet equipment and regular maintenance. Limitation of noisy work to the period between 8:00 a.m. and 6:00 p.m. Installation of sound-absorbing panels around the construction site.
		Air pollutants	Potential low-intensity effect on the environment	Insignificant	M	General good environmental practices shall be applied in accordance with national regulations.
		Waste (including hazardous waste)	Generation of waste with local impact	Not significant	M	General good environmental practices will be applied in accordance with national regulations.
Compaction/leveling works		Air pollutant emissions	Possible effect on air quality	Insignificant	M	General good environmental protection practices will be applied in accordance with national regulations.
		Noise emissions	Possible effect on air quality	Not a big deal	M	Use of quiet equipment and regular maintenance. Limitation of noisy work to the period between 8 a.m. and 6 p.m. Installation of sound-absorbing panels around the construction site.
Construction site vehicle traffic/operation of machinery necessary for the work	Accidental spills of pollutants on the ground	Temporary physical changes to the soil layer	Significant	L	Impermeable work platforms with gutters for collecting runoff will be set up. Fuels and hazardous materials will be stored in secure, covered, and sealed areas.	
Vegetation clearing works	Vegetation removal	Potential low-intensity impact on the environment	Insignificant	M	Good general environmental protection practices will be applied in accordance with national regulations.	
Topsoil stripping	Temporary removal of soil	Temporary physical changes to the soil layer	Not significant	M	Impermeable work platforms with gutters for collecting runoff will be set up. Fuels and hazardous materials will be stored in secure, covered, and sealed areas.	
Trench digging works		Noise	Possible acoustic effect on the area of influence	Insignificant	M	Use of quiet equipment and regular maintenance. Limitation of noisy work to the period between 8:00 a.m. and 6:00 p.m. Installation of sound-absorbing panels around the construction site.
		Air pollutants	Potential low-intensity effect on the environment	Insignificant	M	Good general environmental protection practices will be applied in accordance with national regulations.
Storage of soil from excavations		Occupation of additional land areas	Possible effect on air quality	Not really	H	Wetting of exposed surfaces and access roads. Transport of dusty materials in covered containers. Avoidance of demolition work on windy days.
		Temporary landscape disturbance	Potential low-intensity effect on the environment	Insignificant	H	Good general environmental protection practices will be applied in accordance with national regulations.
Removal of electrical cables		Atmospheric emissions	Possible effect on air quality	Not really	M	General good environmental protection practices will be applied in accordance with national regulations.
		Atmospheric pollutants	Potential low-intensity effect on the environment	Not really	M	General good environmental practices will be applied in accordance with national regulations.
		Prolonged noise	Possible acoustic effect on the area of influence	Not a big deal	M	Use of quiet equipment and regular maintenance. Limitation of noisy work to the period between 8:00 a.m. and 6:00 p.m. Installation of sound-absorbing panels around the construction site.
		Waste	Generation of waste with local impact	Not a big deal	M	General good environmental protection practices will be applied in accordance with national regulations.
Trench filling and land levelling works	Air pollutants	Potential low-intensity effect on the environment	Not really	M	Good general environmental protection practices will be applied in accordance with national regulations.	
Restoration of vegetation cover	Spread of invasive plant species	Potential low-intensity effect on the environment	Not really	M	General good environmental protection practices will be applied in accordance with national regulations.	
Construction site traffic/operation of machinery necessary for the works		NOx and PM10/PM2.5 emissions	Possible effect on air quality	Not really	M	General good environmental protection practices will be applied in accordance with national regulations.
		Prolonged noise level	Possible acoustic effect on the area of influence	Not a big deal	M	Use of quiet equipment and regular maintenance. Limitation of noisy work to the period between 8:00 a.m. and 6:00 p.m. Installation of sound-absorbing panels around the construction site.
Strip mining of the topsoil layer	Localized emission of dust particles	Possible effect on air quality	Insignificant	M	Wetting exposed surfaces and access roads. Transporting dusty materials in covered containers. Avoiding demolition work on windy days.	
Storage of soil from excavations	Local dust generation	Possible effect on air quality	Insignificant	M	Wetting exposed surfaces and access roads. Transporting dusty materials in covered containers. Avoiding demolition work on windy days.	
Ballast removal works	Dust emissions and vibration propagation	Possible effect on air quality	Insignificant	M	Wetting exposed surfaces and access roads. Transporting dusty materials in covered containers. Avoiding demolition work on windy days. Monitoring vibrations with specific equipment. Using technologies with low impact on the soil.	
Compaction/leveling work		Generation of dust and vibrations	Possible effect on air quality	Insignificant	M	Wetting exposed surfaces and access roads. Transporting dusty materials in covered containers. Avoiding demolition work on windy days. Monitoring vibrations with specific equipment. Using technologies with low impact on the soil.
		NOx and PM10/PM2.5 emissions	Possible effect on air quality	Insignificant	M	General good environmental protection practices will be applied in accordance with national regulations.

Project phase	Activities	Effects generated	Potential impact	Significance of impact	Risks generated	Measures
	f vehicles on site/operation of machinery necessary to carry out the work	Prolonged noise level	Possible acoustic effect on the area of influence	Not really	M	Use of quiet equipment and regular maintenance. Limitation of noisy work to the period between 08:00 and 18:00. Installation of sound-absorbing panels around the construction site.
	Restoration of the site where work was carried out and rehabilitation of temporarily used areas	Spread of invasive plant species	Potential low-intensity impact on the environment	Insignificant	M	General good environmental protection practices will be applied in accordance with national regulations.
	Clearing of all installations, equipment, and waste, and reinstallation of topsoil on areas that have been temporarily used	Spread of invasive plant species	Potential low-intensity impact on the environment	Insignificant	M	Good general environmental protection practices will be applied in accordance with national regulations.

5.1.2.6 Residual impact

Following the implementation of the measures proposed in the environmental management plan, the residual impacts associated with the Battery Energy Storage System (BESS) project are assessed as being low, temporary, and controllable, with no significant long-term effects on the environmental components analyzed.

1. Air quality

During the construction phase, dust and particulate matter emissions may occur, mainly from excavation and transport activities. Through measures such as road wetting and material covering, the residual impact on air quality is localized, short-lived, and insignificant. The operational phase does not generate atmospheric emissions.

2. Noise and vibrations

Noise comes exclusively from construction and decommissioning activities. After implementing reduction measures (limiting working hours, using equipment that complies with noise regulations), the residual impact is barely noticeable outside the site and does not affect sensitive receptors. The operational phase does not involve continuous sources of noise.

3. Soil and water

Risks to soil and groundwater are associated with possible leaks of hazardous substances (electrolytes, fuels). These are prevented by the use of impermeable platforms, collection ditches, and secure storage. The residual impact is considered low and unlikely, with controllable and reversible contamination potential.

4. Biodiversity

Impacts on flora and fauna are minimal, as the site is typically industrial/degraded and does not involve the occupation of sensitive habitats. Compliance with seasonal measures (e.g., avoiding interventions during breeding periods) reduces any residual effect to an ecologically insignificant level.

On the site there are no wild animals. The construction site will be fully enclosed by a continuous perimeter fence, designed to prevent the access of wild animals to the site and to minimize any potential interaction with construction activities.

5. Specific technological risks (BESS)

Residual risks associated with system operation (e.g., fires, thermal reactions in batteries) are addressed through automatic detection and extinguishing systems, fireproof enclosures, and maintenance procedures. The residual impact on public health and safety is minimal, with an extremely low probability of occurrence.

The BESS project, due to its static nature and minimal emissions during operation, has **a very low residual impact profile**. All potential effects are effectively addressed through technical and organizational measures, and the remaining residual impacts comply with environmental legislation and do not pose major risks to the environment or human health.

5.1.2.7 Cumulative impact

For each of the impacts assessed, the ESIA investigates the cumulative impacts that could result from the impacts of other known existing and/or planned developments in the area and based on currently available information on such existing/planned developments.

At the level of the Gura Ialomiței UAT, a number of other projects will be developed, such as:

Name	Owner	Activity	Year of development
Increasing storage capacity at silos for agricultural products	SC GREEN HARVEST SRL	Expansion of grain storage capacity (construction of new silo cells)	2023 Building permit issued in 2024
Establishment of a voluntary collection center in Gura Ialomiței	INTRACOMMUNITY DEVELOPMENT ASSOCIATION ECOO 2009	Setting up a public center for selective waste collection (CAV type) Waste collection	2023-present Building permit pending
400 kV double circuit LEA Cernavodă-Stâlpu and connection to the Gura Ialomiței station	CNTEE TRANSELECTRICA SA	Construction of a 400 kV overhead power line (~160 km) and extension of the 400 kV Gura Ialomiței station (2 cells) to connect the line Electricity transmission and distribution	2020-present Permits issued in 2020 for local sections
Zonal Urban Plan - Construction of the "Gurbănești" wind power plant (max. 60 turbines)	GURA IALOMIȚEI SOLAR SRL (private investor, part of Renovatio)	Development of a wind farm (~253 MW) on the territory of Gurbănești commune (CL) and connection to the SEN (probably at the Gura Ialomiței station) 2023-present	2023-present PUZ approved, awaiting authorisation
Modernization of public roads in the commune of Gura Ialomiței (and component villages) - 7.5 km	UAT Gura Ialomiței Commune (Town Hall)	Rehabilitation and asphaltting of communal roads (local streets ~7.5 km)	2022-2024

In the vicinity of the UATs of Gura Ialomiței, Vlădeni, Giurgeni, Făcăeni, Țândărei, and others, the following major renewable energy projects (wind and photovoltaic) are proposed:

- Făcăeni I wind farm – 132 MW (operational);
- Țândărei photovoltaic park – 45.15 MW (planned for 2024/25);
- Cosereni photovoltaic park – 4.5 MW (operational);
- Giurgeni photovoltaic park – 8 MW (operational since 2018);
- Slobozia photovoltaic project – 70.2 MW (CfD winner 2024);
- Ialomița Nord (Grivița) wind farm – ~247 MW (planned);
- Giurgeni wind project – 193 MW (under environmental assessment);
- Făcăeni II – 226.5 MW wind farm expansion (planned);
- Bărbulești I & II photovoltaic parks – ~5 MW (authorized);
- Vlădeni solar cluster – >300 MW (under dispute);
- CEF Ialomița 1 – 225 MW (ATR approved).

In the event of a temporary overlap in the execution periods of these projects, cumulative effects on environmental factors may occur locally. However, the temporary nature and geographical dispersion of the works significantly limit the cumulative negative impact.

Table 43 : Assessment of the cumulative impact with projects approved/under implementation in the project location area

Types of projects approved in the project implementation area	Impact assessment			
	Affected environmental factor	Description of identified effects	Significance of impact	Justification of the impact
Energy infrastructure projects – Energy production Energy infrastructure projects – Transport and network Projects with economic and logistical functions	Air	Dust and exhaust emissions from machinery, transport, and multiple construction sites	Negative, insignificant	Simultaneous construction activities for BESS, LEA, and silos may lead to increased dust and exhaust emissions. However, the works are spread over a relatively large area and are carried out for limited periods. The application of dust reduction measures (watering, protective barriers) and the use of compliant equipment reduce the cumulative impact.
	Climate change	Contributions to climate change - GHG emissions	Negative, insignificant	Construction activities involve GHG emissions through the use of fuel-based equipment. However, the limited duration of the works and the small size of the project compared to other major sources indicate an insignificant cumulative impact.
	Water	Possible accidental spills at construction sites	No cumulative impact	The projects do not involve significant water use during execution. The risks of accidental contamination (oils, fuels) are minimal and can be effectively managed through soil and water protection measures, such as specially designed refueling and storage areas.
	Soil/subsoil	Disturbances due to excavations, foundations, power lines	Negative, insignificant	The foundations for BESS and power line poles, as well as the excavations for underground infrastructure, may temporarily affect soil quality and stability. However, the affected areas are small in size, and the restoration of the vegetation layer is provided for through specific remediation and ecological reconstruction measures.
	Biodiversity	Temporary disturbances to fauna in anthropized areas	No cumulative impact	The works are carried out in already anthropized areas, and the existing projects do not intersect sensitive natural habitats or ecological corridors. No effects on local biodiversity are expected.
	Noise	Simultaneous activities with machinery and transport	Negative, insignificant	Noise generated by heavy machinery, material transport, and construction work may cause discomfort to the local population in the event of temporary overlap of works. However, the impact is temporary and can be mitigated by scheduling works and using sound-absorbing panels in sensitive areas.
	Landscape	Temporary structures and site organization	Negative, insignificant	Site organization, the presence of machinery, and temporary storage of materials may temporarily affect the appearance of the landscape. However, the reversible nature of the works and the restoration of the land upon completion of the investments significantly reduce the cumulative visual impact.
	Cultural heritage	Vibrations, noise, or shocks near historic buildings	No cumulative impact	There are no historical monuments or archaeological sites in the Gura Ialomiței area. Construction activities do not involve interventions in areas with protected cultural heritage.
Social and economic environment	Temporary discomfort due to traffic, noise, and dust	Negative, insignificant	During construction, there may be inconveniences for the local population (noise, dust, traffic). These effects are limited in time and space, and compliance with work schedules, public information, and impact reduction measures minimize the discomfort experienced.	

During the operational phase of the BESS project, the cumulative impact analysis considers the potential interactions between the activities specific to the operation of the energy storage system and those generated by other existing or planned projects in the area. This period is characterized by low or non-existent emissions from a physical standpoint for the BESS system, but it may indirectly influence environmental factors such as air, noise, or soil, depending on the energy source used for charging and the operation of related equipment.

At the same time, the operation of other facilities such as wind farms, photovoltaic parks, the 400 kV LEA network, agricultural silos, and the collection center contribute to a potential cumulative impact. This analysis takes into account the simultaneous operation of these facilities, identifying those effects that may overlap or amplify each other and estimating their significance.

The assessment was carried out for each relevant environmental factor, justifying the level of anticipated impact and how it is manageable or significant in the local and regional context.

Table 44 : Assessment of the cumulative impact during the operation period of the investments proposed by this project and the activities generated by the projects under implementation and other similar existing objectives

Types of projects approved in the project implementation area	Impact assessment			
	Affected environmental factor	Description of identified effects	Significance of the impact	Justification of the impact
Energy infrastructure projects – Energy production Energy infrastructure projects – Transport and network Projects with economic and logistical functions	Air	Indirect energy consumption of BESS, GHG emissions from the network	Negative, insignificant	BESS does not produce direct emissions, but by charging from the grid it can indirectly contribute to GHG emissions, depending on the energy source used. Given the ongoing energy transition and the integration of renewable sources in the region, this contribution is estimated to be marginal and insignificant.
	Climate change	Indirect energy consumption, possible GHG emissions	Negative, insignificant	The operation of the BESS system requires energy consumption from the grid. With an increasing share of renewable sources in the energy mix, the impact on the climate is marginal and significantly reduced compared to other types of installations.
	Water	Potential risk of accidental contamination through chemical spills (e.g., coolant, oils, electrolytes) during the operation of BESS and related equipment	Negative, insignificant	Modern BESS systems are equipped with sealing and automated control systems (Battery Management System - BMS), which detect any faults and isolate them. In addition, placement on impermeable platforms and the implementation of strict operating and maintenance procedures minimize the risk of surface or groundwater contamination. No hazardous substances are used in open air, and any spills are collected and disposed of by authorized operators. There is no significant source of water required for current operations, and the surrounding area does not include sensitive aquatic ecosystems.
	Soil/subsoil	Disturbances from excavations, foundations, power lines	Negative, insignificant	The foundations for BESS and power line poles, as well as the excavations for underground infrastructure, may temporarily affect soil quality and stability. However, the affected areas are small in size, and the restoration of the vegetation layer is provided for through specific remediation and ecological reconstruction measures.
	Biodiversity	The presence of equipment does not affect habitats	No cumulative impact	All project sites are located in areas already used for economic purposes. The lack of direct or indirect impact on natural ecosystems eliminates the possibility of any relevant cumulative effects on biodiversity.

Types of projects approved in the project implementation area	Impact assessment			
	Affected environmental factor	Description of identified effects	Significance of the impact	Justification of the impact
	Noise	Background noise from installations (BESS, silos)	Negative, insignificant	BESS cooling systems, silo equipment, and collection center activities generate a constant but low level of noise. Values remain below legal thresholds, and the location of facilities in semi-industrial areas minimizes the impact on the population.
	Landscape	Presence of infrastructure (panels, turbines, BESS, LEA)	Negative, insignificant	Energy infrastructure elements (PV panels, wind turbines, BESS equipment, LEA) can visually alter the character of the area. However, they are compatible with the economic/industrial use of the land and do not affect areas of high landscape value.
	Cultural heritage	Vibration-free operation, no visual impact	No cumulative impact	BESS installations and other projects do not involve structural changes or interventions in areas of cultural heritage. Their operation does not generate vibrations, loud noise, or major visual effects on heritage sites.
	Social and economic environment	Increased energy security, attracting investment, jobs	Positive, significant	The BESS project, together with other energy and logistics investments, contributes to the development of local infrastructure, the stability of the electricity grid, and the stimulation of the local economy by generating jobs and income. The integration of renewable sources is supported by this technological solution.

5.2 Climate Change Assessment

5.2.1 Climate change mitigation (climate neutrality)

This type of project does not fall within the category of projects for which a carbon footprint assessment is required according to the "Technical Guidance on Climate Change Resilience of Infrastructure for the period 2021-2027".

However, an estimate of GHG emissions has been made for this project.

By implementing this project – in phase I, energy from renewable sources (wind and solar) will be stored and approximately 201,749.5 MWh/year of energy will be delivered annually.

In order to calculate the greenhouse gas (GHG) emissions reduced by producing 201,749.5 MWh/year of energy, it was assumed that energy from renewable sources replaces energy from conventional sources. The estimates were made taking into account an energy mix equivalent to approximately 0.23-0.24 tCO_{2e}/MWh, which is specific to an average European mix/energy system with lower coal weights.

Reduced emissions (tCO_{2e})=Production (MWh)×Emission factor (tCO_{2e}/MWh)

Estimates show an annual amount of energy delivered from renewable sources of approximately 201,749.5 MWh/year, a **reduction** in greenhouse gas emissions of over 70,285 tons of CO₂ equivalent/year

Total emissions avoided: 70,285 tCO_{2e}/year (phase I)

By implementing this project after phase II, energy from renewable sources (wind and solar) will be stored and an additional 201,749.5 MWh/year will be delivered annually compared to phase I.

Total emissions avoided: 117,239 tCO_{2e}/year (after phase II)

5.2.2 Examination for adaptation to climate change (STAGE 1 analysis)

5.2.2.1 Sensitivity

In order to perform a sensitivity analysis of the project, all components relevant to the battery energy storage system (BESS) were identified. In accordance with the EU Communication on climate change resilience, the project components were grouped into the following categories: on-site assets and processes, inputs, outputs, and interdependencies.

Each component is then subjected to sensitivity analysis to understand which climate hazards are relevant. This structures and focuses the assessment on demonstrating that the proposed project is resilient to possible climate risks.

Project components for BESS

Inputs	Assets	Lifespan (years) ¹⁶	Process	Output
Electricity from renewable sources	Battery modules (including multiple battery cells) Racking and mounting Wiring and electrical components (cables, switches, fuses, circuit breakers) Inverter/Converter Monitoring and control system (including thermal management, fire suppression system, and other safety systems)	5-15 15 15 10 10	Energy storage Maintenance and repairs Monitoring and control	Electricity

An average duration of approximately **15 years** was considered for this project.

BESS interdependencies

Interdependencies
Electricity network Electricity consumption Personal transport/maintenance

Project criticality

In the energy sector, the criticality of a project can be assessed on the basis **of its role in regional energy supply/distribution/storage and the existence of sufficient redundancies** (see also the Directive on¹⁷) resilience of critical entities. **The following table** presents indicative levels of criticality (in qualitative terms).

45 : Indicative levels of criticality for projects in the energy sector

Criticality level	Description
Very low criticality	"Very low" contribution to regional energy production/supply/distribution/storage
Low criticality	Reduced contribution to regional energy production/supply/distribution/storage. Redundancies/backup systems are in place to allow operations to continue.
Moderate criticality	Significant contribution to regional energy production/supply/distribution/storage. Over 50% operability can be achieved if the system operates with redundancies/backup systems/inputs.
High criticality	Significant contribution to regional energy production/supply/distribution/storage. Reduced operability can be achieved when using available (limited) redundancies/backup systems/inputs. The risk of a generalised system shutdown cannot be ruled out.

¹⁶ The values are indicative and may differ depending on the characteristics of the project, as appropriate. The actual lifespan of assets depends on the material, regional context, economic conditions, procurement processes, etc. As such, a fairly wide range is observed in the tables. It should be noted that lifespan is particularly important for defining adaptation measures as a result of risk analysis.

¹⁷ Directive (EU) 2022/2557 of the European Parliament and of the Council of December 14, 2022, on the resilience of critical entities and repealing Council Directive 2008/114/EC: Member States will have to identify critical entities for the sectors covered by the CER Directive by July 17, 2026. Member States will use this list of essential services to carry out risk assessments and then identify critical entities.

Criticality level	Description
Very high criticality	Major contribution to regional energy production/supply/distribution/storage. No redundancies or the system cannot operate using available redundancies/backup systems/inputs.

Relevant climate hazards affecting the energy sector – BESS

Table 46 : Climate hazards relevant to BESS

Hazards according to EU Taxonomy	BESS
ACUTE	
Heatwave	
Cold wave/frost	
Fires	
Extreme wind (including storm, hurricane, tornado)	
Drought	
Flooding/Storm surge/Heavy rainfall	
Landslides/Avalanches/Subsidence	
CHRONICLES	
Temperature change/ Temperature variability	
Permafrost thawing	
Changing wind patterns	
Changing precipitation patterns/Precipitation or hydrological variability	
Sea level rise; Saline intrusion	
Coastal erosion/Soil erosion	

The sensitivity analysis of the project is presented in the following table.

Table 47 : Sensitivity analysis

Climate risks	Sensitivity			
ACUTE				
Heat waves	Heat waves can affect the source (e.g., lower-efficiency photovoltaic panels), causing minor fluctuations in the energy received Acceleration of chemical reactions leading to degradation and reduction of battery cell life. Increased risk of spontaneous combustion due to battery overheating. High temperatures can affect the discharge characteristics of batteries, affecting the efficiency of electricity production. Reduced available capacity – at extreme temperatures, the useful capacity of the system can decrease by up to 20-30%.			
Overall score: High	Assets and processes	Inputs	Output	Interdependencies
3	3	1	2	1
Cold spell/frost	Renewable sources (e.g., wind) become less efficient due to freezing temperatures The charging current must be limited to prevent damage to the cells in cold conditions. Increased energy consumption for preheating the system. Risk of dendrite formation in Li-ion cells (increased risk of short circuit). Increase in internal resistance → severe decrease in storage capacity and efficiency. Interruptions or delays in system startup (freeze lock on moving parts). Available capacity reduced by as much as 40-50% during peak winter periods. The network may already be under strain from high consumption (air conditioning in the service area).			

Climate risks	Sensitivity			
Overall rating: Moderate	Assets and processes	Input	Output	Interdependencies
2	2	1	2	1
Fires	In the event of fires in the source area, the BESS power supply may be interrupted; otherwise, the electrical energy flow is not directly sensitive to fire When exposed to very high temperatures and flames, battery cells may explode. Malfunction/damage to the air filter motor when the air filter is clogged with smoke from fires. Smoke residue accumulated on sensitive electromechanical parts may cause malfunctions. Fire may lead to forced shutdown of power supply or destruction of equipment			
Overall score: High	Assets and processes	Inputs	Output	Interdependencies
3	3	0	0	2
Strong wind (including storm, hurricane, tornado)	Structural damage to BESS components and their support structures. Impact damage/malfunctions of sensitive electromechanical equipment. Water ingress into the BESS unit triggers electrical faults Damage to electrical equipment (e.g., parallel switches, transfer switches) caused by lightning or power surges (following a power outage). Service interruption in the event of power failures or blackouts (caused by damage to the power grid during storms).			
Overall score: Low	Assets and processes	Input	Output	Interdependencies
1	1	0	0	1
Drought	Possible effects on water-based cooling systems (if any)			
Overall score: Low	Assets and processes	Inputs	Output	Interdependencies
1	1	0	0	0
Flooding/Storm surge/Heavy rainfall	Reduced electricity production - for photovoltaic parks Flooding of batteries and electronic components, leading to short circuits and corrosion. Contamination of floodwaters with active chemicals from batteries can pose a significant ecological threat to aquatic ecosystems. Electrical faults leading to thermal runaway events causing battery fires. Possible safety shutdowns in case of physical damage			
Overall score: High	Assets and processes	Inputs	Output	Interdependencies
3	3	1	1	2
Landslide/Avalanche/Subsidence	BESS units may be displaced/rotated/distorted when subjected to massive ground movements. BESS units (being relatively heavy structures) can trigger landslides when located in areas prone to landslides. Physical damage to transmission and distribution lines may interrupt the operation of the BESS facility. Blocked access roads preventing personnel access.			
Overall rating: Moderate	Assets and processes	Input	Output	Interdependencies
2	2	0	0	2
CHRONICLES				
Permafrost thawing	Freezing and thawing movements of the soil can cause physical damage to cables and joints in underground networks. Excessive settlement and subsidence of ground structures.			
Overall score: Low	Assets and processes	Input	Output	Interdependencies

Climate risks	Sensitivity			
1	1	0	0	0
Temperature change/Temperature variability	No effects			
Overall score: No impact	Assets and processes	Input	Output	Interdependencies
1	0	0	0	0
Permafrost thawing	Freezing and thawing movements of the soil can cause physical damage to cables and joints in underground networks. Excessive settlement and subsidence of ground structures.			
Overall score: Low	Assets and processes	Input	Output	Interdependencies
1	1	0	0	0
Changing wind patterns	No effects			
Overall score: No impact	Assets and processes	Input	Output	Interdependencies
0	0	0	0	0
Change in precipitation patterns/Precipitation or hydrological variability	No effects			
Overall score: No impact	Assets and processes	Input	Output	Interdependencies
1	0	0	0	0
Sea level rise Saltwater intrusion	Submerging batteries and electronic components in water can lead to short circuits and corrosion. Foundation collapse and land subsidence of BESS units (triggered by rising groundwater levels). Increased salinity accelerates the corrosive effects on metal and electronic parts. Shutdown of energy discharge due to damage or protections Networks and access may be affected by rising sea levels			
Overall score: Low	Assets and processes	Input	Output	Interdependencies
1	1	0	1	0
Soil erosion Coastal erosion	Soil erosion increases water runoff and therefore the risk of soil movements affecting the BESS installation. Soil erosion increases water runoff and therefore the risk of soil movements affecting other interconnected infrastructure (transmission lines and access roads).			
Overall score: Low	Assets and processes	Input	Output	Interdependencies
1	1	0	0	1

Conclusions:**The project is highly sensitive to the following climate hazards:**

Cold wave
 Fires
 Flooding/Storm surge/Heavy rainfall

The project is moderately sensitive to the following climate hazards:

Cold wave/frost
 Landslides/Avalanches/Subsidence

The project shows low sensitivity to the following climate hazards:

Extreme wind (including storm, hurricane, tornado)
 Drought
 Permafrost thawing
 Sea level rise; Saline intrusion
 Coastal erosion/soil erosion

The following section presents information on the current and future exposure of the area where the project will be located for the category of climate hazards specified in Table 30.

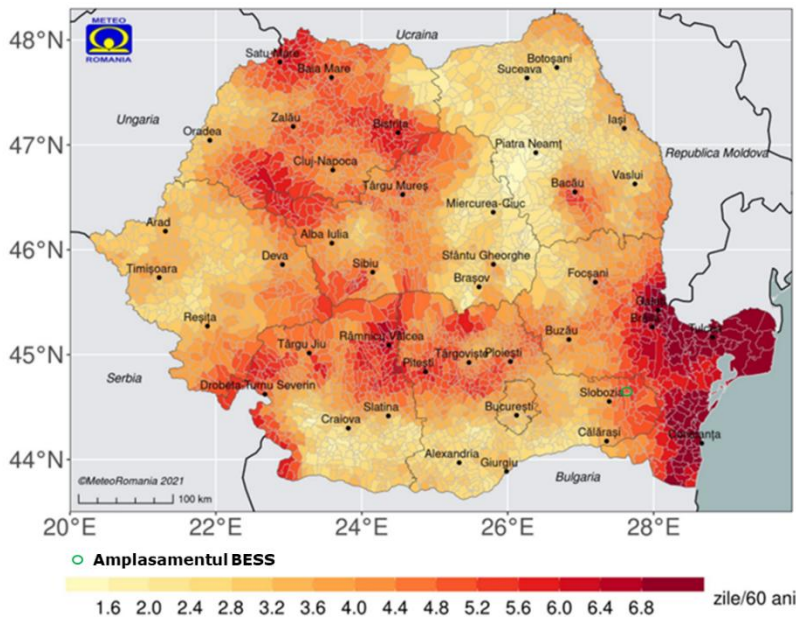
Current exposure

- **Heat waves (extreme temperatures)**

With regard to the current climate in Romania, the brochure "Adaptation to Climate Change in the Energy Sector - National Strategy on Adaptation to Climate Change for the period 2023-2030 with a view to 2050" it is mentioned that the data recorded by the National Meteorological Agency (ANM) indicate that the average annual air temperature (TMAA) in Romania has increased by 1.3°C-2.6°C. The maximum temperature shows more significant increases (3.1°C) than the minimum (1.9°C).

Between 1970 and 2024, there was an increase in exposure to heat stress due to excessive heat (and a decrease in the frequency of negative extremes). In 2024, the heat waves in June, July, and August were notable for their duration and the size of the affected area. In June 2024, there were two heat waves that mainly affected the low-lying areas in the south of the country (an area that includes the town of Gura Ialomiței). In July 2024, there was a heat wave that began on July 8 and lasted for 15 days. It affected over 80% of the country's total area, ranking second after the one in 2012, which lasted 17 days. In 2021, there was also a persistent heatwave that lasted 14 days. Years in which heat waves lasting 10-12 days were recorded and affected over 60% of the country's territory are: 1987, 2007, 2015, 2021, and 2022.

According to meteorological data for Romania, Gura Ialomiței is located in an area with a high frequency of heat waves (6-6.8 days/60 years).



The town is in an area with one of the highest frequencies of heat waves in the country. This reflects the excessive continental climate in the southeast, where extreme summer temperatures are more frequent. The area is prone to more frequent episodes of high temperatures, which can affect health, agriculture, and infrastructure.

In the context of climate change (RCP scenarios), this frequency is likely to increase in the future.

Figure 27 : Observed trends in the annual duration of heat waves¹⁸
 Source: National Meteorological Administration

○

¹⁸ Meteorological characterization, 2024, National Meteorological Administration

- **Cold wave/frost**

Annually, it snows for about 30 days in Ialomița County. Frequent snowfalls form a continuous layer of snow, mainly in December and January, which remains until February-March.

The negative events of the emergency situations caused by snowstorms in Ialomița County in the last two years (blocked county roads, isolated localities for a period of 3-4 days, damage to electricity transmission and distribution networks) were mainly due to: heavy snowfall exceeding the multi-annual amounts and strong blizzards, wind gusts exceeding 80-90 km/h, which led to snow drifts exceeding 2-3 m in height in certain areas, both on the carriageway of county roads and in the northern part of the localities of¹⁹.

DN 2A (Urziceni - Giurgeni), which also passes through the town of Gura Ialomiței, is among the transport routes affected by snow drifts in the last two years.

Over time, ice bridges have been recorded on the Ialomița rivers, but these have not posed a major threat to the riverside localities.

In the area under analysis, the frost depth is 0.80-0.90 m below ground level, and the average frequency of frost days with $T \leq 0^{\circ}\text{C}$ is 113.8 days/year.

In the case of scenario RCP2.6: cold spells decrease, but remain possible. The current exposure will take into account that there will be isolated but milder episodes.

- **Fires**

The town of Gura Ialomiței is characterized by a high risk of fires, according to the Copernicus Emergency Management Services forest fire risk map. In the area of Gura Ialomiței, the FWI indicator shows that the forest fire risk corresponds to the value (FWI > 21.3) (high risk).

This is explained by:

- specific vegetation (floodplain forests, forest belts, areas with dry vegetation);
- the local arid climate (southeastern Romania has frequent droughts and heat waves);
- the potential for fires to be started by human or natural sources.

The areas most exposed to fires are those with specific vegetation (floodplain forests, forest belts, areas with highly combustible vegetation). The following forested areas have been identified in the vicinity of Gura Ialomiței:

- Alexeni Forest - Located on the left bank of the Ialomița River, near the village of Alexeni (belonging to the commune of Gura Ialomiței), which has an area of approximately 37 ha. It is classified as a protected natural area, home to 56 centuries-old oak trees, some of which are over 200–300 years old.
- On the western and southern edges of the village, there are deciduous forests of the transition type, which are specific to the plain region. These are part of the Natura 2000 sites, "Berteștii de Sus – Gura Ialomiței" (ROSPA0111), and "Kogalniceanu – Gura Ialomiței" (ROSPA0120). Within these areas, deciduous forests cover 9–27% of the territory of Ialomița County.

¹⁹ PLAN FOR ANALYSIS AND COVERAGE OF RISKS IDENTIFIED AT THE LEVEL OF IALOMIȚA COUNTY, 2023

There are no recent data showing significant fires that have affected forested areas in the Natura 2000 sites. The fires reported are mainly in households²⁰, agricultural land and the landfill²¹, not in forests or protected natural habitats.

Under the RCP 2.6 scenario, the Gura Ialomiței area remains vulnerable to forest fires due to the arid continental climate and dry vegetation. Regional warming in Romania (and south-east, Ialomița) is estimated at +1.5°C compared to the reference period (1971-2000).

²⁰ Adevărul newspaper, October 2014, <https://adevarul.ro/stiri-locale/slobozia/tone-intregi-de-furaje-s-au-facut-scrum-intr-o-1571465.html>
Gura Ialomiței newspaper, January 2020 https://www.guraialomitei.com/gura-ialomitei/incendiu-la-moldoveni-o-batrana-si-a-pierdut-viata/?utm_source=chatgpt.com

²¹²¹ The Independent newspaper, August 2022, https://www.independentonline.ro/tag/gura%2Bialomitei?utm_source=chatgpt.com

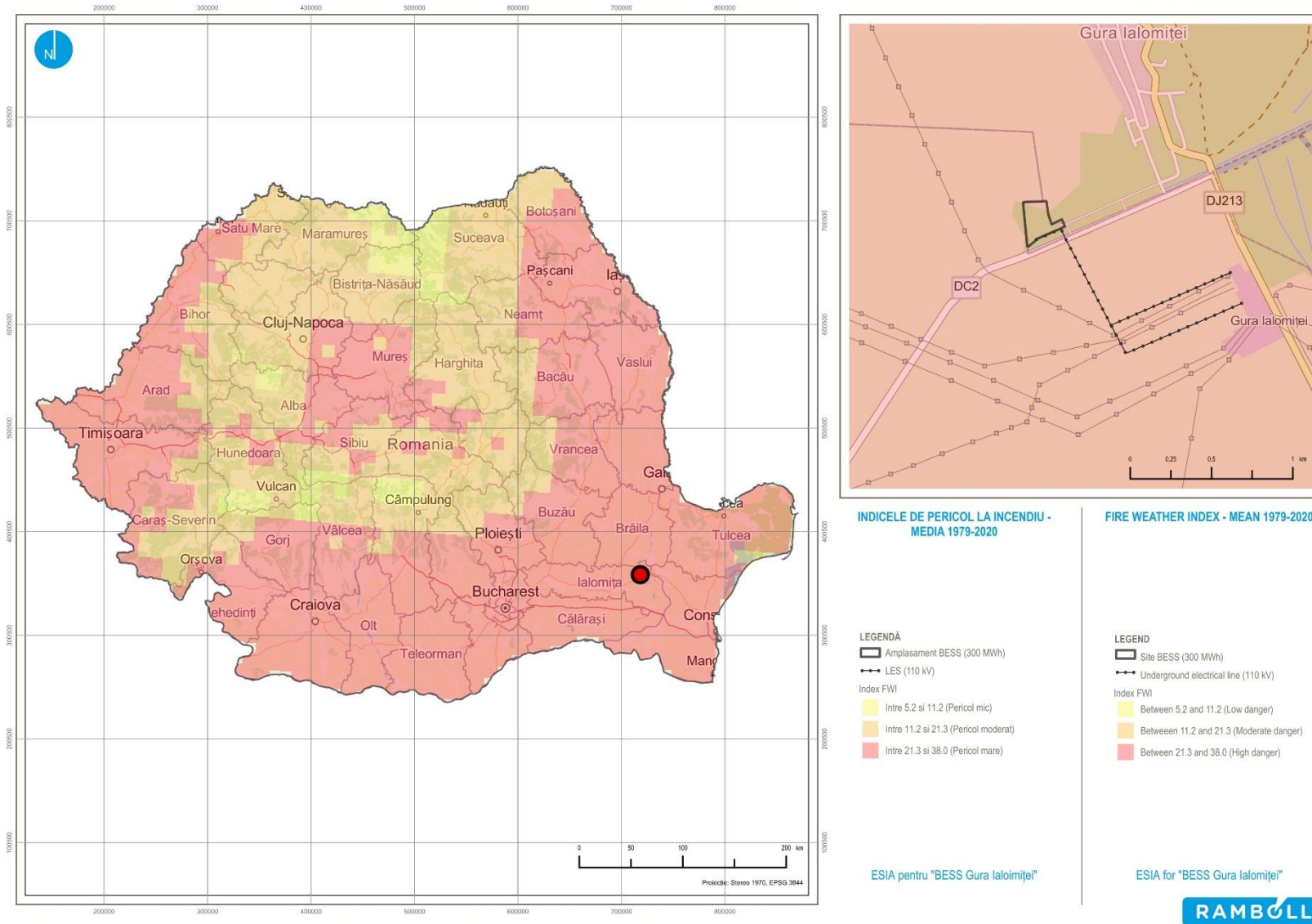
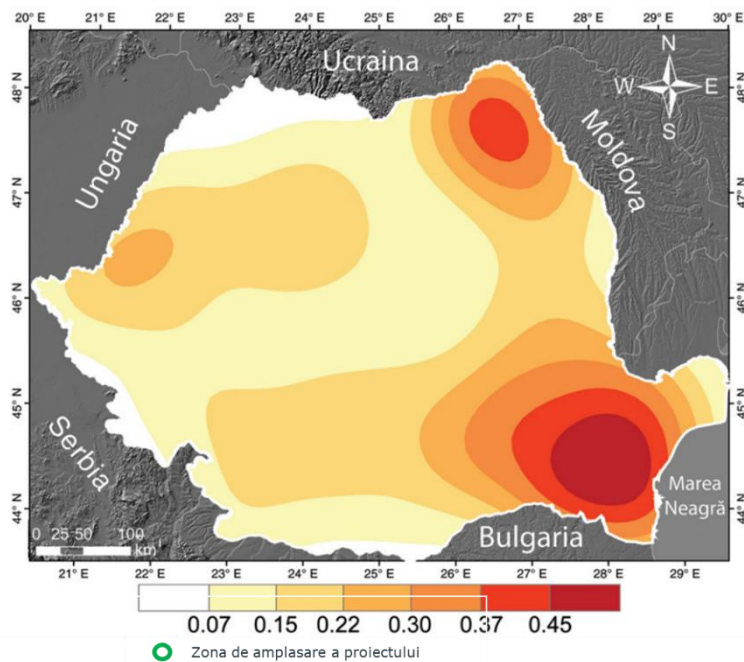


Figure 28: Forest fire risk map in the project location area
 Source: Data processing by Copernicus Emergency Management Services

- **Extreme wind (including storms, hurricanes, tornadoes)**

Records and data from the National Meteorological Authority show that, between 1961 and 2013, there was a decrease in average wind speed across the country. This trend was observed at all weather stations, including those in the project location area.



The Gura Ialomiței area has a moderate average annual wind speed (3.0–3.3 m/s), typical of the southeastern plains, which are open to continental and marine influences.

The spatial distribution of tornadoes shows that they are more frequent in the eastern part of the country, with a maximum in the southeast. Gura Ialomiței is located in southeastern Romania, an area with high exposure to this phenomenon.

Figure 29 : Spatial distribution of tornadoes in Romania reported between 1990–2013 (tornadoes per 105 km² /year)

Source: *Bulletin of the Romanian Meteorological Society, year III, no. 1, March 2015, Antonescu and Bell (2015)*

- **Drought**

Types of drought present in the project area:

- meteorological drought: prolonged rainfall deficit, frequent in the summer months;
- pedological drought: soil moisture deficit, with a major impact on agricultural crops;
- hydrological drought: reduced flows in local river systems, especially in summer and autumn.

Recorded climate data indicate that the Gura Ialomiței area has one of the highest frequencies of drought in Romania, with dry years occurring on average every 3-4 years and severe drought years occurring on average once every 10 years (e.g., 2000, 2007, 2012)²². The area studied is classified as an area severely affected by drought and is characterized by a high degree of vulnerability to drought, evidenced by the frequent occurrence of soil moisture anomalies and precipitation deficits.

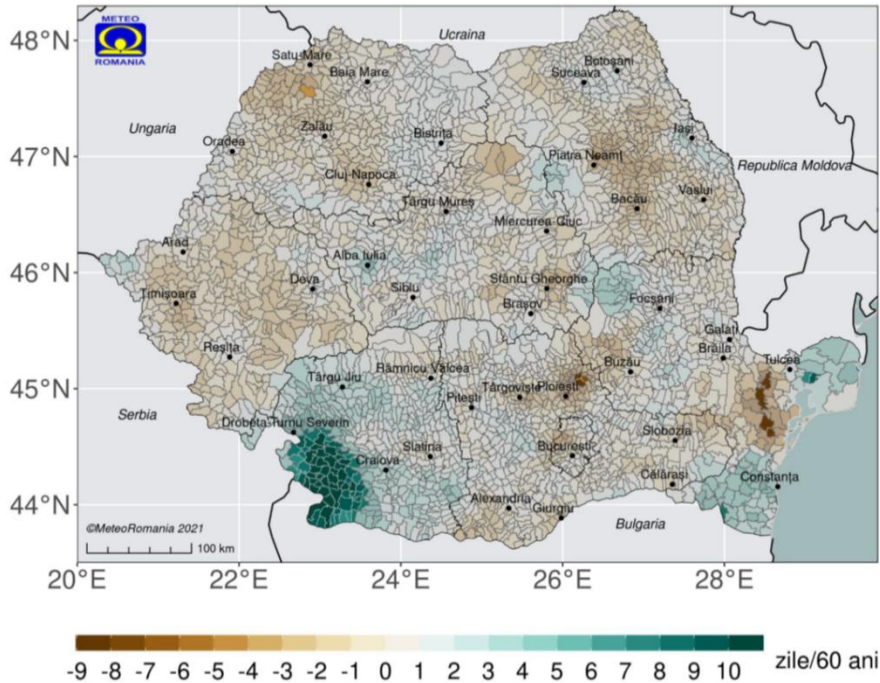
The information available for SPEI (Standardized Precipitation Evapotranspiration Index) indicators²³ confirms an increase in the frequency, duration, and intensity of drought.

²² Study "Meteorological drought in Romania" – ANM, 2015

²³ SPEI considers two climate parameters in determining drought: precipitation and potential evapotranspiration (PET), capturing the main impact of increased temperatures on water demand.

Under the RCP 2.6 climate scenario, drought will remain a major risk, with no significant improvement in rainfall patterns.

Figure 30 : Trends observed in the maximum number of days without precipitation



- **Flooding/Storm surge/Heavy rainfall**

According to the flood risk study carried out for this project, the proposed site for the "Development of a battery energy storage capacity in the commune of Gura Ialomiței", proposed to be located in the commune of Gura Ialomiței, Ialomița County, Str. Gării, no. 12, is not located in an area at risk of flooding at the probabilities analyzed in this study, namely 5%, 1%, and 0.5%.

The elevation of the site is CT = 16.92 m, and the maximum level for a 0.5% probability of exceedance (insurance) is 13.16 m on section no. 1 – the Ialomița River, and 10.22 m on section no. 2 – the Borcea branch.

According to the hazard and risk maps that were developed for the two watercourses, in accordance with Directive 2007/60/EC, in the low probability scenario (for maximum flows with a 0.1% probability of exceedance – i.e., floods that can occur once every 1,000 years), the site is not at risk of flooding.

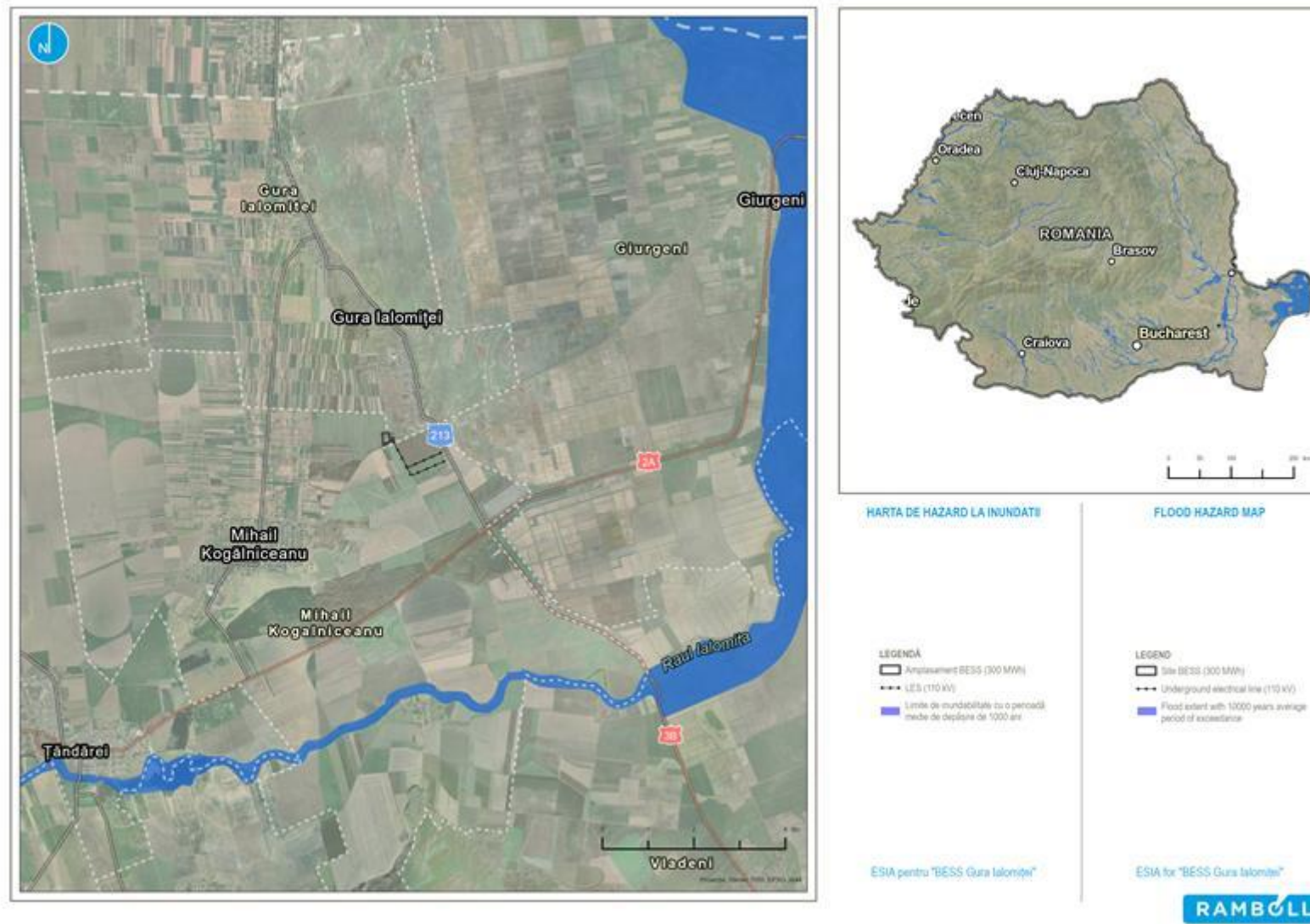


Figure 31: Flood limit on the Ialomita River and the Danube River for 0.1% insurance in the area of the studied site
Source: Flood Risk Management Romania

- **Landslides/Avalanches/Subsidence**

According to Law No. 575 of October 22, 2001, on the approval of the National Land Use Plan – Section V, natural risk areas are geographically delimited areas within which there is a potential for destructive natural phenomena, namely earthquakes, floods, and landslides.

According to Annex 3 of this plan, which contains the list of administrative-territorial units affected by landslides, in the Gura Ialomiței area the potential for landslides is low and the probability of landslides is practically zero.

The Gura Ialomiței area, characterized by low-lying plains and a lack of significant slopes, is not exposed to the risk of avalanches. The local relief and climatic conditions exclude this type of natural hazard.

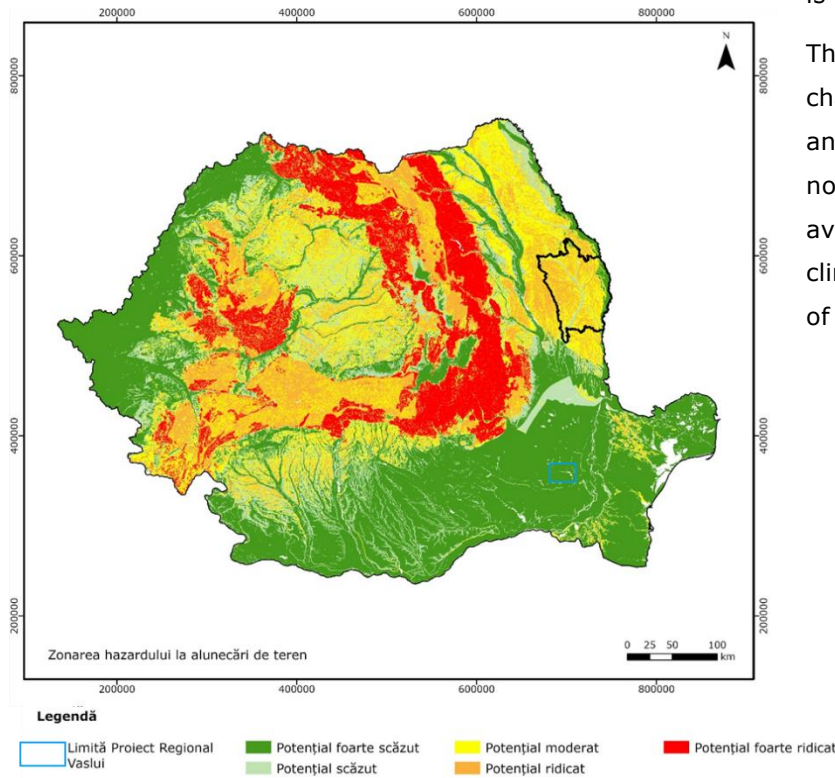
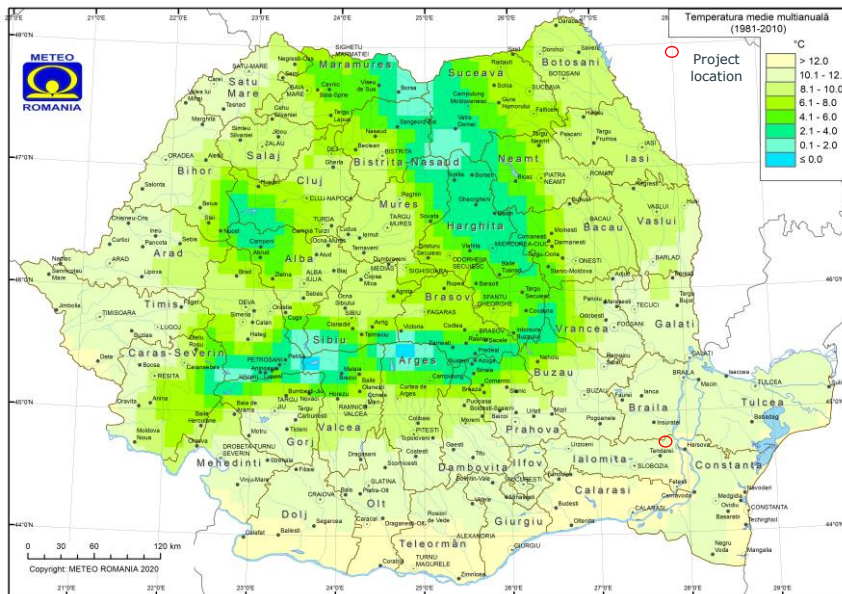


Figure 32 : Landslide hazard map (ISGU)

- **Temperature change/Temperature variability**

Gura Ialomiței is located in an area characterized by multi-year average temperatures of 10.1–12.0°C (1981-2010), reflecting a warm, continental climate specific to the southeastern plains. This climatic feature implies a predisposition to droughts and heat waves during the warm season.

The values are favorable for agriculture but increase the risk associated with drought, heat waves, and vegetation fires.



In the RCP 2.6 climate scenario, the Gura Ialomiței area will experience a moderate increase in average annual temperature (approximately +1°C to +1.5°C compared to the 1981-2010 climate). The area's exposure to the risks associated with heat waves and wildfires remains moderate, with less severe effects.

Figure 33 : Map of average multi-year temperature
 Source: National Meteorological Administration

- **Permafrost thawing**

There is no permafrost in the project area, therefore we consider that there is no possibility of exposure to the effects of this hazard.

- **Change in wind patterns**

According to climate data for the period 1981-2024, the study area is characterized by a multi-annual average wind speed of between 3.0 and 3.6 m/s. This value falls within the moderate to high wind regime specific to southeastern Romania. The prevailing winds are from the east and northeast, associated with continental and marine influences. Increased frequency of wind intensification in spring and autumn.

In the studied area, changes in wind patterns will be limited in the RCP 2.6 scenario, with no significant changes in the multi-annual average speed or dominant directions. The main directions (NE, E) will remain predominant, maintaining the characteristics of the region's continental regime.

- **Change in precipitation patterns/Precipitation or hydrological variability**

The study area is located in a zone characterized by ≤ 10 days per year with precipitation ≥ 10 mm.

This pattern reflects an arid to semi-arid climate, specific to southeastern Romania, with rare but locally intense rainfall (especially in the warm season).

In Gura Ialomiței, there has been a slight reduction in annual precipitation in recent decades. (approx. -5% to -10% in 60 years)²⁴. There is also a noticeable increase in drought, especially in areas already affected, and an intensification of torrential rainfall.

In the context of the RCP 2.6 climate scenario, the study area will not experience significant changes in the number of days with precipitation ≥ 10 mm, remaining below the threshold of 10 days/year, which is characteristic of the region for the period 1981-2024.

In the studied area, there has been a trend of approximately 5-10% reduction in annual precipitation over the last six decades. In the RCP 2.6 climate scenario, this trend is expected to stabilize, with no further significant decreases, but with a rainfall regime characterized by rare rains, often concentrated in short-duration episodes of high intensity. This pattern maintains the area's vulnerability to drought.

- **Sea level rise, Saline intrusion**

The locality is downstream, in a low-lying plain connected to hydrographic networks (Danube, Ialomița). Sea level rise may indirectly contribute to:

- more difficult drainage of water during critical periods (e.g., heavy rainfall + high water levels at the mouth);
- greater pressure on hydraulic structures (dikes, canals);
- changes in hydrostatic balance, which facilitates the migration of salt water to low-lying areas, especially aquifers.

The risk of saltwater intrusion exists only as an indirect effect, for example in rare cases of severe drought combined with sea level rise and low flows on the Danube.

In the RCP 2.6 climate scenario, the study area has a low degree of exposure to the risks associated with sea level rise and saltwater intrusion. The impact is considered insignificant due to the distance from the coastline and the limited sea level rise predicted in this scenario.

- **Coastal erosion/soil erosion**

The project site is not located in a coastal area. A review of climate change scenarios on the coastal flood risk map and coastal erosion risk map confirms that there is no current or future exposure to coastal and ocean hazards.

Future exposure

- **Heatwave**

According to climate projections for the RCP 4.5 scenario (2041-2070), the project site will experience an average annual duration of heat waves of approximately 11.4-12.5 days/year, representing a significant increase compared to the 1971-2000 reference period (currently the duration is much shorter, generally 3-5 days/year), reflecting an increased risk associated with heat stress, with an impact on population health, agriculture, infrastructure, and biodiversity.

²⁴ National Strategy on Adaptation to Climate Change for the period 2023-2030 with a view to 2050, Brochure on Climate Change Adaptation in the Energy Sector, 2023

In the RCP 8.5 climate scenario for the period 2071-2100, the studied area is expected to experience an average annual duration of heat waves between 29 and 34 days/year, compared to 3-5 days/year in the 1971-2000 climate. This scenario highlights an extreme climate risk, requiring urgent and consistent adaptation measures, including the protection of vulnerable populations, infrastructure adaptation, and sustainable resource management solutions.

- **Cold wave/frost**

In the RCP 4.5 climate scenario for the period 2041-2070, the average annual duration of cold spells in the project area is estimated at 4.6-4.9 days/year, reflecting a slight reduction compared to the historical climate. This trend indicates a decrease in the risk associated with severe cold spells, in line with the projected climate warming for southeastern Romania, a trend of attenuation of extreme winter phenomena in the southeast of the country, and a potentially lower impact on infrastructure and agriculture compared to the reference scenario.

In the RCP 8.5 climate scenario (2071-2100), the average annual duration of cold spells in the study area is estimated at 2.7–3.2 days/year, indicating a substantial reduction compared to historical climate values. The duration of cold spells decreases considerably compared to the current climate and even compared to RCP 4.5, reflecting a clear trend towards a reduction in severe cold spells due to marked climate warming. The risk associated with cold stress becomes much lower compared to the present, which may positively influence infrastructure and agricultural activities during winter, but may have negative effects on ecosystems that depend on normal winter cycles.

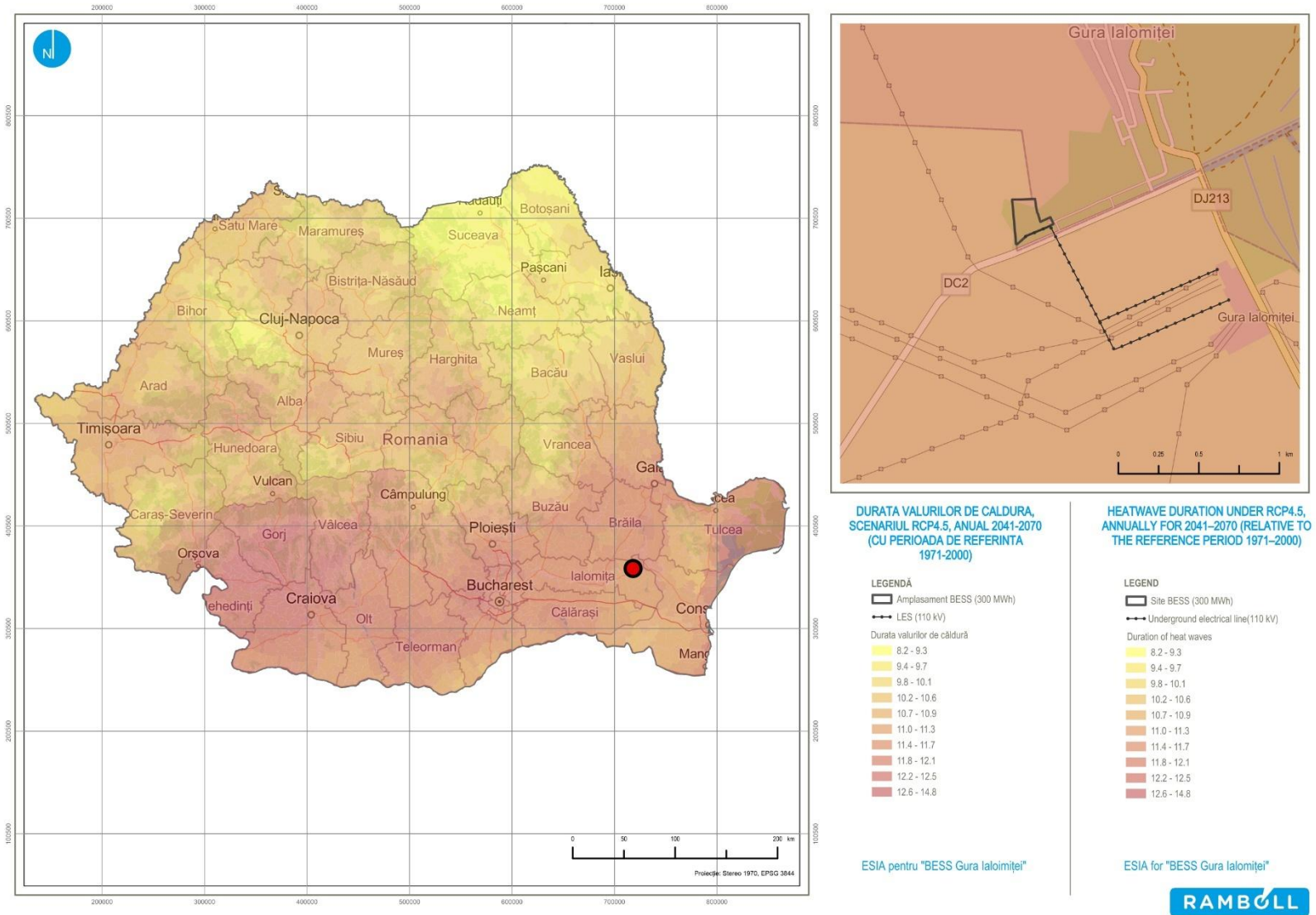


Figure 34 : Duration of heat waves - RCP4.5 scenario, Annual 2041 - 2070 (reference period 1971-2000)
Source: ROADAPT platform

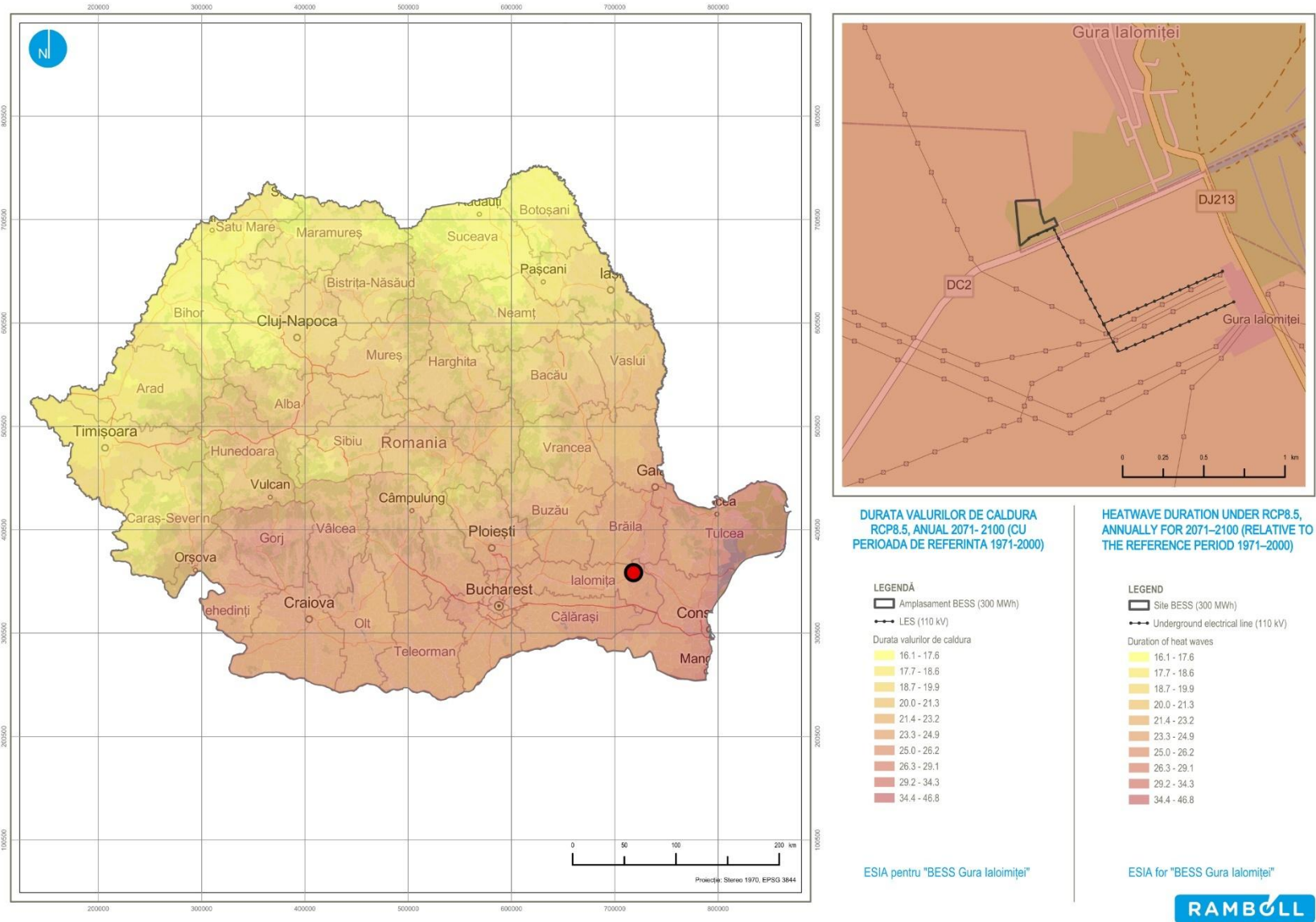


Figure 35 : Duration of heat waves - RCP8.5 scenario, Annual 2071–2100 (reference period 1971–2000)

Source: ROADAPT Platform

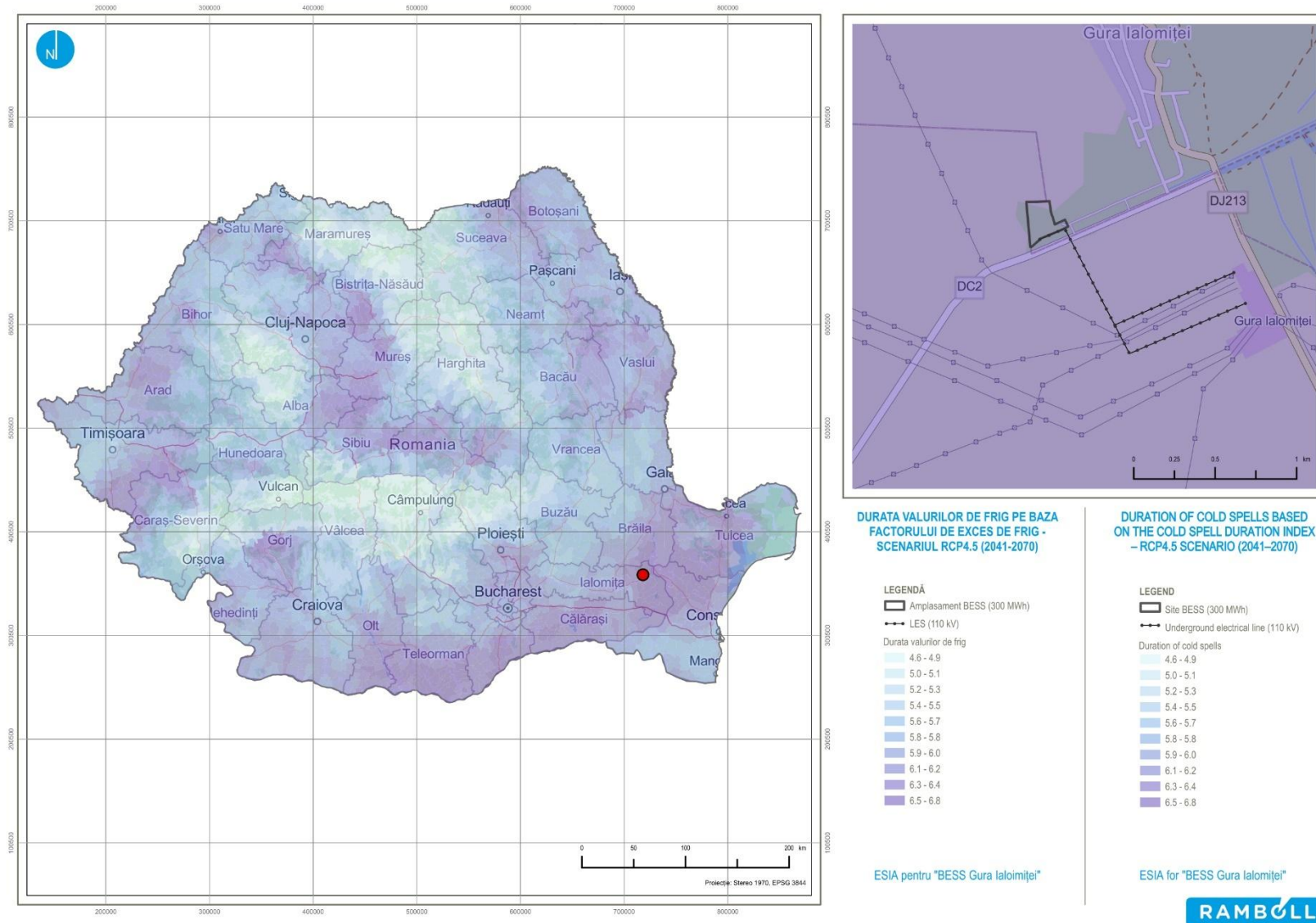


Figure 36 : Duration of cold spells TN10p - RCP4.5 scenario, Annual 2041 - 2070 vs reference period 1971-2000 (reference period 1971-2000)

Source: ROADAPT Platform

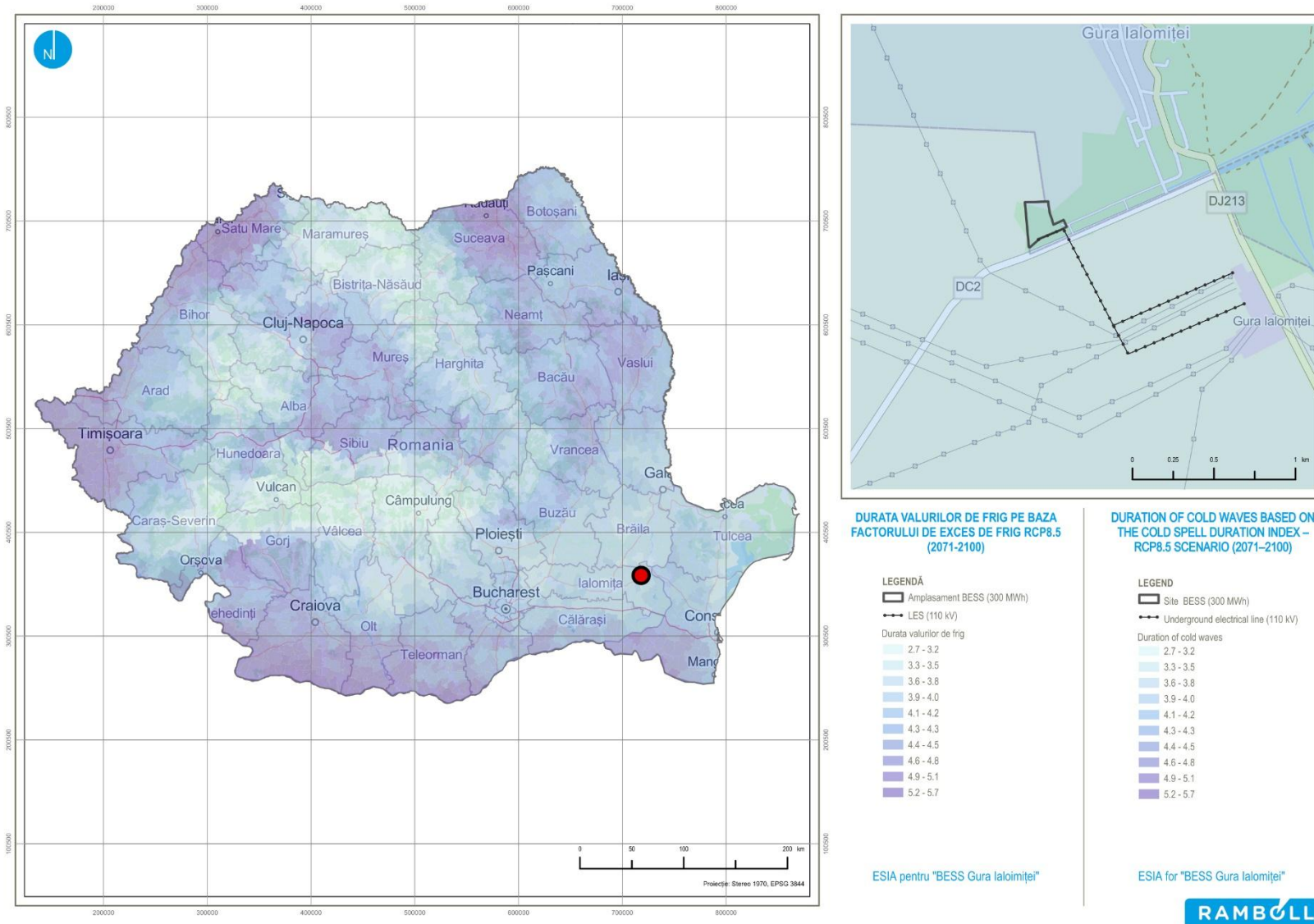


Figure 37 : Duration of cold spells TN10p - RCP8.5 scenario, Annual 2041 - 2070 vs reference period 1971-2000 (reference period 1971-2000)

Source: ROADAPT platform

• **Fires**

In the case of the RCP 4.5 climate scenario, it is estimated that there will be an increase in average temperature of +2°C - +2.5°C by the end of the century, heat waves will last ~11-13 days/year (according to the maps presented), which will make droughts more frequent and intense compared to the current climate. Soil moisture will decrease during hot periods, which will lead to a moderate increase in the risk of vegetation fires, with an extended risk season (late spring - early autumn) and an increase in the number of days favorable to the outbreak and spread of fires.

In the RCP 4.5 climate scenario, the project site area will be characterized by a moderate increase in the risk of vegetation fires, linked to rising temperatures, longer heat waves, and more intense droughts. This may influence the risks to: energy infrastructure (e.g., BESS),

The RCP 8.5 scenario analysis indicates that the analyzed area will experience an increase in average temperature: +4°C or more by the end of the century, heat waves: ~29-34 days/year or more. Droughts will become severe and prolonged, affecting soils and spontaneous vegetation. All this will significantly increase the risk of fires, with a higher probability of widespread and difficult-to-control fires.

The fire season may extend to almost the entire year in exceptionally dry years.

In the RCP 8.5 scenario, the risk of fires will increase, associated with prolonged heat waves, severe droughts, and an extended and intense fire season. It is necessary to plan adaptation measures, including dry vegetation management and strengthening fire response capacity.

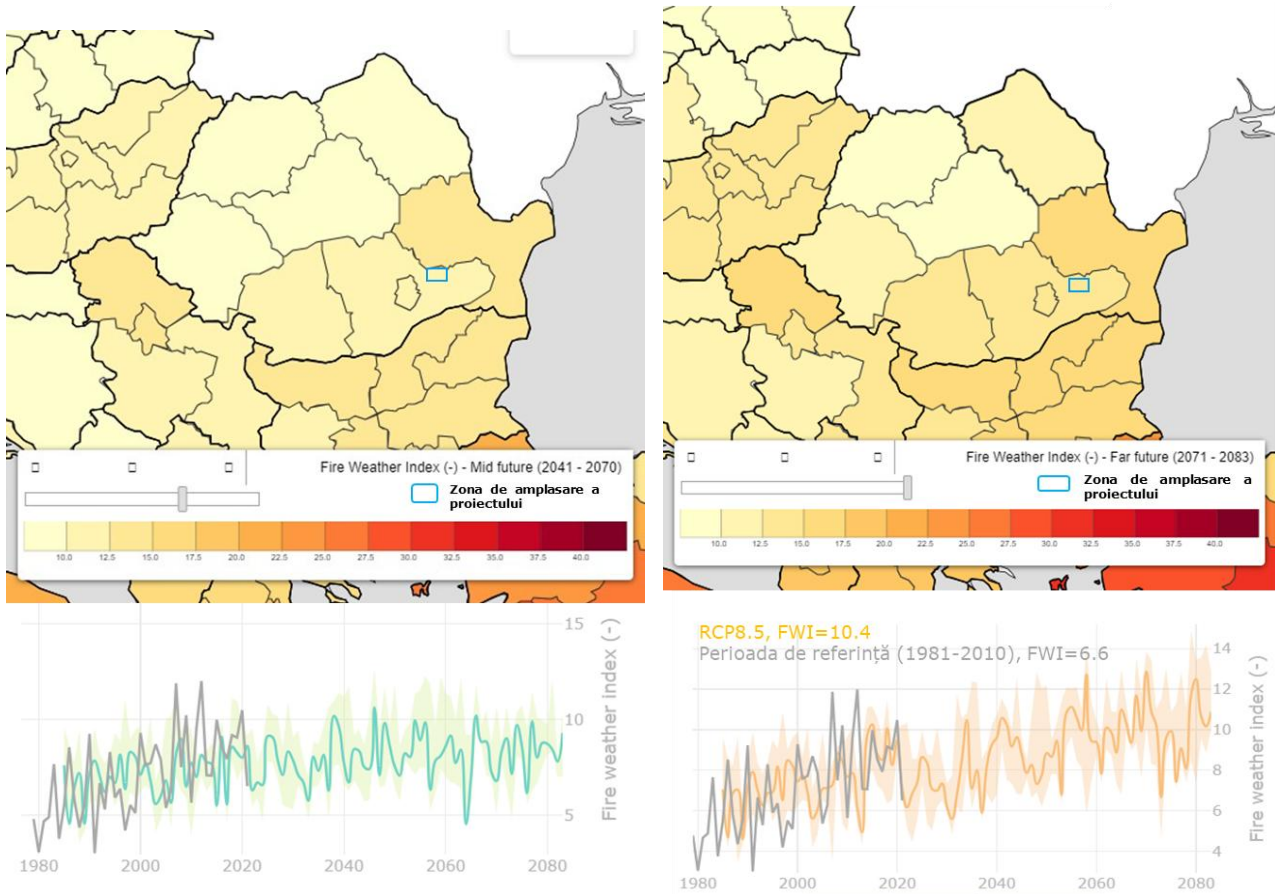


Figure 39 : Fire Weather Index (FWI) in Romania, project location area, RCP 4.5 (2041-2070)
Source: Copernicus Climate Change Service (C3S)

Figure 38: Fire Weather Index (FWI) in Romania, project location, RCP 8.5 (2071-2083)
Source: Copernicus Climate Change Service (C3S)

- **Extreme wind (including storms, hurricanes, tornadoes)**

In the RCP 4.5 scenario, the studied area will experience wind gusts with maximum speeds similar to or slightly higher than at present. Wind conditions will remain moderate to high for southeastern Romania.

In the RCP 4.5 climate scenario for the period 2041-2070, the estimated maximum wind speed in the Gura Ialomiței area is between 10.3 and 10.6 m/s. This reflects a moderate to high wind regime, specific to southeastern Romania, with the potential to impact the spread of vegetation fires and light infrastructure. It is recommended that this data be integrated into climate design and adaptation plans.

The RCP 8.5 scenario indicates that the maximum wind gust speed remains at values comparable to those in the RCP 4.5 scenario. No significant increase in extreme gusts is anticipated compared to the RCP 4.5 scenario. In the RCP 8.5 climate scenario (2071-2100), the estimated maximum wind speed in the Gura Ialomiței area is 10.3–10.6 m/s, similar to the values projected in the RCP 4.5 scenario.

- **Drought**

Both climate scenarios (RCP 4.5 and RCP 8.5) suggest a high vulnerability of the Gura Ialomiței area to drought, mainly due to rising temperatures and changes in precipitation patterns (less useful rainfall, more extreme events). RCP 8.5 indicates a marked increase in the risk of drought, with direct effects on agriculture, water reserves, and local ecosystems.

- **Flooding/Storm surge/Heavy precipitation**

According to climate projections, the number of days with very heavy precipitation in the study area is expected to increase from approximately 3.4-3.7 days/year in the RCP 4.5 scenario (2041-2070) to 4.1-4.5 days/year in the RCP 8.5 scenario (2071-2100). In the RCP 8.5 scenario, the increase is more pronounced, reflecting a more unstable climate with more intense and frequent events. This indicates an intensification of the risks associated with extreme weather events, including local flooding, erosion, and additional stress on infrastructure.

In the RCP 4.5 and RCP 8.5 climate scenarios, the Gura Ialomiței area remains exposed to the risk of flooding, with increasing intensity and frequency as the climate scenario becomes more severe. In RCP 4.5, the risks are mainly associated with localized flash floods caused by extreme precipitation. In RCP 8.5, the risk is more pronounced for both flash floods and river floods, due to sea level rise and the Danube's reduced capacity to discharge water into the Black Sea.

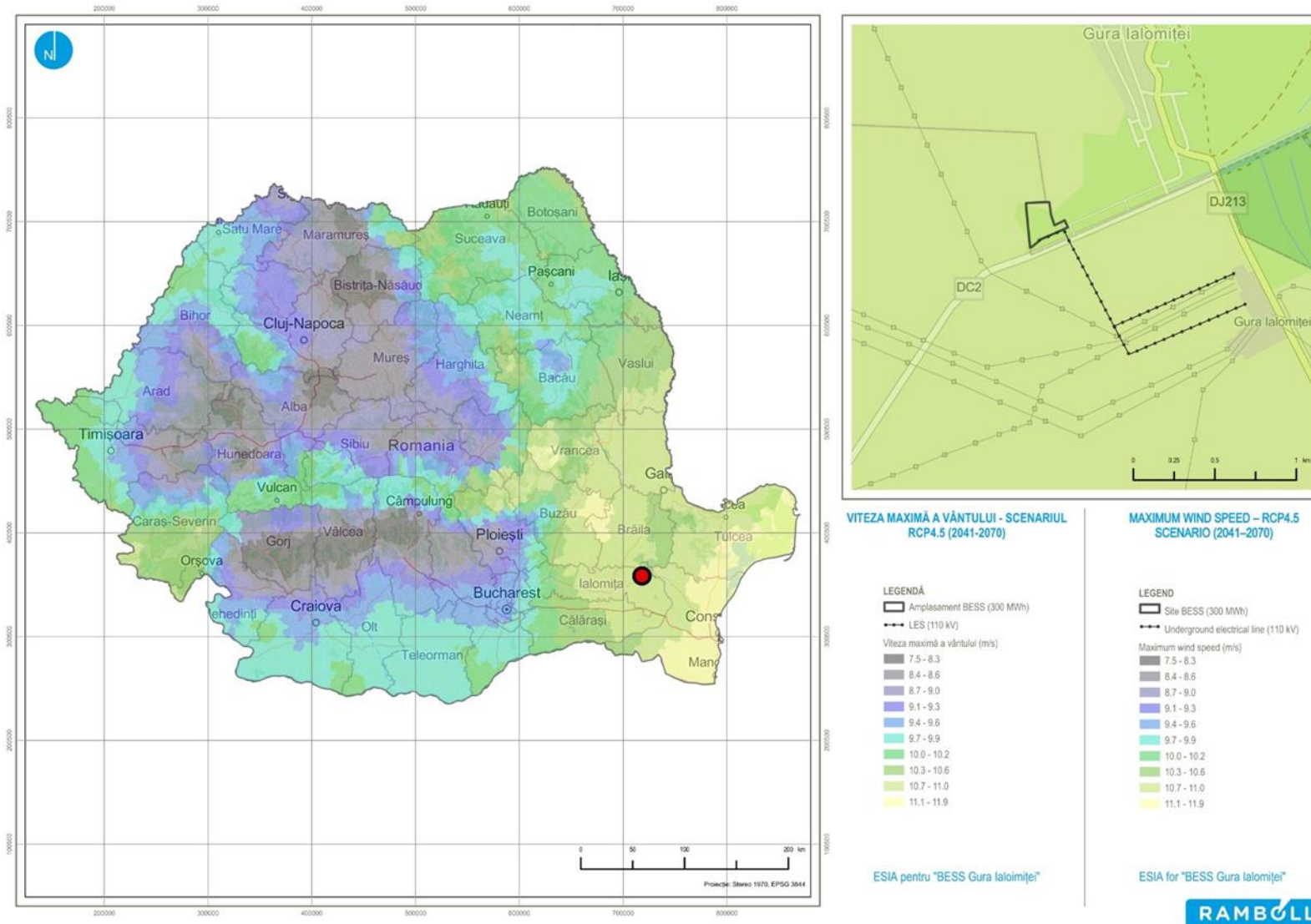


Figure 40 : Maximum wind speed - RCP4.5 scenario, Annual 2041-2070 (reference period 1971-2000)

Source: ROADAPT platform

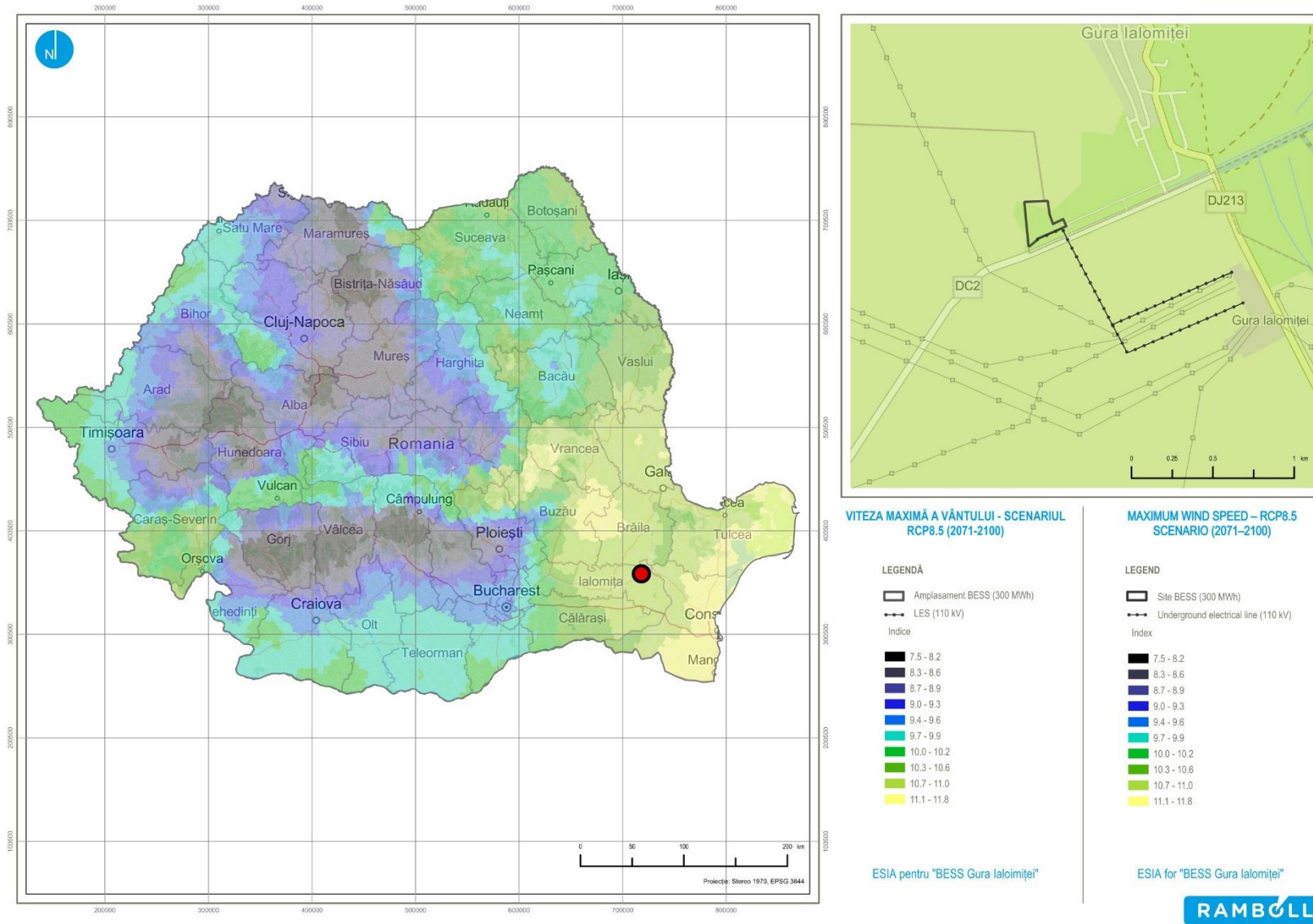


Figure 41 : Maximum wind speed - RCP8.5 scenario, Annual 2071-2100 (reference period 1971-2000)
 Source: ROADAPT platform

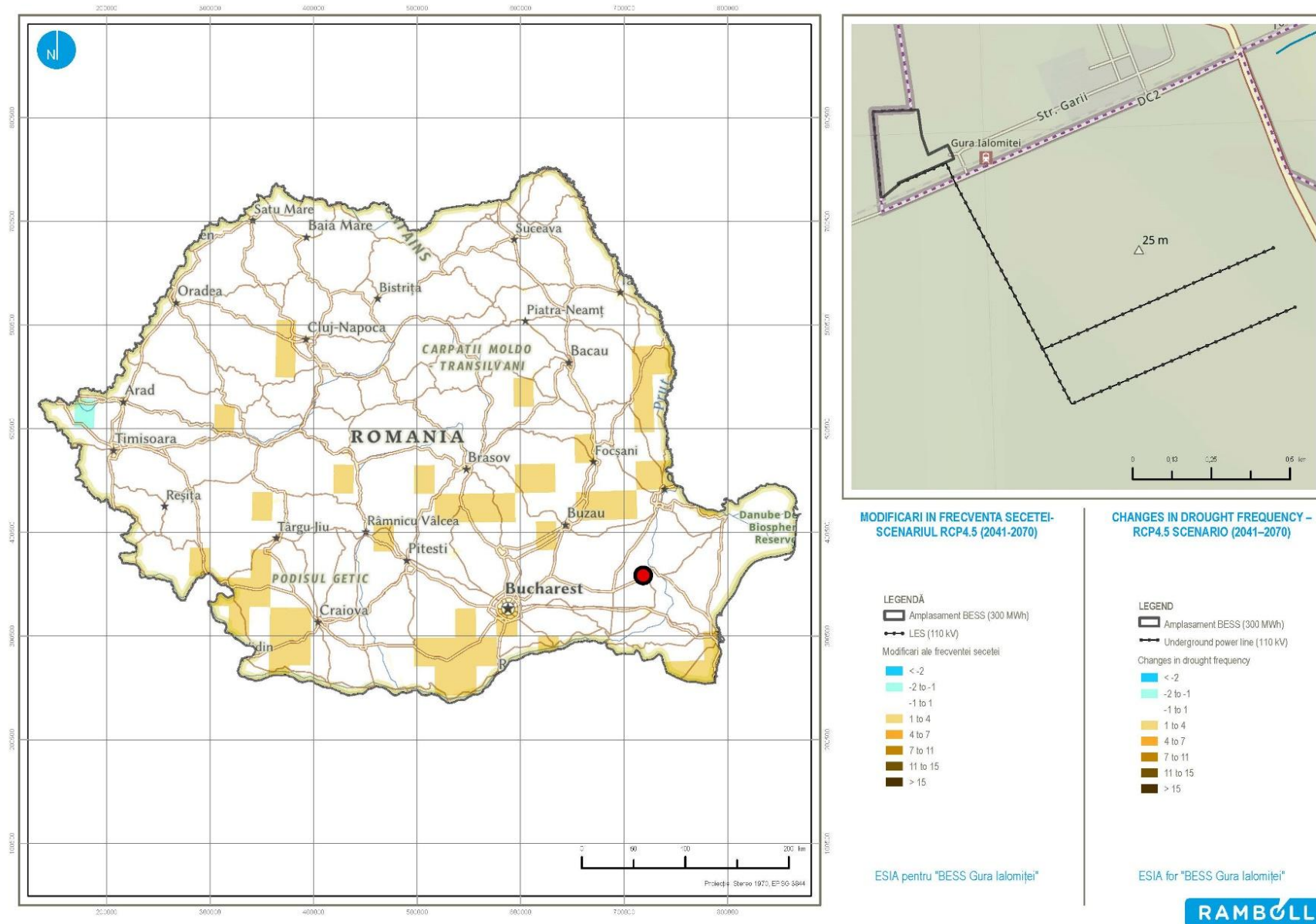


Figure 42 : Changes in drought frequency - RCP 4.5 scenario, Annual 2041-2070 (reference period 1941-2070)

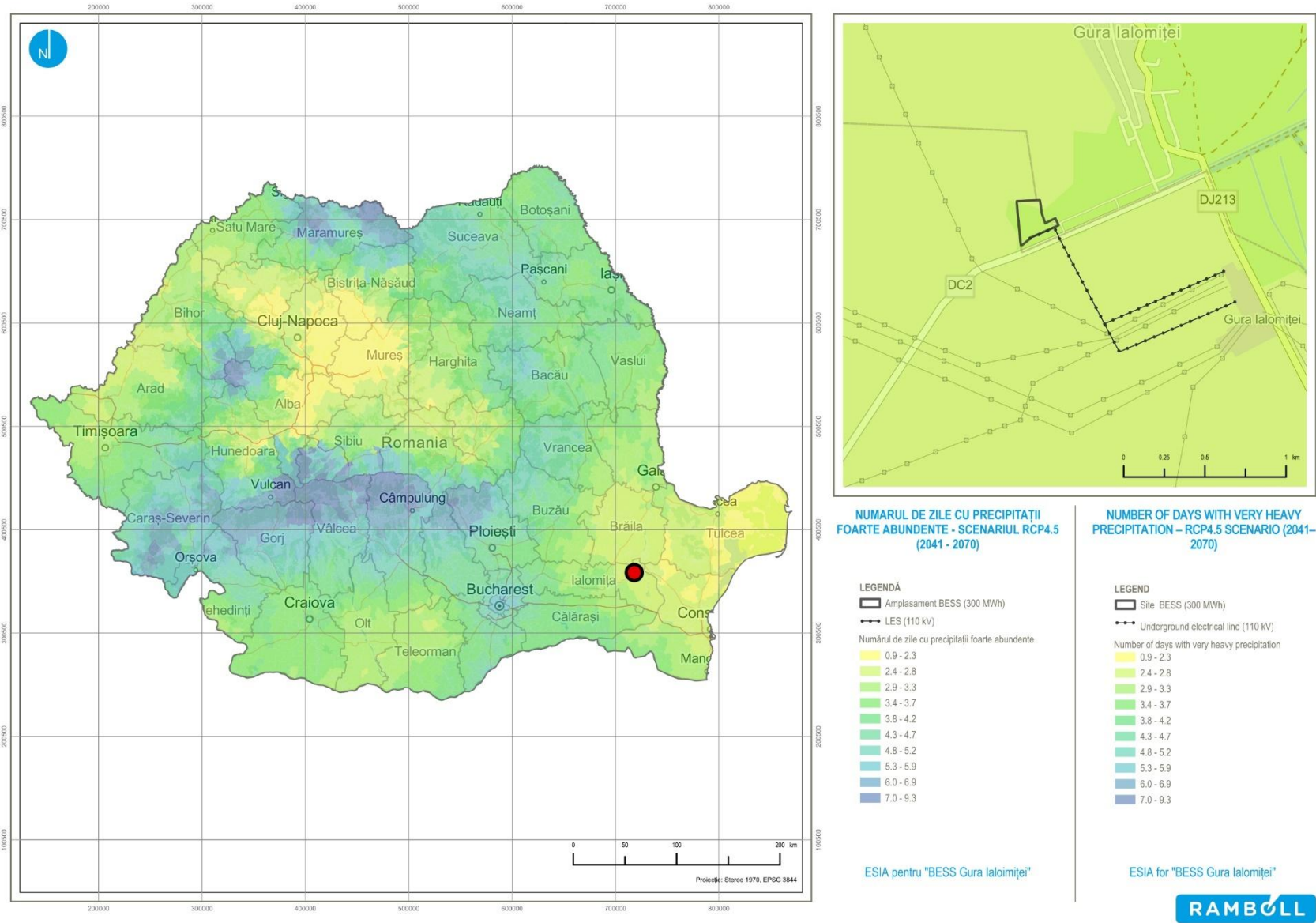


Figure 43 : Maximum 24-hour precipitation amounts - RCP4.5 scenario (2041-2070)
source: data processing taken from RO-ADAPT

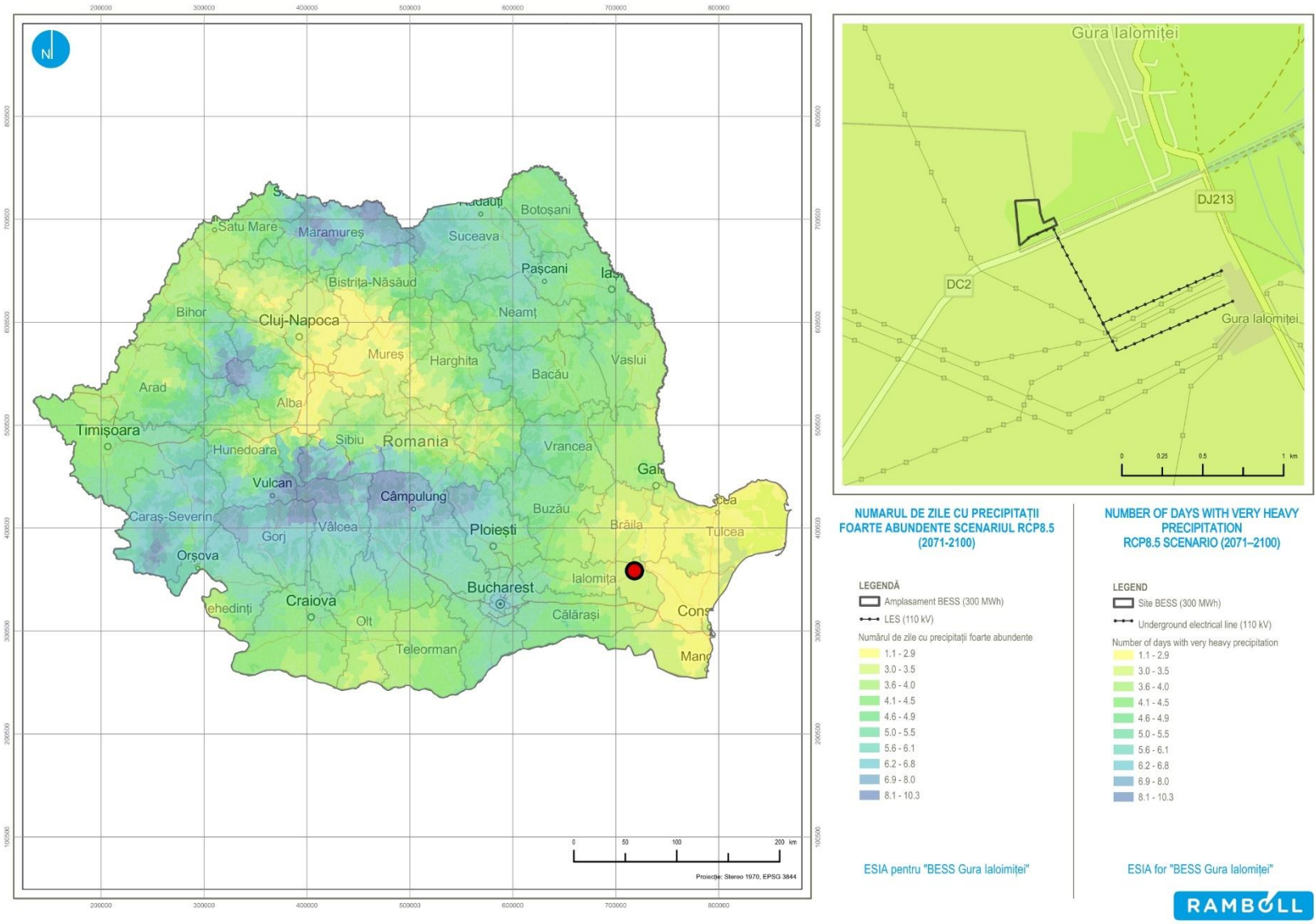


Figure 44 : Maximum 24-hour precipitation amounts - RCP8.5 scenario (2071-2100)

source: data processing taken from RO-ADAPT

- **Landslides/Avalanches/Subsidence**

In the RCP 4.5 and RCP 8.5 climate scenarios, the studied area presents a low risk of landslides due to its geomorphological characteristics (flat relief, plain). However, the increase in the frequency of extreme precipitation events (heavy rainfall concentrated in a short period of time) could cause localized soil instability (e.g., local erosion on road embankments, canal banks, dikes) and possible damage to surface infrastructure in the event of water accumulation or infiltration.

- **Temperature change/Temperature variability**

In the study area, the change in temperature pattern is marked by a clear and steady increase in the average annual temperature in both climate scenarios (RCP 4.5 and RCP 8.5).

In the RCP 4.5 scenario (2041-2070), the average annual temperature is around 12.0-12.5°C, representing an increase of approximately +2°C compared to the reference period (1971-2000). In the RCP 8.5 scenario (2071-2100), the average annual temperature could reach 13.3-13.9°C, which means an increase of +3.5°C or more compared to the current climate. This significant warming is associated with more intense heat waves, a longer hot season, and an increased risk of drought.

In conclusion, the temperature pattern in the Gura Ialomiței area is changing substantially in the direction of significant warming, which requires climate change adaptation measures to reduce the vulnerability of communities and infrastructure.

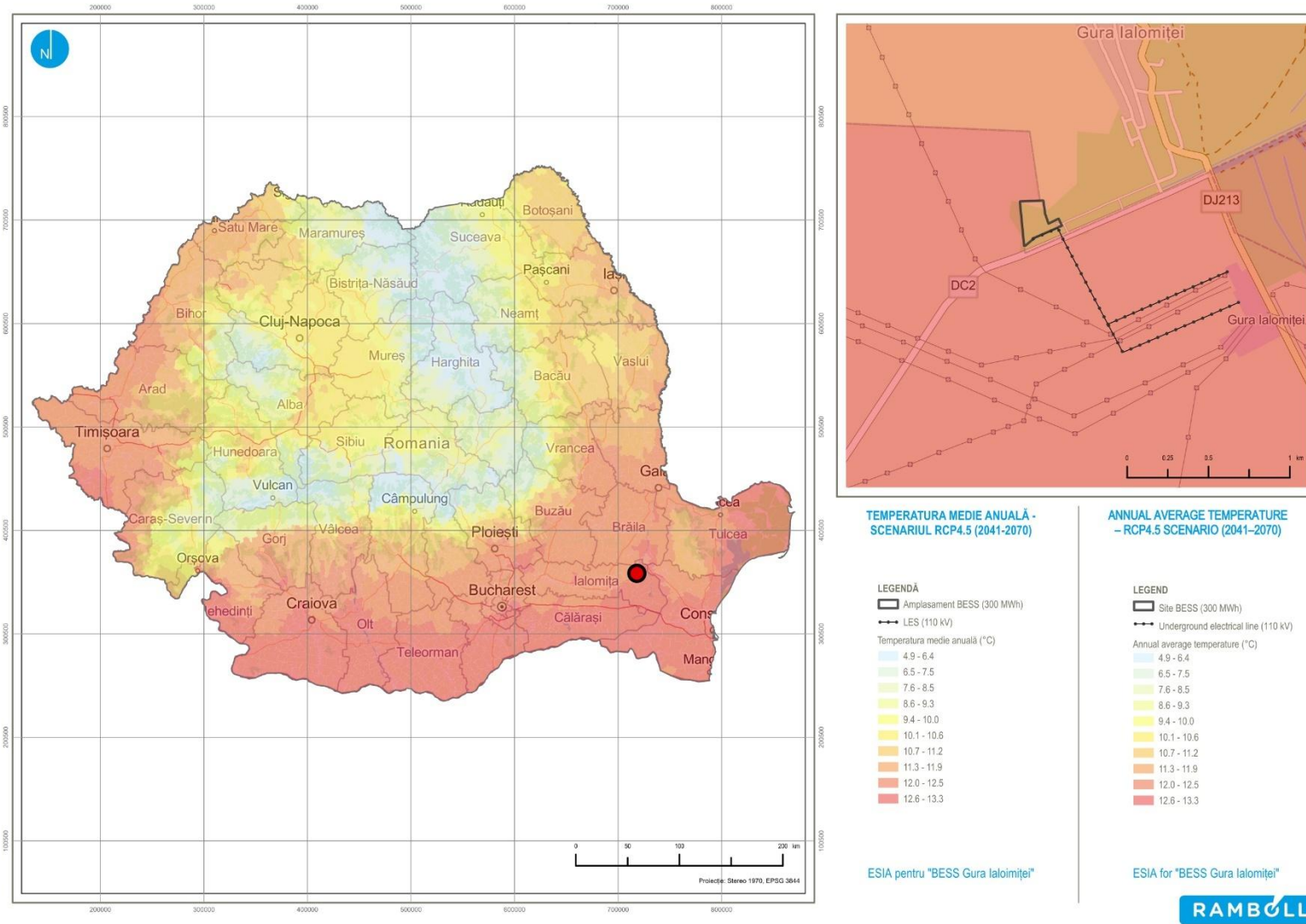
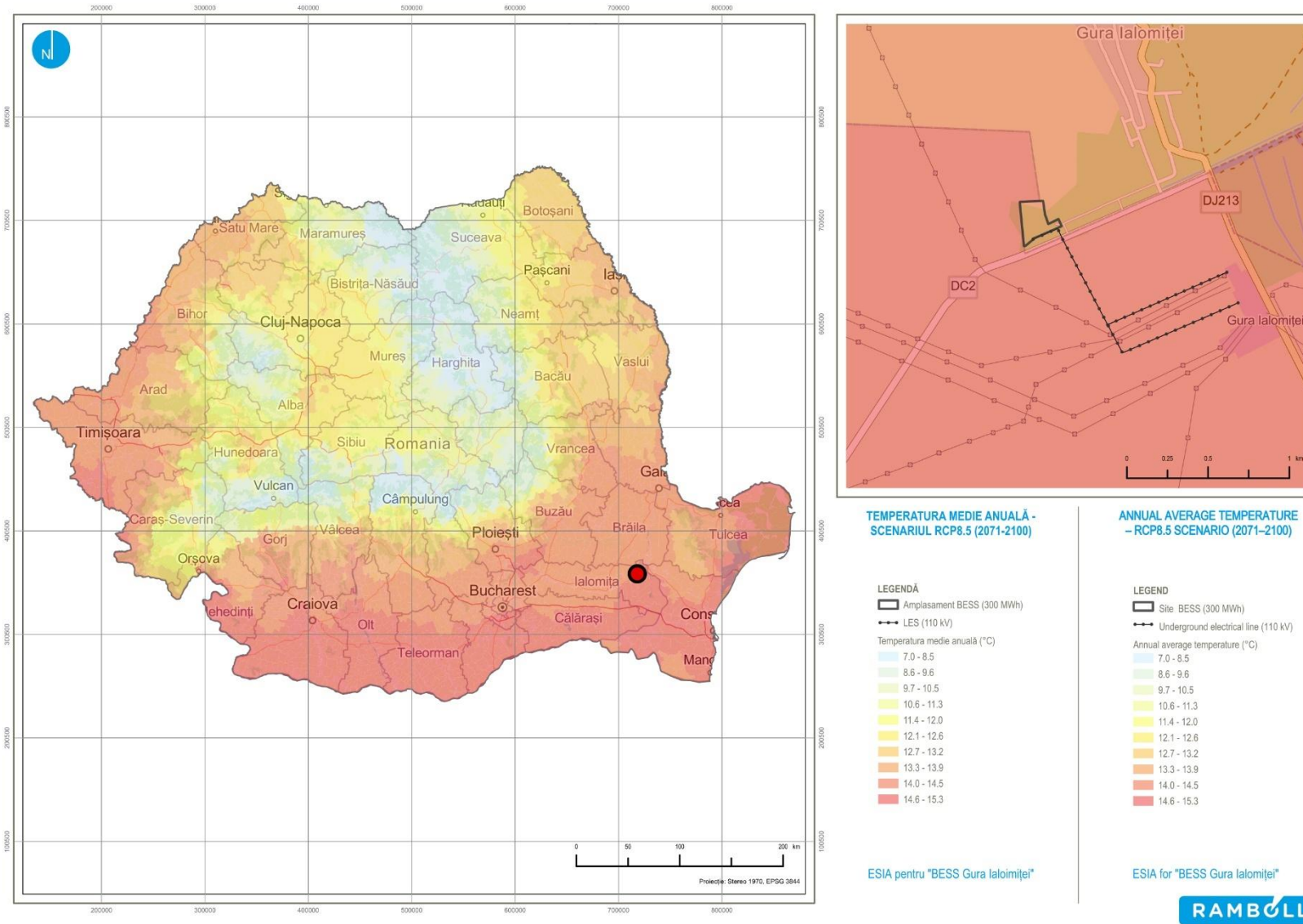


Figure 45: Average annual temperature - RCP4.5 scenario (2041-2070)
source: data processing taken from RO-ADAPT



Average annual temperature - RCP8.5 scenario (2071-2100)

source: data processing taken from RO-ADAPT

Figure 46 :

- **Permafrost thawing**

Permafrost thawing has no direct effects on the Gura Ialomiței area.

- **Changing wind patterns**

Based on climate scenarios RCP 4.5 (2041-2070) and RCP 8.5 (2071-2100), the Gura Ialomiței area will not experience significant changes in wind patterns, with average wind speeds remaining in the range of 4.0-4.2 m/s and the maximum annual gust speed around 10.3-10.6 m/s. Although the wind regime remains stable, the associated climate risks (e.g., vegetation fires, impact on light infrastructure) may increase, particularly due to the combination with high temperatures and prolonged droughts forecast in RCP 8.5.

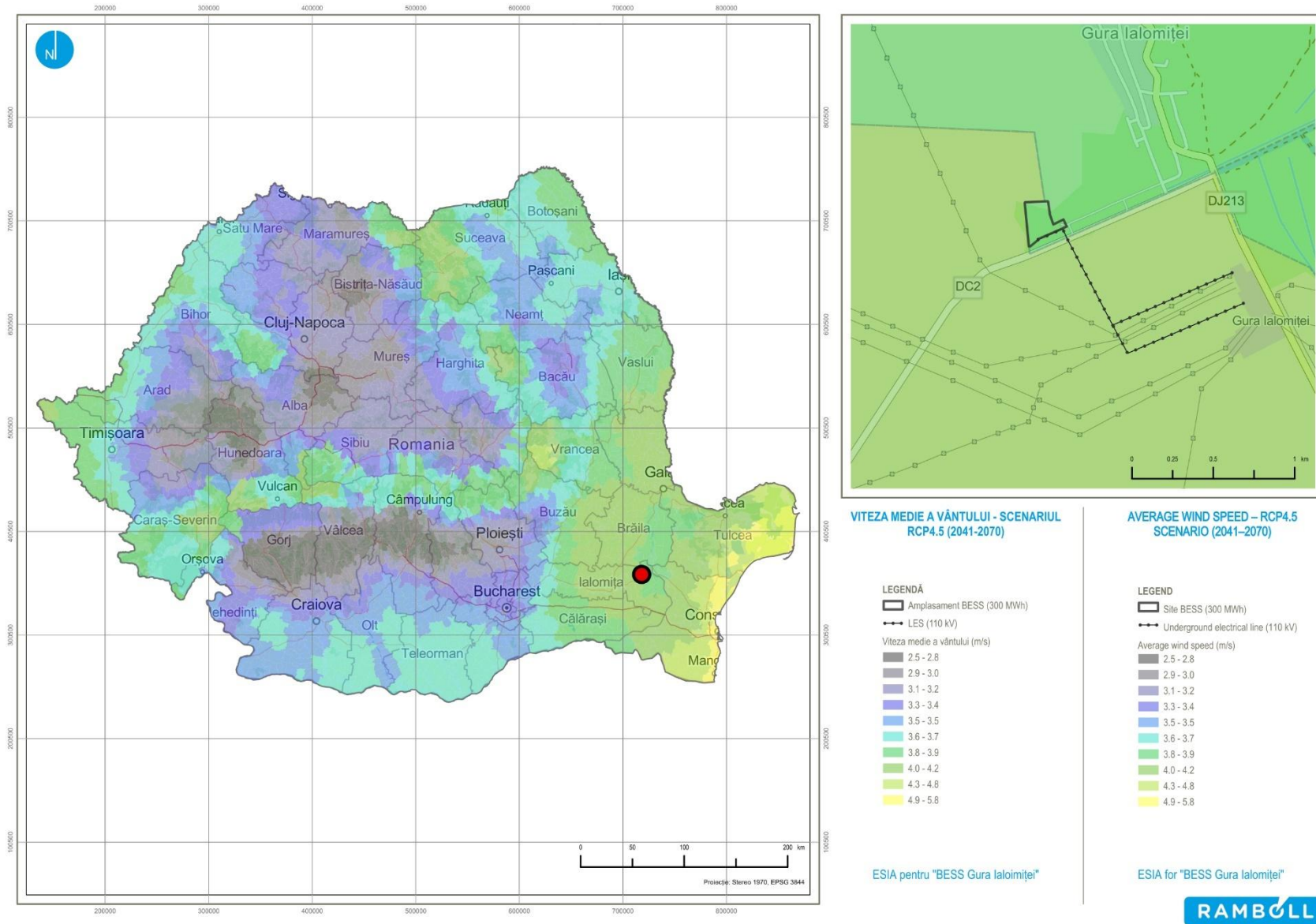


Figure 47: Average wind speed - RCP4.5 scenario (2071-2100)
source: data processing taken from RO-ADAPT

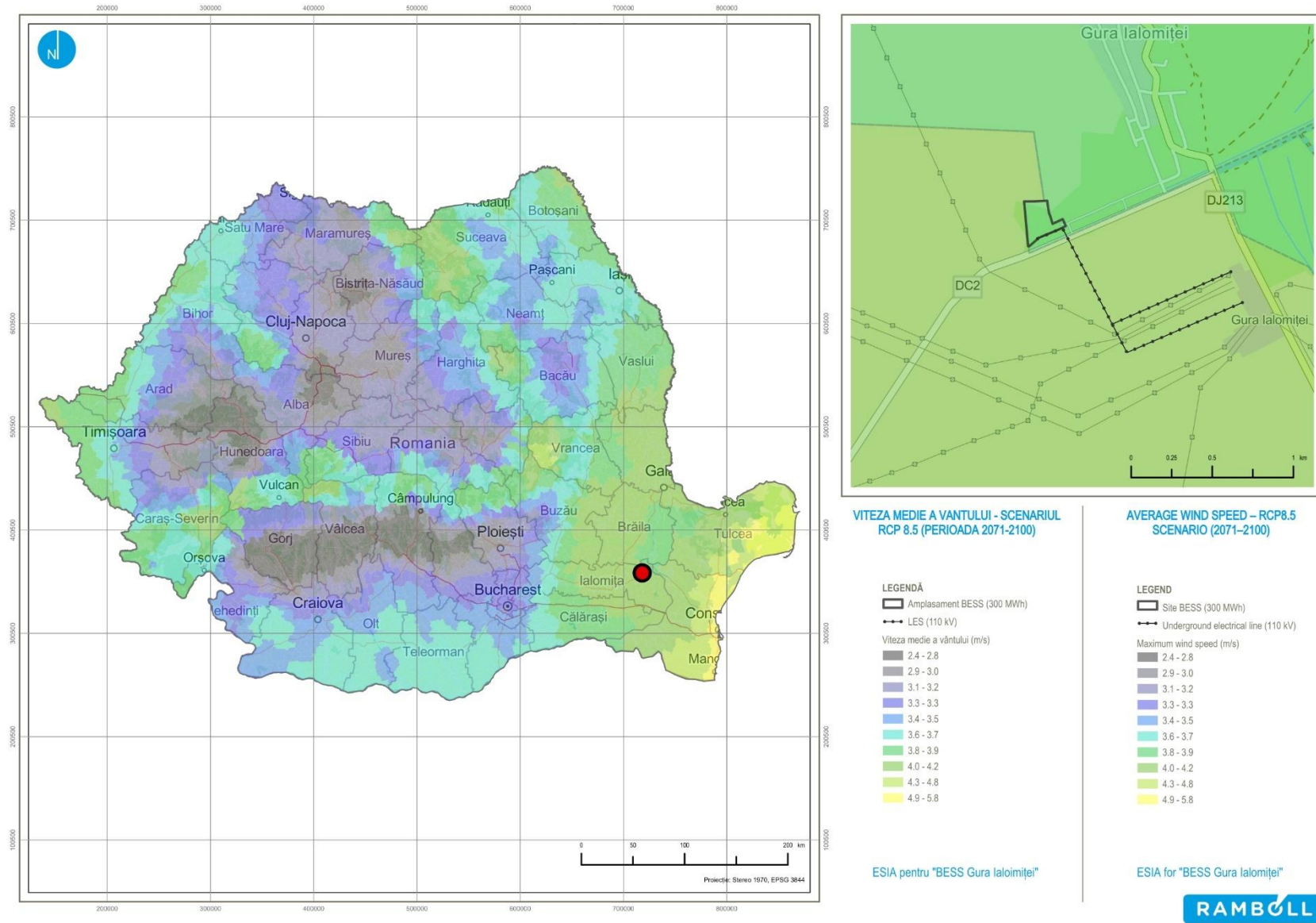


Figura 48 : Average wind speed - RCP8.5 scenario (2071-2100)
source: data processing taken from RO-ADAPT

- **Change in precipitation patterns/Precipitation or hydrological variability**

In the studied area, the average annual precipitation according to climate projections remains at relatively low values, approximately 430-437.3 mm/year in the RCP 4.5 scenario (2041-2070) and 438-490 mm/year in the RCP 8.5 scenario (2071-2100).

The average annual rainfall in the Gura Ialomiței area remains relatively constant, with low values compared to the rest of the country. However, the temporal distribution and intensity of precipitation is likely to change (as confirmed by the heavy precipitation maps you provided earlier), which may lead to: alternating longer periods of drought and episodes of torrential rain, and an increased risk of extreme events (e.g., flash floods).

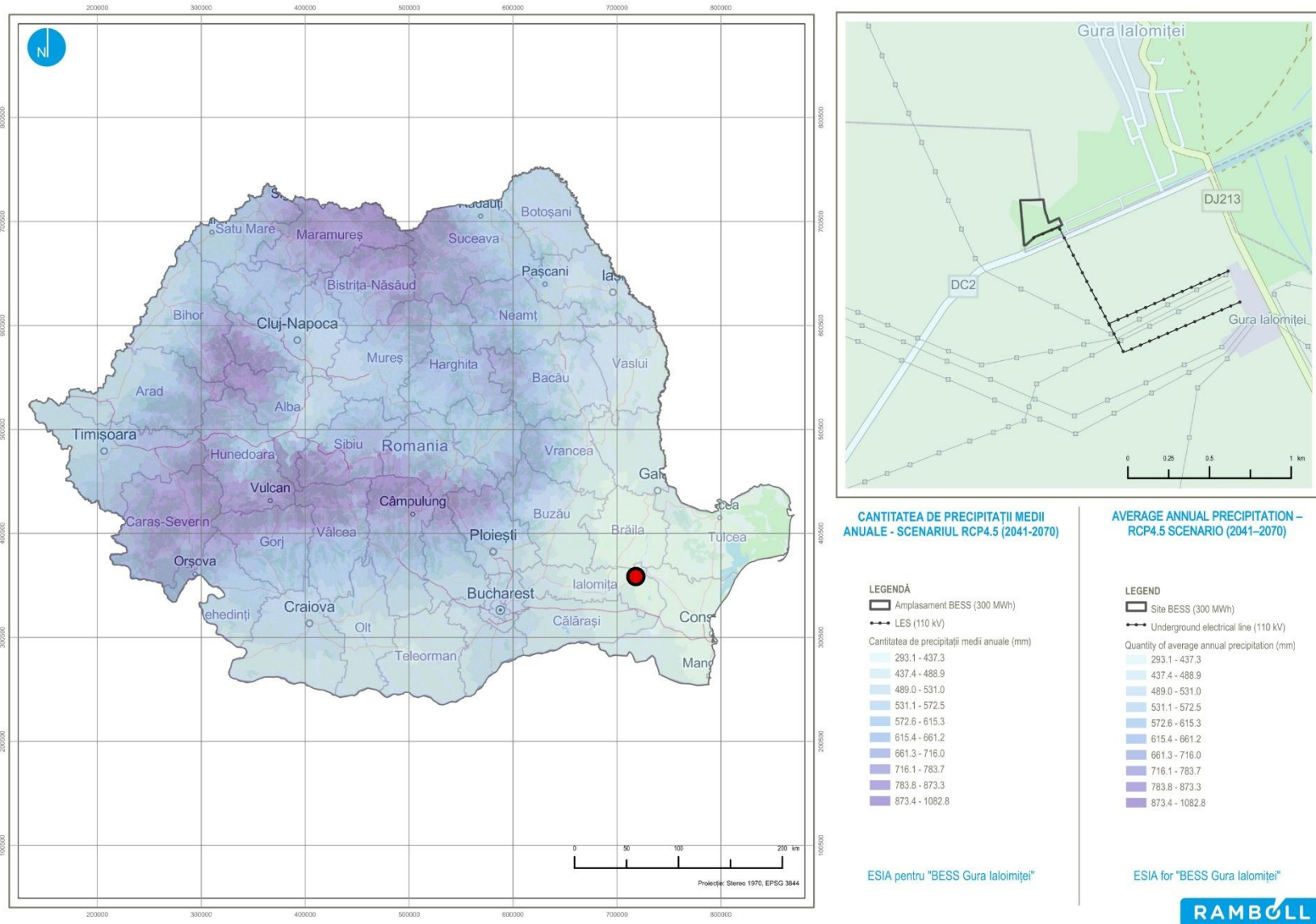


Figure 49 : Average precipitation amount - RCP4.5 scenario (2041-2070)
 source: data processing taken from RO-ADAPT

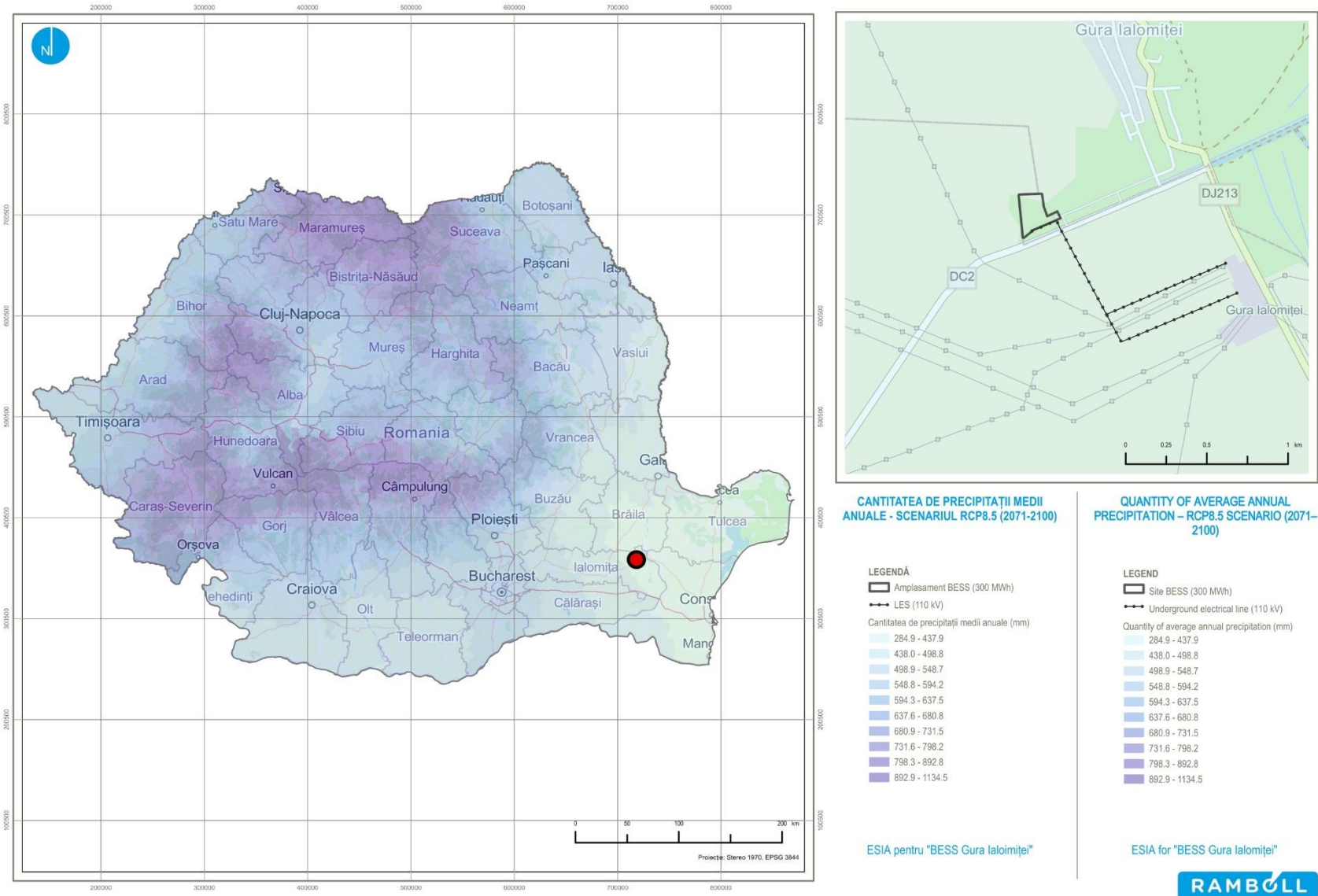


Figure 50 : Average precipitation - RCP8.5 scenario (2071-2100)
source: data processing taken from RO-ADAPT

- **Sea level rise, saltwater intrusion**

In the studied area, sea level rise according to the RCP 4.5 and RCP 8.5 scenarios does not generate direct coastal erosion effects, but it does put increased pressure on hydrotechnical defenses and increases the risk of river flooding.

- **Coastal erosion/Soil erosion**

In the Gura Ialomiței area, soil erosion may be exacerbated by climate change, particularly under the RCP 8.5 scenario. The main factors are the intensification of heavy rainfall events and heat waves, which promote drying and disintegration of the topsoil. The risk of coastal erosion is low, but there may be indirect effects on the banks of the Danube and local hydrotechnical infrastructure.

Vulnerability

The vulnerability analysis showed that the project has medium to high vulnerability to the following climate hazards, to which the analyzed area is currently and will be exposed in the future:

High vulnerability to the following climate hazards:

RCP 2.6 scenario: Heat waves, fires

RCP 4.5 scenario: Heat waves, fires, floods/storm surges/heavy rainfall

RCP 8.5 scenario: Heatwave, Fires, Floods/storm surge/heavy rainfall

Moderate vulnerability to the following climate hazards:

RCP 2.6 scenario: Floods/storm surges/heavy precipitation

The results of the vulnerability assessment are presented below:

Climate hazard	Exposure			Sensitivity Overall	Vulnerability		
	RCP 2.6 Current exposure	RCP 4.5 Medium-term exposure	RCP 8.5 Long-term exposure		RCP 2.6 Current vulnerability	RCP 4.5 Medium-term vulnerability	RCP 8.5 Long-term vulnerability
Heat wave	2	2	3	3	6	6	9
Cold wave/frost	1	1	1	2	2	2	2
Fires	2	2	3	3	6	6	9
Extreme wind (storm, hurricane, tornado)	1	2	2	1	1	2	2
Drought	2	2	3	1	2	2	3
Flood / Storm surge / Heavy rainfall	1	2	3	3	3	6	9
Landslide / Avalanche / Subsidence	0	0	0	2	0	0	0
Temperature change / Temperature variability	2	2	3	1	2	2	3
Permafrost thawing	0	0	0	1	0	0	0
Changing wind patterns	1	2	2	0	0	0	0
Change in precipitation patterns / hydrological variability	2	2	3	1	2	2	3
Sea level rise; Saline intrusion	1	2	3	1	1	2	3
Coastal erosion / Soil erosion	1	2	3	1	1	2	3

Vulnerability matrix:

BESS vulnerability matrix

		Current exposure - 2021-2040			
		0	1	2	3
Sensitivity	0		Changing wind patterns		
	1	Permafrost thawing	Extreme winds (storms, hurricanes, tornadoes) Sea level rise; Saltwater intrusion Coastal erosion / Soil erosion	Drought Temperature change/Temperature variability Change in precipitation patterns / Hydrological variability	
	2	Landslides/ Avalanches/ Subsidence	Cold wave/frost		
	3		Flooding / Storm surge / Heavy precipitation	Heatwave Fires	
		Medium-term exposure – 2041-2070			
		0	1	2	3
Sensitivity	0			Changing wind patterns	
	1	Permafrost thawing	Extreme wind (storm, hurricane, tornado) Temperature change / Temperature variability	Drought Extreme wind (storm, hurricane, tornado) Sea level rise; Saltwater intrusion Coastal erosion / Soil erosion Changing precipitation patterns / Hydrological variability	
	2	Landslides / Avalanches / Subsidence	Cold wave/Frost		
	3			Heat waves Fires Flood / Storm surge / Heavy rainfall	
		Long-term exposure – 2071-2100, worst-case scenario			
		0	1	2	3
Sensitivity	0				
	1	Permafrost thawing		Extreme wind (storm, hurricane, tornado)	Drought Temperature change / Temperature variability Change in precipitation patterns / hydrological variability Sea level rise; Saltwater intrusion Coastal erosion / Soil erosion
	2	Landslides / Avalanches / Subsidence	Cold wave/frost		
	3				Heat wave Fires Flood / Storm surge / Heavy rainfall

KEY

Sensitivity * Exposure	
Vulnerability class	
high vulnerability	≥ 6
medium vulnerability	3-5
reduced vulnerability	1-2
no vulnerability	0

		Exposure			
		0	1	2	3
Sensitivity	0	0	0	0	0
	1	0	1	2	3
	2	0	2	4	6
	3	0	3	6	9

5.2.3 Detailed analysis for adaptation to climate change (STAGE 2 analysis)

Risk assessment provides a structured method for analyzing climate hazards and their impact on the proposed project. This process works by assessing the probabilities and severity of the impact associated with the hazards identified in the vulnerability assessment (or in the initial examination of relevant hazards) and by assessing the significance of the risk to the success of the project.

Probability analysis

The following table presents the results of the probability analysis of climate hazards.

Table 48 : Probability analysis

Climate hazard	Probability	Justification
Heat wave	5	High average annual temperatures, high frequency of heat waves. Probability >95%.
Cold wave/frost	2	Severe frost events are becoming increasingly rare, but not completely eliminated. Probability ~20-30%.
Fires	4	The Fire Weather Index indicates an increased probability of occurrence. Probability 80-90%.
Extreme wind	3	Average and maximum wind speeds increase moderately in RCP scenarios. Probability 50-60%.
Drought	5	The area is affected by moderate to severe drought every 3-4 years. Probability >95%.
Flooding/Heavy rainfall	1	Variable but possible heavy rainfall. Very low probability due to the topography of the area and distance from watercourses.
Landslides/Avalanches/Subsidence	2	Specific risks depending on the relief, low in the plain area. Probability ~20-30%.
Temperature change	3	Clear trend of increasing annual temperatures. Probability 50%.
Permafrost thawing	1	Not applicable to the region (there is no permafrost in Romania). Probability <5%.
Change in wind patterns	3	Wind patterns may vary, but no extreme changes are anticipated. Probability ~50%.
Change in precipitation patterns	3	Variable precipitation, with increased frequency of extremes. Probability 70-80%.
Sea level rise; Saltwater intrusion	1	The area is close to the Danube and the Delta, but the effects are moderate. Probability below 5%.
Coastal erosion/Soil erosion	3	Increased risk of erosion due to changes in precipitation and drought. Probability ~50%.

Severity and risk analysis

To simplify risk assessment, the effects of climate hazards and climate components (those for which the project has been identified as having medium and high vulnerability) have been grouped together. This allows the risk assessment to focus on the most critical hazards and describe how the built-in resilience measures that are part of the proposed project address multiple climate hazards.

The following table shows the risk matrix.

Table 49 : Risk Matrix

Climate hazard	Probability	Severity	Risk	Risk level	Associated risk area	Consequences
Heat wave	4	4	16	High	RA1, RA3, RA5, RA6	Heat waves can lead to equipment damage, environmental pollution, and health effects on exposed personnel.
Cold wave/frost	2	3	6	Low	RA2, RA5	May cause technical malfunctions in exposed systems and risks to personnel.
Fires	4	4	16	High	RA1, RA2, RA5, RA6, RA3	Increases the risk of infrastructure damage and BESS operation interruption.
Extreme wind	3	3	9	Moderate	RA1, RA5	May damage infrastructure and affect equipment stability.
Drought	4	3	12	High	RA1, RA3, RA5, RA6	May cause indirect risks such as fires and soil instability.
Flooding/Heavy rainfall	1	3	3	Non-transferable	RA1, RA3, RA5	Equipment damage, operational disruption, environmental pollution
Landslides/Avalanches/Subsidence	1	3	3	Non-recoverable	RA1, RA5	May affect the base structure and underground cables.
Temperature change	3	3	9	Moderate	RA1, RA3, RA5	Rising temperatures may reduce the lifespan of equipment.
Permafrost thawing	1	3	3	Not applicable	n/a	Not relevant for the site under consideration (no permafrost).
Change in wind patterns	3	2	6	Low	RA1, RA5	May influence microclimate and pollutant dispersion.
Change in precipitation patterns	3	3	9	Moderate	RA1, RA3, RA5	May lead to local hydrological instability and operational problems.
Coastal erosion/Soil erosion	2	2	4	Low	RA1, RA3, RA5	May affect the stability of the structure and access routes.

Conclusion

The risk assessment showed that the project presents **high risks** for the following climate hazards:

- Heat waves
- Fires
- Drought

The project presents **moderate risks** to the following climate hazards:

- Extreme wind
- Temperature change
- Precipitation pattern change

Risks with a medium and high risk score must be managed to an acceptable level through climate change adaptation measures. Such measures have been taken since the planning/design stage of the project. The proposed climate change adaptation measures are part of the project and include investment measures, operational measures, and strategic measures (see table below). By implementing these adaptation measures, the risk is reduced to an insignificant/acceptable level.

Table 50: Climate change adaptation measures

Climate hazard	Risk level	Investment measures	Operational measures	Management measures	Identification of measures at the level of technical reports prepared for this project
Heat wave	High	Installation of a resilient and efficient HVAC system for cooling BESS containers; use of thermo-reflective materials.	Internal temperature monitoring and automatic alarm; load reduction during heat waves.	Training for staff during heat waves; safety shutdown simulations in case of overheating.	BESS technical data sheet: Intelligent Liquid Cooling provided in BESS containers; thermal insulation detailed in technical specifications. Fire suppression system, sensors, extinguishers, SCADA systems
Fires	High	The fire safety system shall be designed in accordance with the requirements of standard PE118-3/2015, as amended and supplemented	Regular maintenance of fire protection systems; clearing of flammable vegetation.	Cooperation protocol with ISU; emergency evacuation and relocation plan for affected equipment.	Architectural memorandum and technical data sheet: fireproof metal walls, modular layout; distance from flammable vegetation, fire detection and warning system
Drought	High	Water supply system from tanks; perimeter area covered with gravel to reduce evaporation.	Soil moisture monitoring; automatic cooling adjustment based on evaporation levels.	Adjustment of maintenance planning according to dry periods.	Resistance memorandum: drainage system indicated around the site; soil treatments according to DTAC for stabilization.
Extreme wind	Moderate	Anchored and ventilated BESS containers; electrical infrastructure sized for gusts; wind-resistant poles.	Weather monitoring and adjustment of electrical load flows; rapid response in case of outages.	Emergency procedures for storms; annual assessment of infrastructure vulnerability.	DTAC memorandum: anchored BESS structures, gust-resistant side closures; integrated natural ventilation.

Climate hazard	Risk level	Investment measures	Operational measures	Management measures	Identification of measures at the level of technical reports prepared for this project
Temperature change	Moderate	Thermally insulated materials; modular design to adapt to temperature fluctuations.	Periodic recalibration of HVAC systems; performance analysis based on seasonal climate.	Review of operating procedures based on climate scenarios; adaptation of operating cycles.	Architectural memorandum: HVAC systems sized for temperature ranges; thermal insulation material applied in panels.
Changing precipitation patterns	Moderate	Adaptable drainage structures; water storage reserves and rainwater collection system.	Seasonal checks of drainage systems and adaptation to new precipitation patterns.	Updating continuity plans based on revised climate models.	DTAC Memorandum: Rainwater is collected using sheet metal gutters and downspouts for the transformer station; adaptability to changes in the hydrological regime.

5.3 Biodiversity impact assessment

This section analyzed the impact on protected natural areas.

This project has not undergone the appropriate assessment procedure, in accordance with Scoping Decision No. 272/28.10.2024.

5.3.1 Definition of the area of influence

To analyze the location of the project in relation to protected natural areas and the potential for their impact, the vector format boundaries available on the website of the Ministry of Environment, Water, and Forests were used.

To identify the Natura 2000 sites potentially affected by the implementation of the project, the criteria mentioned in the annex to Order No. 1.682/2023 approving the Methodological Guide on the adequate assessment of the potential effects of plans or projects on protected natural areas of Community interest and in the annex to Order of the Minister of Environment, Water and Forests No. 1.679/2023 approving the Specific Methodological Guide on the appropriate assessment of the potential effects of plans/projects in areas of interest. These criteria are: a) intersection; b) proximity (area of influence); c) species mobility; d) ecological connectivity.

a) Identification of Natura 2000 sites intersected by the project

The identification of Natura 2000 sites intersected by the project was carried out through a spatial analysis that took into account all elements of the project. The project site and the route of the proposed underground power lines in the extra-urban area of Gura Ialomiței do not intersect sites of Community interest, as they are located at a distance of approximately 1 km. The power lines route covers an area of 1.6 km, from the project site to the power station.

b) Identification of Natura 2000 sites within the project's area of influence:

b1) Area of direct influence

The area of influence is usually represented by geospatial mapping tools, with clear boundaries for each of the areas mentioned. These maps are accompanied by a narrative description and justifications based on scientific data, field observations, or technical expertise. Detailed documentation ensures the transparency of the process and allows for its validation by stakeholders and competent authorities.

Considering the above, the actual footprint of the project is 38,756 m² (38,756 square meters), to which is added the area temporarily occupied by the cable route, which is 1.6 km long.

The area directly affected by the project consists of the areas potentially affected by the proposed works.

During the assessment process, the following maximum distances of potential influence of the project were established, depending on the nature of the estimated effects:

- 100–500 m – in the case of interventions involving digging and excavation works, representing the possible area of dispersion of invasive plant species through hydrochore and anemochore mechanisms, around the work fronts;
- 250 m – for the area of influence associated with the dispersion of pollutants into the atmosphere under normal operating conditions;
- 100 m – estimated distance for the propagation of noise from specific construction and operating activities. The “100 m” value is used as a conservative, screening-level distance of potential influence for construction-phase noise in a BESS project, reflecting that the dominant sources (e.g., excavators, cranes, delivery vehicles and intermittent works) are localised, short-duration and at-grade, and that sound levels typically attenuate rapidly with distance under normal conditions;
- 500 m – maximum area of influence associated with accidental scenarios with potential environmental impact;
- 50 m – for possible localized contamination of soil and surface or groundwater in the event of accidental spills or operational deficiencies.

These reference distances were used to delimit the areas of direct and indirect influence in the assessment of the impact on environmental and social factors.

The area of indirect impact was mainly delimited at the level of the road transport infrastructure in the vicinity of the site, given the anticipated changes in traffic volume generated in particular during the construction and decommissioning phases. Apart from this, the development of the project is not likely to cause any other significant changes in the structure of economic or functional activities in the area, as no interference with existing land uses or local socio-economic dynamics is expected.

The following table shows the project's area of influence and the effects generated by the project and the forms of potential impact (AH-Habitat alteration, PH-Habitat loss, REP-Population reduction, PAS-Species activity disturbance).

Table 51 : Effects generated by the project and ANPIC in the project's area of influence

Project effects	Form of potential impact	Direct area of influence of the project	Justification	ANPIC in the area of influence
Construction phase				
Generation of emissions into the atmosphere (NOx, CO2, CO, PM2.5, PM10 including asbestos)	AH	Impact on air quality	Possible release of pollutants from the equipment used in this stage and modification of air quality through subsequent drying	Unlikely, but we do not rule out the possibility of affecting sites ROSPA0111, ROSPA0120
Increased noise and vibration levels	PAS	Transmission of vibrations to buildings through the ground	Noise or vibrations above the limits set by legislation	Unlikely, but we do not rule out the possibility of affecting sites ROSPA0111, ROSPA0120
Waste generation	AH	Impact on soil quality in the area in the event of improper storage	Possible change in local soil quality and properties	Unlikely, but we do not rule out the possibility of affecting the ROSPA0111 and ROSPA0120 sites
Temporary land occupation	FH	Reduction in the aesthetic value of the landscape	Temporary change in the appearance of the area Artificial barrier that may affect local fauna (especially mobile species)	Unlikely, but we do not rule out the possibility of affecting sites ROSPA0111, ROSPA0120
Removal of topsoil and vegetation	FH	Alteration of habitats Loss of soil productivity	Temporary change in the appearance of the area Artificial barrier that may affect local fauna (especially mobile species)	Unlikely, but we do not rule out the possibility of affecting sites ROSPA0111, ROSPA0120
Soil compaction	AH	Change in soil structure due to mechanical pressure caused by various activities (storage, vehicle traffic)	Mechanical injuries to workers and visitors Painted metals, varnishes, solvents → infiltration into soil and groundwater	Unlikely, but we cannot rule out the possibility of damage to sites ROSPA0111 and ROSPA0120
Physical barrier or interruption of ecological corridors	FH	Fragmentation of natural habitats Increased mortality through isolation or collision with infrastructure	Artificial visual modification of the terrain	Unlikely, but we do not rule out the possibility of affecting sites ROSPA0111, ROSPA0120
Introduction of invasive species	PAS	Possibility of introduction and spread of invasive plant or animal species	Temporary damage to local flora	Unlikely, but we do not rule out the possibility of affecting sites ROSPA0111, ROSPA0120
Collision of wildlife with traffic	FH	Reduction in population numbers	Construction activities and machinery involve a significant increase in vehicle traffic compared to the normal traffic level in that area	Unlikely, but we do not rule out the possibility of

Project effects	Form of potential impact	Direct area of influence of the project	Justification	ANPIC in the area of influence
on access roads/machinery in the work area				affecting sites ROSPA0111, ROSPA0120
The appearance of pollutant emissions in soil/water	PAS	Contamination of soil and/or surface or groundwater as a result of accidental spills of fuel, oil, hazardous substances from machinery and equipment, and improper storage of hazardous materials on site	Oils, fuels → contamination of soil and groundwater	Unlikely, but we do not rule out the possibility of affecting sites ROSPA0111, ROSPA0120
Emissions of odorous pollutants (eco-toilets)	AH	Air quality impairment	Reduced infiltration capacity → surface water accumulation	Unlikely, but we do not rule out the possibility of affecting sites ROSPA0111, ROSPA0120
Emissions of pollutants into the atmosphere (generator operation)	AH	Air quality impact	Accidental transport of pollutants	Unlikely, but we do not rule out the possibility of affecting sites ROSPA0111, ROSPA0120
Landscape structure modification	SE impact	Alteration of the local landscape/Decrease in aesthetic value	Artificial visual modification of the terrain	Unlikely, but we do not rule out the possibility of affecting sites ROSPA0111, ROSPA0120
Occurrence of surface morphological processes (collapses, landslides)	AH	Uneven soil compaction, which may favor differential settlement and micro-landslides;	Risk of collapse, landslide, or injury if excavations are performed incorrectly Accidental soil and water pollution due to leaks	Unlikely, but we do not rule out the possibility of damage to sites ROSPA0111, ROSPA0120
Generation of pollutants in the soil	AH	Impact on air quality	The excavated surface becomes vulnerable to wind and rain → soil loss Exceeding environmental standards if the soil is contaminated or excavated without permits	Unlikely, but we do not rule out the possibility of affecting sites ROSPA0111, ROSPA0120
Permanent occupation of land areas	AH	Permanent loss of land areas as a result of the installation of fences and other auxiliary structures, the construction of permanent access roads, and the development of technical platforms, BESS stations, and related infrastructure	Artificial visual modification of the land	Unlikely, but we do not exclude the possibility of affecting sites ROSPA0111, ROSPA0120
Generation of pollutant emissions into the atmosphere caused by the handling of earth masses (PM2.5, PM10)	AH	Impact on air quality	Leakage or release of toxic compounds → air contamination	Unlikely, but we do not rule out the possibility of affecting sites ROSPA0111, ROSPA0120
Temporary change in natural drainage	AH	Disruption of natural water flow → uncontrolled accumulation or stagnation Temporary flooding or excessive drying of adjacent areas	Involves excavation and redistribution of soil, which may disrupt natural water flows and the soil's ability to drain effectively	Unlikely, but we do not rule out the possibility of affecting sites ROSPA0111, ROSPA0120

Project effects	Form of potential impact	Direct area of influence of the project	Justification	ANPIC in the area of influence
Accidental infiltration into soil and water	AH	Accidental infiltration of fuels, oils, hydraulic fluids, or other hazardous substances from machinery Leakage of chemicals or hazardous substances from technical equipment or storage containers	Leaks or release of toxic compounds → soil or water contamination	Unlikely, but we do not exclude the possibility of affecting sites ROSPA0111, ROSPA0120
Emissions of pollutants into the atmosphere (generator operation)	AH	Impact on air quality	Leaks or release of toxic compounds → air contamination	Unlikely, but we do not rule out the possibility of affecting sites ROSPA0111, ROSPA0120
Accidental spills of petroleum products from machinery – emissions of pollutants into water – emissions of pollutants into water	AH	Accidental spills of fuel, oil, hydraulic fluids, or other hazardous substances from machinery Leaks of chemicals or hazardous substances from technical equipment or storage containers	Leaks or release of toxic compounds → water contamination	Unlikely, but we do not rule out the possibility of affecting sites ROSPA0111, ROSPA0120
Accidental spills of pollutants	AH	Accidental infiltration of fuels, oils, hydraulic fluids, or other hazardous substances from machinery Leaks of chemicals or hazardous substances from technical equipment or storage containers	Accidental selection of invasive or unsuitable species Reduction in plant diversity if only one type of grass is planted Imbalances in the local ecosystem (e.g., disappearance of pollinators) Improper leveling can lead to problems with water drainage or stagnation	Unlikely, but we do not rule out the possibility of affecting sites ROSPA0111, ROSPA0120
Nighttime light pollution	PAS	Disorientation of nocturnal fauna Disruption of natural behaviors	Impervious surfaces increase the risk of flooding because rainwater cannot infiltrate the soil and accumulates on paved surfaces	Unlikely, but we do not rule out the possibility of affecting sites ROSPA0111, ROSPA0120
Operational phase				
Infiltration of hazardous substances into the soil	AH	Immediate soil contamination: Destruction of local flora Danger to soil fauna	Long-term destruction of soil fertility High costs for soil remediation (excavation, bioremediation, isolation). Indirect ingestion through consumption of vegetables/fruit grown on contaminated soil.	Unlikely, but we do not rule out the possibility of affecting sites ROSPA0111, ROSPA0120
Waste generation	AH	Immediate environmental pollution Creation of visual and olfactory discomfort Attracting pests	Immediate environmental pollution Creating visual and olfactory discomfort Attracting pests	Unlikely, but we do not rule out the possibility of affecting sites ROSPA0111, ROSPA0120

Project effects	Form of potential impact	Direct area of influence of the project	Justification	ANPIC in the area of influence
		Immediate chemical or biological hazard (for hazardous waste)	Immediate chemical or biological hazard (for hazardous waste)	
Air pollutant emissions	AH	Air quality impairment	Inhalation of dust → irritation, allergic reactions, respiratory diseases	Unlikely, but we cannot rule out the possibility of affecting sites ROSPA0111, ROSPA0120
Noise generation	PAS	Continuous or intermittent noise generation as a result of the operation of cooling equipment (fans, air conditioning systems) and the operation of transformers and inverters;	Noise or vibrations above the limits set by legislation	Unlikely, but we do not exclude the possibility of affecting sites ROSPA0111, ROSPA0120
Electrocution of birds	REP	Immediate death of birds Serious injury to birds Decline in local bird populations Impact on protected species	Use of electrical equipment and power cables, which may pose a risk of electrocution	
Decommissioning phase				
Removal of topsoil and vegetation	FH	Decrease in local biodiversity Increased soil erosion Noise and air pollution Soil compaction	Indispensable for preparing the ground to facilitate the installation of foundations.	Unlikely, but we do not rule out the possibility of affecting sites ROSPA0111, ROSPA0120
Generation of pollutants in the atmosphere	AH	Air quality impairment	Inhalation of dust → irritation, allergic reactions, respiratory diseases	Unlikely, but we do not rule out the possibility of affecting sites ROSPA0111, ROSPA0120
Atmospheric emissions	AH	Air quality impairment	Inhalation of dust → irritation, allergic reactions, respiratory diseases	Unlikely, but we do not rule out the possibility of affecting sites ROSPA0111, ROSPA0120
Temporary change in natural drainage	AH	Disruption of natural water flow → uncontrolled accumulation or stagnation Temporary flooding or excessive drying of adjacent areas	It involves excavation and redistribution of soil, which may disrupt natural water flows and the soil's ability to drain effectively	Unlikely, but we do not rule out the possibility of affecting sites ROSPA0111, ROSPA0120
Intense traffic of heavy and light machinery	PAS	Significant emissions of NO _x , CO ₂ , PM (dust, soot) Constant noise from engines and brakes – affects wildlife and communities Soil compaction and damage to unprotected areas	Loss of oil, fuel, or hydraulic fluids → soil/water contamination Damage to underground networks (water, gas, sewage) if access is not controlled	Unlikely, but we do not rule out the possibility of damage to sites ROSPA0111, ROSPA0120
Increased noise and vibration levels	PAS	Disruption of species activity	Noise or vibrations above the limits set by legislation	Unlikely, but we do not rule out the possibility of affecting sites ROSPA0111, ROSPA0120
Temporary removal of vegetation	FH	Decrease in local biodiversity Increased soil erosion Noise and air pollution	Long-term destruction of soil fertility High costs for soil remediation (excavation, bioremediation, isolation).	Unlikely, but we do not rule out the possibility of

Project effects	Form of potential impact	Direct area of influence of the project	Justification	ANPIC in the area of influence
		Soil compaction	Indirect ingestion through consumption of vegetables/fruit grown on contaminated soil.	damage to sites ROSPA0111, ROSPA0120
Temporary removal of soil	FH	Loss of fertile layer Immediate damage to vegetation and fauna	Temporary damage to local flora	Unlikely, but we do not rule out the possibility of damage to sites ROSPA0111, ROSPA0120
Generation of dust and mud	AH	Suspended particles (PM ₁₀ , PM _{2.5}) from dust – affects human health Formation of mud puddles, slippery surfaces	Risk of erosion or land instability	Unlikely, but we do not rule out the possibility of damage to sites ROSPA0111, ROSPA0120
Waste (including hazardous waste)	AH	Spread of powdery waste in the implementation area	-	-
Accidental spills of pollutants on the ground	AH	Immediate soil contamination: Destruction of local flora Danger to soil fauna	-	-
Emissions of suspended particles from the handling of earth masses (PM ₁₀ , PM _{2.5})	AH	Impairment of air quality	-	-
Temporary occupation of additional land areas	FH	Loss of natural habitats Soil degradation	-	-
Temporary landscape disturbance	Impact SE	Visual alteration of the area Removal of existing vegetation Creation of visual and physical barriers	-	-
Emissions of suspended particulate matter from earthworks (PM ₁₀ , PM _{2.5})	AH	Impact on air quality	-	-
Emissions of pollutants into the atmosphere (NO _x , SO ₂ , CO, GHG, PM _{2.5} , PM ₁₀)	AH	Impact on local air quality	-	-
Spread of invasive plant species	PAS	Replacement of native species Alteration of natural habitats Prevention of natural regeneration	Accidental selection of invasive or unsuitable species	-

From the analysis of protected natural areas of Community interest in relation to the project location, the following sites were not identified in the area of direct influence: ROSCI0389 Sărăturile de la Gura Ialomiței – Mihai Bravu, ROSPA0111 Berteștii de sus-Gura Ialomiței, ROSPA0120 Kogălniceanu-Gura Ialomiței.

According to EU Regulation 1143/2014 on the prevention and management of the introduction and spread of invasive alien species, the study area is not prone to the presence of invasive species, and the probability of their occurrence and spread is low. Habitats 91I0 and 1950 are dependent on the groundwater body ROIL09 Calmatuiul de Sud. According to the IUCN Red List, vulnerable species found in the vicinity of the site include bird species such as *Falco vespertinus*, *Falco columbarius*, *Anser erythropus*, and *Vanellus vanellus*.

Considering the effects generated in the vicinity of the project within a radius of approximately 1 km, the species that could be affected are the birds in the ROSPA0111 and ROSPA0120 sites. The native plant species in the agricultural and construction areas in the vicinity of the project are represented by: *Triticum aestivum*, *Helianthus annuus*, *Hordeum vulgare*, *Zea mays*, *Cichorium intybus*, *Elymus repens*, *Plantago major*, *Achillea millefolium*, *Rumex acetosa*.

b2) Indirect influence area

The indirect influence area is the area where effects generated by other activities occur, modified as a result of the implementation of the analyzed project. The traffic generated by the execution is temporary, reduced, and controlled, taking place on existing public roads. No new access points or permanent roads are created. In the case of this project, it is not necessary to delimit an indirect influence area.

c) Identification of Natura 2000 sites where highly mobile species that can reach the project area are protected

For this criterion, Natura 2000 sites located at least 1 km from the project boundary were analyzed, and standard forms were checked to see which ones were designated for the protection of highly mobile species, such as birds and mammals that could reach the project area and be affected by it. This category includes the sites ROSPA0111 Berteștii de Sus – Gura Ialomiței and ROSPA0120 Kogălniceanu – Gura Ialomiței. Given the location of the project, an agricultural and built-up area, the presence of highly mobile species within these areas is possible.

Spermophilus citellus, present in the ROSCI0389 site, is a species with extremely low mobility around its own galleries, covering distances of up to 200 m.

Grassland and farmland birds, *Accipiter brevipes*, *Anthus campestris*, *Circus cyaneus*, *Circus macrorus*, *Circus pygargus*, *Coracias garrulus*, *Emberiza hortulana*, *Falco vespertinus*, *Tringa glareola*, *Vanellus vanellus*, *Burhinus oedicephalus*, *Buteo rufinus*, *Glareola pratincola* have a range of 1–5 km and are sensitive to changes in the agricultural landscape, making them vulnerable to land use changes or short-term disturbances in their feeding and nesting habitats.

Aquatic and wetland species such as *Ciconia ciconia* (white stork), *Anser albifrons*, *Charadrius alexandrinus*, *Ciconia nigra*, *Egretta alba*, *Egretta garzetta*, *Himantopus himantopus*, *Limosa limosa*, *Philomachus pugnax*, *Platalea leucorodia*, *Plegadis falcinellus*, *Anser erythropus*, *Branta ruficollis*, *Charadrius*

a alexandrinus, *Circus aeruginosus*, *Recurvirostra avosetta* are highly mobile (10–20 km) and may use the project area as a transit or feeding habitat, especially during periods of intense activity (spring–summer).

Therefore, the presence of these species with varying degrees of mobility and habitat fidelity justifies an integrated approach in the impact assessment, taking into account the potential extended area of influence and the specific ecological sensitivities of each functional group.

d) Identification of Natura 2000 sites whose connectivity or ecological continuity may be affected by the implementation of the project

For this criterion, protected natural areas of Community interest whose connectivity (within the site or to the rest of the Natura 2000 network) may be interrupted by the appearance of barriers at the level of ecological corridors were analyzed. Given the nature of the proposed interventions and the specific nature of the project, it is unlikely that the ecological connectivity or continuity of Natura 2000 sites in the implementation area will be affected.

The project implementation area is not characterized by ecological corridors for large carnivores or ecological corridors that can be used by herbivorous species.

Water bodies are recognized as important ecological corridors for the movement and maintenance of connectivity of species of Community interest. In the vicinity of the project, at a distance of approximately 8 km, there is the Ialomița River, a favorable habitat for other species.

The impact on conservation objectives has been assessed for these areas. Information on the ANPIC potentially affected by the project, as well as the restrictive measures in the Management Plans, is presented in the following table.

Table 52: Effects generated by the project and ANPICs in the project's area of influence

Information on ANPICs potentially affected by the project								
No.	ANPIC code and name	Intersected (Yes/No)	Conservation objectives (Yes/No)	Management plan (Yes/No)	ANPIC included in the project's Area of Influence (Yes/No) (Justification)	ANPIC hosts fauna species that can move within the project area (Yes/No) (Justification)	ANPIC ecologically connected to the project area (Yes/No, Justification)	Restrictive measures in the PM - normative act or administrative act
1	ROSCI0389 Salt marshes at Gura Ialomiței-Mihai Bravu	No The proposed project does not intersect with the boundary of this Natura 2000 site.	Yes Decision No. 2051/04.04.2022	No	No	Yes The site is home to the <i>Spermophilus citellus</i> species, which cannot move within the project's direct area of influence.	No	There is no management plan, no restrictive measures have been established.
2	ROSPA0111 Berteștii de Sus-Gura Ialomiței	No The proposed project does not intersect with the boundary of this Natura 2000 site.	Yes Note no. 4645/16.07.2021	Yes Management plan for the Natura 2000 site ROSPA0111 Berteștii de Sus-Gura Ialomiței not approved	No	Yes Agricultural land species have medium mobility, use anthropized habitats, and are sensitive to changes in land use and temporary disturbance. Therefore, the site is home to bird species that can move within the direct influence area of the project.	Yes Presence of highly mobile species	No restrictive measures have been established for the energy storage battery.
3	ROSPA0120 Kogălniceanu-Gura Ialomiței	No The proposed project does not intersect with the boundary of this Natura 2000 site.	Yes Decision 62191/06.10.2021	No	No	Yes Agricultural land species have medium mobility, use anthropized habitats, and are sensitive to changes in land use and temporary disturbance. Therefore, the site is home to bird species that can	Yes Presence of highly mobile species	No management plan, no restrictive measures established

Information on ANPICs potentially affected by the project

No.	ANPIC code and name	Intersected (Yes/No)	Conservation objectives (Yes/No)	Management plan (Yes/No)	ANPIC included in the project's Area of Influence (Yes/No) (Justification)	ANPIC hosts fauna species that can move within the project area (Yes/No) (Justification)	ANPIC ecologically connected to the project area (Yes/No, Justification)	Restrictive measures in the PM - normative act or administrative act
						move within the project's direct area of influence ().		

Of the three Natura 2000 sites analyzed in this project, ROSPA0111 Berteștii de Sus – Gura Ialomiței is the only site that has a management plan, but it has not been approved at the time of writing this documentation. Of the sites studied, only ROSCI0389 Sărăturile de la Gura Ialomiței-Mihai Bravu is recorded in the standard forms as being affected by pressures and threats.

The predominant use of land in the studied area and its vicinity is for construction and agriculture, which can provide a favorable habitat for some bird species, especially for feeding or nesting, depending on the degree of anthropogenic disturbance and the presence of spontaneous vegetation or agricultural crops compatible with their ecological requirements.

The IUCN Red List includes endangered and vulnerable bird species such as: *Egretta garzetta*, *Egretta alba*, *Ciconia nigra*, *Ciconia Ciconia*, *Plegadis falcinellus*, *Anser erythropus*, *Branta ruficollis*, *Accipiter brevipes*, *Buteo rufinus*, *Falco vespertinus*, *Himantopus Himantopus*, *Recurvirostra avosetta*, *Burhinus oedicephalus*, *Glareola pratincole*, *Charadrius alexandrinus*

5.3.1.1 Effects and impact forms

Biodiversity impact assessment is the process of determining the types and significance of the effects that a project will have. The following sections highlight the main methodological elements considered in the biodiversity impact assessment process.

Project interventions and components

The assessment took into account the entire life cycle of the project, from the construction, operation, and decommissioning stages.

Table 53 : Impact of the cause-effect relationship on biodiversity

Phase	Intervention	Location	Activity	Potential effects	Type of potential impact on species and habitats considered	
Construction	Demolition of existing structures on site	Site	Demolition of non-functional buildings	Generation of dust and particles Noise from machinery Vibrations	Habitat degradation: short-term disturbance caused by emissions, exacerbation of acid rain impact Disruption of wildlife activity: short-term disturbance caused by human presence.	
			Debris disposal	Water and soil pollution Noise and vibrations during loading/unloading		
	Site organization		Location of workers' barracks (offices, changing rooms, living quarters)	Landscape changes Degradation of soil structure Waste generation	Loss and degradation of habitats: loss of vegetation can fragment local habitats; Disruption of species activities: short-term disruption caused by air emissions, noise	
			Installation of eco-friendly toilets	NOx and PM10/PM2.5 emissions Noise Waste generation Possible odor release Metal and wood waste generation		
				Temporary modification of the landscape		
			Storage of materials needed for construction / waste and equipment	Zoning on pallets/containers Local dust generation Air pollution		
				Land clearing (removal of vegetation, preparation of flat surfaces)		Spread of invasive plant species Dust and pollen generation Emissions and prolonged noise
			Creation of access roads	Removal of vegetation layer		Exposure of soil to erosion
	Excavations and fillings Levelling/compaction			Generation of dust and mud Soil erosion		
	Road construction and finishing			Continuous noise and ground vibrations		
	On-site roads			Soil exposure to erosion Waste generation		
	Connection to utilities		Works to ensure utilities (water supply, sewerage, electricity supply)	Noise and vibrations Soil pollution with hydrocarbons Soil contamination	Disturbance of species activity	
	Excavation and foundation work		Construction of foundations for battery containers, inverters, and other equipment	Soil contamination Dust and vibration generation	Disruption of species activities: short-term caused by emissions, noise, potentiation of acid rain impact; Habitat degradation: short term caused by emissions	
			Identification of cracks, corrosion, or damage	Soil pollution		
	Transportation of BESS systems and installation		Cable ducts/drainage	Mud and standing water Potential risk of slipping during excavation	Habitat degradation: short-term disturbance caused by emissions; Disturbance of species activity	
				Delivery and handling of battery containers and PCS		Mud and standing water
			Installation of BESS containers, inverters, and HVAC systems	Noise and air pollution Noise and emissions during unloading		
				Installation of transformers, medium/low voltage cables		Generation of metal waste and cut cables High need for PPE equipment
			Connection of systems to EMS (Energy Management System)	Noise Possible insulating oil leakage		
				Laying cables between equipment (AC and DC)		Waste generation (excavated soil, packaging) Generation of electronic waste if equipment is defective
	Internal electrical work		Installation of fire detection systems (sensors, automatic extinguishing)	Noise generation during testing Dispersion of chemicals in fire extinguishers	Habitat alteration through soil pollution	
	Installation of security and safety systems		Installation of video surveillance systems (CCTV), perimeter lighting	GHG emissions Nighttime light pollution	Disruption of species activity and loss of habitats by creating a barrier effect	
				Marking and preparing routes on agricultural land		Spread of invasive plant species
	Connection to the electricity grid (SEN)		Outside the site	Mechanized excavation for cable laying	Generation of dust and mud Intense mechanical noise	Disruption of species activity Alteration of habitats
				Installation of medium-voltage power cables	Degradation of soil structure	
				Refilling and restoring the land to its original condition	Soil structure degradation	
				Setting up the connection point in the station	Generation of construction waste	
				Powering up and synchronisation with the grid	Noisy testing of equipment	

Phase	Intervention	Location	Activity	Potential effects	Type of potential impact on species and habitats considered		
	Building renovation (headquarters)	Location	Structural reinforcement of the building	Generation of dust and masonry waste	Alteration of habitats through emissions and soil pollution		
			Interior work (painting, installations)	Emissions from paints Generation of household waste and materials			
	Restoration of areas affected by construction works		Restoration of temporarily affected land areas: waste disposal, leveling, grass planting	Water, soil, and air pollution		Soil degradation and removal of invasive plant species	
				Soil structure degradation			Disruption of species activity Alteration of habitats
	33kV/110kV transformer station		Permanent occupation of land	Erosion	Habitat loss Habitat alteration		
			Installation operations (including the construction of foundations)	Noise Air pollutants			
Operation	Operation, monitoring, and maintenance	Location	Periodic visual inspection of containers and cables	Soil pollution	Habitat alteration		
			Battery maintenance (cycle testing, replacement of defective cells)	Waste generation (including hazardous waste)			
			Cleaning and maintenance of HVAC/cooling systems	Waste generation (including hazardous waste)			
	Hazardous waste management (used batteries)		Pollution caused by improper storage and collection				
Operation of the transformer station	Existence of contact elements contact elements posing a risk of electrocution	Electrocution of birds	Disruption of species activity Reduction in population numbers				
Decommissioning	Site layout and organization	Location	Land development	Spread of invasive plant species	Habitat alteration Disruption of species activity		
			Topsoil removal	Spread of invasive plant species			
			Storage of stripped soil	Generation of dust and mud			
			Ballast layer laying works	Atmospheric and noise emissions			
			Compaction/leveling work	Erosion			
			Construction site vehicle traffic/operation of machinery necessary to carry out the works	Noise and vibrations High level of prolonged noise			
	Dismantling of BESS systems		Dismantling of all facilities	Air pollutants	Habitat alteration		
			Vegetation clearance works	Spread of invasive plant species	Erosion		
	Decommissioning of technological platforms and foundations		Topsoil stripping	Erosion			
			Storage of stripped soil	Generation of dust and mud			
			Foundation demolition work	Noise		Waste (including hazardous waste)	
				Air pollutants			
			Compaction/leveling work	Air pollutant emissions		Noise emissions	
				Construction site vehicle traffic/operation of machinery necessary for carrying out the works			Accidental spills of pollutants on the ground
			Decommissioning of electrical connections and removal of underground cables	Vegetation clearing works		Erosion	Habitat alteration Disruption of species activity Habitat fragmentation
				Topsoil removal		Erosion	
	Ditch digging			Noise		Air pollutants	
				Soil erosion			
	Storage of soil from excavations			Temporary landscape disturbance	Air emissions		
				Atmospheric pollutants			
	Removal of electrical cables			Prolonged noise	Waste		
				Filling trenches and leveling the ground		Air pollutants	
	Restoration of vegetation cover			Spread of invasive plant species	NOx and PM10/PM2.5 emissions Prolonged noise levels		
	Construction site traffic/operation of machinery necessary to carry out the work			Stripping of the topsoil layer		Dust particle emissions	
			Storage of soil from excavations	Local dust generation			
	Decommissioning of access roads		Ballast layer removal works	Dust emissions and vibration propagation	Habitat alteration Disturbance of species activity		
			Compaction/leveling work	Dust generation and vibrations			
			Construction site vehicle traffic/operation of machinery necessary to carry out the work	NOx and PM10/PM2.5 emissions		Prolonged noise levels	
Restoration of the site where the works were carried out and rehabilitation of the temporarily used areas		Spread of invasive plant species					
Land restoration works upon completion of construction	Removal of all installations, equipment, and waste, and restoration of topsoil on areas that were temporarily used	Spread of invasive plant species	Disruption of species activity				

The sensitivity of protected areas was determined using information taken from the basic description of the importance or value of the biodiversity component examined. It is important to understand the sensitivity of the receptor parameter, as this is a measure of the adaptability and resistance of an environmental parameter to an identified impact. The following sensitivity categories were applied to the assessment.

Impact characteristics

The purpose of this step is to characterize the potential impacts of the project identified in the previous step. The simplest way to characterize impacts on biodiversity is to use habitat as a proxy for the values it supports. Some of the ways in which impacts on habitats can be measured include change in gross area of habitat affected, change in area accounting for conditions or naturalness of habitats, and fragmentation of habitats at the landscape level.

The definition of the impact area was based on spatial analysis in GIS starting from the physical footprint of the project, land use for BESS, proximity to protected natural areas, surface water bodies, and residential areas. The following factors are considered when assessing the severity of the impact:

Table 54 : Severity of impact

Impact severity	Definition
Probability or likelihood of occurrence	How likely is the event to occur during the project's life cycle
Magnitude and duration	The magnitude of the change induced, such as the size of the affected area, the proportion of a species affected, or a resource lost. The magnitude of the impact represents the extent of change that the impact may cause compared to the initial value and how this change relates to thresholds and standards, as shown in the table below.
Extent	The geographical area that could be affected by the impact.
Reversibility	Whether or not the impact will be reduced and disappear as the project ends.

The significance of the impact on biodiversity is the result of the value or importance of the biodiversity components that will be affected and the intensity or magnitude of the impact on those resources. The matrix used to assess the significance criteria of the impact is presented in the following table. A score from 0-5 was assigned for the consequences generated by the project.

Table 55 : Severity of impact

Consequence (impact)		
Impact severity	Score	Description
None	0	No change from existing conditions
Low	1	Accidental and localized impact on natural habitat No net loss of biodiversity value, regardless of conservation status
Moderate	2	Small-scale loss of natural habitat Net loss of value with LC, NT, or VU status
High	3	Large-scale loss of natural habitat or small-scale conversion of critical habitat

Consequence (impact)		
Impact severity	Score	Description
		Net loss of EN status value or change in status of a value to EN due to project impact
Extreme	4	Large-scale loss of critical habitat or small-scale loss of critical habitat. Net loss of CR status value or changes in CR status value due to project impact.
Catastrophic	5	Large-scale loss of critical habitat Changes in value status to ew or co2 due to impact

Magnitude/Severity = (Nature of impact × Temporal extent × Spatial extent × Reversibility) / 4

5.3.1.2 Significant impact

This section analyzes the significance of the project's potential impact on local biodiversity, considering the presence of natural habitats, flora and fauna species of conservation value, and proximity to protected natural areas or sites of ecological interest. The assessment is based on the standardised ESIA methodology, including criteria such as impact magnitude, duration, reversibility, frequency and sensitivity of ecological receptors, in order to establish ecological relevance and possible avoidance, mitigation or compensation measures.

Table 56: Impact Severity

Existing conditions	Importance	Current/future pressure	Project phase	Consequences/impact	Impact characteristics								Probability of occurrence	Risk without implementation of measures	
					Nature of impact	Type of impact	Reversible	Spatial extension of the impact	Temporal extension of the impact	Receptor sensitivity	Severity of impact	Justification			
ROSCIO389 The salt marshes of Gura Ialomitei-Mihai Bravu Habitats															
All energy storage batteries will be located in areas used for construction, without intersecting protected areas. However, the possibility of the presence of Natura 2000 species in habitats with semi-natural vegetation cannot be ruled out.	Agricultural ecosystems (consisting of cereal and oilseed crops) distributed in the vicinity of energy storage batteries and underground power lines.	There is no conservation value in terms of anthropogenic, open areas, but they are used as feeding habitats for protected bird and mammal species.	Urbanized areas	Construction	-	Negative	Direct cumulative	Reversible	Local	Short term	Low	Weak	Within the studied site, anthropically modified land will be permanently occupied by energy storage batteries, and the ecological assessment did not reveal the presence of habitats with conservation value or protected habitats.	Rare	L
				Operation	-	Negative	Direct cumulative	Irreversible	Local	Permanent	Low	Weak		Possible	L
			Cultivation	Construction	AH PAS	Negative	Direct cumulative	Reversible	Local	Short term	Low	Weak		Rare	L
				Operation	-	Negative	Direct cumulative	Irreversible	Local	Permanent	Low	Weak		Possible	L
Birds															
ROSPA011 Bertestii de Sus-Gura Ialomitei															
According to standard forms and specific conservation objectives, several bird species have been identified.	<i>Anser erythropus</i>	IUCN: VU Birds Directive: Annex 1 GEO 57/2007: Annex 3	Overhead power lines – agriculture	Construction	AH PAS	Negative	Direct cumulative	Reversible-AH Irreversible-PAS	Local	Short term	Low	Minor	Construction: During the construction phase, the implementation of the project may disturb bird species due to the construction of the foundation. In addition, the temporary and permanent occupation of land areas by energy storage batteries and underground power lines may alter	Possible	L
				Operation	PAS	Negative	Direct cumulative	Irreversible	Local	Permanent		Weak		Possible	L
	<i>Anthus campestris</i>	IUCN: VU Birds Directive: Annex 1 GEO 57/2007: Annex 3		Construction	AH PAS	Negative	Direct cumulative	Reversible-AH Irreversible - PAS	Local	Short term	Low	Minor		Possible	L
				Operation	PAS	Negative	Direct cumulative	Irreversible	Local	Permanent		Weak		Possible	L
	<i>Branta ruficollis</i>	IUCN: VU Birds Directive: Annex 1 GEO 57/2007: Annex 3		Construction	AH PAS	Negative	Direct cumulative	Reversible-AH Irreversible - PAS	Local	Short term	Low	Minor		Possible	L
				Operation	PAS	Negative	Direct cumulative	Irreversible	Local	Permanent		Weak		Possible	L
	<i>Burhinus oedicnemus</i>	IUCN: LC Birds		Construction	AH	Negative	Direct cumulative	Reversible-AH	Local	Short term	Low	Minor		Possible	L

Existing conditions	Importance	Current/future pressure	Project phase	Consequences/impact	Impact characteristics								Probability of occurrence	Risk without implementation of measures	
					Nature of impact	Type of impact	Reversible	Spatial extension of the impact	Temporal extension of the impact	Receptor sensitivity	Severity of impact	Justification			
	Directive: Annex 1			PAS			Irreversible - PAS						habitats favorable to the various stages of development and activities of bird species (breeding, resting, feeding). The level of impact was considered moderate for a short period of time. Operation: During the operational phase, the impact may lead to disruption of bird species activities (feeding and nesting).		
			Operation	PAS	Negative	Direct cumulative	Irreversible	Local	Permanent	Low	Weak	Possible		L	
<i>Buteo rufinus</i>	IUCN: LC Birds Directive: Annex 1 GEO 57/2007: Annex 3		Construction	AH PAS	Negative	Direct cumulative	Reversible-AH Irreversible - PAS	Local	Short term	Low	Minor	Possible		L	
			Operation	PAS	Negative	Direct cumulative	Irreversible	Local	Permanent		Weak	Possible		L	
<i>Calandrella brachydactyla</i>	IUCN: LC Birds Directive: Annex 1		Construction	AH PAS	Negative	Direct cumulative	Reversible-AH Irreversible - PAS	Local	Short term	Low	Minor	Possible		L	
			Operation	PAS	Negative	Direct cumulative	Irreversible	Local	Permanent		Weak	Possible		L	
<i>Charadrius alexandrinus</i>	IUCN: LCDirective Birds: Annex 1 GEO 57/2007: Annex 3		Construction	AH PAS	Negative	Direct cumulative	Reversible-AH Irreversible - PAS	Local	Short term	Low	Minor	Possible		L	
			Operation	PAS	Negative	Direct cumulative	Irreversible	Local	Permanent		Weak	Possible		L	
<i>Ciconia ciconia</i>	IUCN: LC Birds Directive: Annex 1 GEO 57/2007: Annex 3		Construction	AH PAS	Negative	Direct cumulative	Reversible-AH Irreversible - PAS	Local	Short term	Low	Minor	Possible		L	
			Operation	PAS	Negative	Direct cumulative	Irreversible	Local	Permanent		Weak	Possible		L	
<i>Circus aeruginosus</i>	IUCN: LC Birds Directive: Annex 1 GEO 57/2007: Annex 3		Construction	AH PAS	Negative	Direct cumulative	Reversible-AH Irreversible - PAS	Local	Short term	Low	Minor	Possible		L	
			Operation	PAS	Negative	Direct cumulative	Irreversible	Local	Permanent		Weak	Possible		L	
<i>Circus cyaneus</i>	IUCN: LC Birds Directive: Annex 1		Construction	AH PAS	Negative	Direct cumulative	Reversible-AH Irreversible - PAS	Local	Short term	Low	Minor	Possible		L	
			Operation	PAS	Negative	Direct cumulative	Irreversible	Local	Permanent		Weak	Possible		L	
<i>Circus macrourus</i>	IUCN: LC Birds Directive: Annex 1 GEO 57/2007: Annex 3		Construction	AH PAS	Negative	Direct cumulative	Reversible-AH Irreversible - PAS	Local	Short term	Low	Minor	Possible		L	
			Operation	PAS	Negative	Direct cumulative	Irreversible	Local	Permanent		Weak	Possible		L	
<i>Circus pygargus</i>	IUCN: LC Birds Directive: Annex 1 GEO 57/2007: Annex 3		Construction	AH PAS	Negative	Direct cumulative	Reversible-AH Irreversible - PAS	Local	Short term	Low	Minor	Possible		L	
			Operative	PAS	Negative	Direct cumulative	Irreversible	Local	Permanent		Weak	Possible		L	
<i>Coracias garrulus</i>	IUCN: LCIUCN: LCDirective Birds: Annex 1		Construction	AH PAS	Negative	Direct cumulative	Reversible-AH Irreversible - PAS	Local	Short term	Low	Minor	Possible	L		
			Operation	DSA	Negative		Irreversible	Local	Permanent		Weak	Possible	L		

Existing conditions	Importance	Current/future pressure	Project phase	Consequences/impact	Impact characteristics								Probability of occurrence	Risk without implementation of measures			
					Nature of impact	Type of impact	Reversible	Spatial extension of the impact	Temporal extension of the impact	Receptor sensitivity	Severity of impact	Justification					
ROSPA0120 Kogălniceanu-Gura Ialomiței	<i>Egretta garzetta</i>	GEO 57/2007: Annex 3 IUCN: LC Birds Directive: Annex 1 Red Book of Vertebrates in Romania: endangered	Construction	PAS	Negative	Direct cumulative	Local	Short term	Low	Minor	Construction: During the construction phase, the	Possible	L				
				AH		Direct cumulative								Reversible-AH Irreversible - PAS			
	<i>Emberiza hortulana</i>	IUCN: LC Birds Directive: Annex 1	Operation	PAS	Negative	Direct cumulative	Local	Permanent	Low	Weak							
				PAS		Irreversible											
	<i>Falco vespertinus</i>	IUCN: LC Birds Directive: Annex 1 GEO 57/2007: Annex 3	Construction	AH	Negative	Direct cumulative	Local	Short term	Low	Minor							
				PAS		Direct cumulative								Reversible-AH Irreversible - PAS			
	<i>Meadow pipit</i>	IUCN: LC Birds Directive: Annex 1 GEO 57/2007: Annex 3	Operation	PAS	Negative	Direct cumulative	Local	Permanent	Low	Weak							
				PAS		Irreversible											
	<i>Himantopus himantopus</i>	IUCN: LC Birds Directive: Annex 1 GEO 57/2007: Annex 3	Construction	AH	Negative	Direct cumulative	Local	Short term	Low	Minor							
				PAS		Direct cumulative								Reversible-AH Irreversible - PAS			
	<i>Philomachus pugnax</i>	IUCN: NT Birds Directive: Annex 1, Annex 2	Operation	PAS	Negative	Direct cumulative	Local	Permanent	Low	Weak							
				PAS		Irreversible											
	<i>Recurvirostra avosetta</i>	IUCN: LC Birds Directive: Annex 1 GEO 57/2007: Annex 3	Construction	AH	Negative	Direct cumulative	Local	Short term	Low	Minor							
				PAS		Direct cumulative								Reversible-AH Irreversible - PAS			
	<i>Tringa glareola</i>	IUCN: LC Birds Directive: Annex 1 GEO 57/2007: Annex 3	Operation	PAS	Negative	Direct cumulative	Local	Permanent	Low	Weak							
				PAS		Irreversible											
	According to standard forms and specific	<i>Accipiter brevipes</i>	IUCN: LC Birds Directive: Annex 1	Overhead power lines – agriculture	Construction	Negative	Direct cumulative	Local	Short term	Low				Minor	Construction: During the construction phase, the	Possible	L

Existing conditions	Importance	Current/future pressure	Project phase	Consequences/impact	Impact characteristics								Probability of occurrence	Risk without implementation of measures
					Nature of impact	Type of impact	Reversible	Spatial extension of the impact	Temporal extension of the impact	Receptor sensitivity	Severity of impact	Justification		
conservation objectives, several bird species have been identified.		Red Book of Vertebrates in Romania: endangered	Operation	PAS	Negative	Direct cumulative	Irreversible	Local	Permanent		Weak	implementation of the project may disturb bird species due to the construction of the foundation. In addition, the temporary and permanent occupation of land areas by energy storage batteries and underground power lines may alter habitats favorable to the various stages of development and activities of bird species (breeding, resting, feeding). The level of impact was considered moderate for a short period of time. Operation: During the operation phase, the impact may lead to disruption of bird species activities (feeding and nesting).	Possible	L
	<i>Anser albifrons</i>	IUCN: LC Birds Directive: Annex 2	Construction	AH PAS	Negative	Direct cumulative	Reversible-AH Irreversible - PAS	Local	Short term	Low	Minor		Possible	L
			Operation	PAS	Negative	Direct cumulative	Irreversible	Local	Permanent		Weak		Possible	L
	<i>Anhus campestris</i>	IUCN: LC Birds Directive: Annex 1 GEO 57/2007: Annex 3	Construction	AH PAS	Negative	Direct cumulative	Reversible-AH Irreversible - PAS	Local	Short term	Low	Minor		Possible	L
			Operation	PAS	Negative	Direct cumulative	Irreversible	Local	Permanent		Weak		Possible	L
	<i>Buteo rufinus</i>	IUCN: LC Birds Directive: Annex 1 GEO 57/2007: Annex 3	Construction	AH PAS	Negative	Direct cumulative	Reversible-AH Irreversible - PAS	Local	Short term	Low	Minor		Possible	L
			Operation	PAS	Negative	Direct cumulative	Irreversible	Local	Permanent		Weak		Possible	L
	<i>Calandrella brachydactyla</i>	IUCN: LC Birds Directive: Annex 1	Construction	AH PAS	Negative	Direct cumulative	Reversible Reversible-AH	Local	Short term	Low	Minor		Possible	L
			Operation	PAS	Negative	Direct cumulative	Irreversible	Local	Permanent		Weak		Possible	L
	<i>Charadrius alexandrinus</i>	IUCN: LC Directive Birds: Annex 1 GEO 57/2007: Annex 3	Construction	AH PAS	Negative	Direct cumulative	Reversible-AH Irreversible - PAS	Local	Short term	Low	Minor		Possible	L
			Operation	PAS	Negative	Direct cumulative	Irreversible	Local	Permanent		Weak		Possible	L
	<i>Ciconia ciconia</i>	IUCN: LC Birds Directive: Annex 1 GEO 57/2007: Annex 3	Construction	AH PAS	Negative	Direct cumulative	Reversible-AH Irreversible - PAS	Local	Short term	Low	Minor		Possible	L
			Operation	PAS	Negative	Direct cumulative	Irreversible	Local	Permanent		Weak		Possible	L
	<i>Ciconia nigra</i>	Birds Directive: Annex 1 GEO 57/2007: Annex 3 IUCN: LC	Construction	AH PAS	Negative	Direct cumulative	Reversible-AH Irreversible - PAS	Local	Short term	Low	Minor		Possible	L
			Operation	PAS	Negative	Direct cumulative	Irreversible	Local	Permanent		Weak		Possible	L
	<i>Circus aeruginosus</i>	Birds Directive: Annex 1 GEO 57/2007: Annex 3 IUCN: LC	Construction	AH PAS	Negative	Direct cumulative	Reversible-AH Irreversible - PAS	Local	Short term	Low	Minor		Possible	L
			Operation	PAS	Negative	Direct cumulative	Irreversible	Local	Permanent		Weak		Possible	L
	<i>Circus cyaneus</i>	IUCN: LC Birds Directive: Annex 1	Construction	AH PAS	Negative	Direct cumulative	Reversible-AH Irreversible - PAS	Local	Short term	Low	Minor		Possible	L
			Operation	PAS	Negative	Direct cumulative	Irreversible	Local	Permanent		Weak		Possible	L

Existing conditions	Importance	Current/future pressure	Project phase	Consequences/impact	Impact characteristics								Probability of occurrence	Risk without implementation of measures
					Nature of impact	Type of impact	Reversible	Spatial extension of the impact	Temporal extension of the impact	Receptor sensitivity	Severity of impact	Justification		
<i>Circus macrourus</i>	IUCN: LC Birds Directive: Annex 1 GEO 57/2007: Annex 3		Construction	AH	Negative	Direct cumulative	Reversible-AH	Local	Short term	Low	Minor		Possible	L
				PAS			Irreversible - PAS							
<i>Circus pygargus</i>	IUCN: LC Birds Directive: Annex 1 GEO 57/2007: Annex 3		Operation	PAS	Negative	Direct cumulative	Irreversible	Local	Permanent	Low	Weak		Possible	L
			Construction	AH			Reversible-AH							
<i>Coracias garrulus</i>	IUCN: LC Birds Directive: Annex 1 GEO 57/2007: Annex 3		Construction	AH	Negative	Direct cumulative	Reversible-AH	Local	Short term	Low	Minor		Possible	L
				PAS			Irreversible - PAS							
<i>Dendrocopos medius</i>	IUCN: LC Birds Directive: Annex 1 GEO 57/2007: Annex 3		Operation	PAS	Negative	Direct cumulative	Irreversible	Local	Permanent	Low	Poor		Possible	L
			Construction	AH			Reversible-AH							
<i>Dendrocopos syriacus</i>	IUCN: LC Birds Directive: Annex 1 GEO 57/2007: Annex 3		Construction	AH	Negative	Direct cumulative	Reversible-AH	Local	Short term	Low	Minor		Possible	L
				PAS			Irreversible - PAS							
<i>Egretta alba</i>	IUCN: LC Bern Convention: Annex 3		Operation	PAS	Negative	Direct cumulative	Irreversible	Local	Permanent	Low	Weak		Possible	L
			Construction	AH			Reversible-AH							
<i>Little egret</i>	IUCN: LC Birds Directive: Annex 1 Red Book of Vertebrates in Romania: endangered		Construction	AH	Negative	Direct cumulative	Reversible-AH	Local	Short term	Low	Minor		Possible	L
				PAS			Irreversible - PAS							
<i>Emberiza hortulana</i>	IUCN: LC Birds Directive: Annex 1		Operation	PAS	Negative	Direct cumulative	Irreversible	Local	Permanent	Low	Weak		Possible	L
			Construction	AH			Reversible-AH							
<i>Falco columbarius</i>	IUCN: LC Birds Directive: Annex 1 GEO 57/2007: Annex 3		Construction	AH	Negative	Direct Cumulative	Reversible-AH	Local	Short term	Low	Minor		Possible	L
				PAS			Irreversible - PAS							
			Operation	PAS	Negative	Direct Cumulative	Irreversible	Local	Permanent	Low	Weak		Possible	L
			Construction	AH			Reversible-AH							

Existing conditions	Importance	Current/future pressure	Project phase	Consequences/impact	Impact characteristics								Probability of occurrence	Risk without implementation of measures
					Nature of impact	Type of impact	Reversible	Spatial extension of the impact	Temporal extension of the impact	Receptor sensitivity	Severity of impact	Justification		
<i>Falco vespertinus</i>	IUCN: LC Birds Directive: Annex 1 GEO 57/2007: Annex 3		Construction	AH	Negative	Direct	Reversible-AH	Local	Short term	Low	Minor		Possible	L
				PAS		Cumulative	Irreversible - PAS							
<i>Himantopus himantopus</i>	IUCN: LC Birds Directive: Annex 1 GEO 57/2007: Annex 3		Operation	PAS	Negative	Direct	Irreversible	Local	Permanent	Low	Weak		Possible	L
						Cumulative								
<i>Limosa limosa</i>	IUCN: NT GEO 57/2007: Annex 3		Construction	AH	Negative	Direct cumulative	Reversible-AH	Local	Short term	Low	Minor		Possible	L
				PAS			Irreversible-PAS							
<i>Philomachus pugnax</i>	IUCN: NT Birds Directive: Annex 1, Annex 2		Operation	PAS	Negative	Direct cumulative	Irreversible	Local	Permanent	Low	Weak		Possible	L
<i>Platalea leucorodia</i>	IUCN: LC Directive Birds: Annex 1		Construction	AH	Negative	Direct cumulative	Reversible-AH	Local	Short term	Low	Minor		Possible	L
				PAS			Irreversible - PAS							
<i>Plegadis falcinellus</i>	IUCN: LC Birds Directive: Annex 1		Operation	PAS	Negative	Direct cumulative	Irreversible	Local	Permanent	Low	Weak		Possible	L
<i>Sylvia nisoria</i>	IUCN: LC Birds Directive: Annex 1		Construction	AH	Negative	Cumulative direct	Reversible-AH	Local	Short term	Low	Minor		Possible	L
				PAS			Irreversible - PAS							
<i>Tringa glareola</i>	IUCN: LC Birds Directive: Annex 1 GEO 57/2007: Annex 3		Operation	PAS	Negative	Direct cumulative	Irreversible	Local	Permanent	Low	Weak		Possible	L
<i>Vanellus vanellus</i>	IUCN: VU Birds Directive: Annex 1		Construction	AH	Negative	Direct	Reversible-AH	Local	Short term	Low	Minor		Possible	L
				PAS		Cumulative	Irreversible - PAS							
			Operation	PAS	Negative	Direct Cumulative	Irreversible	Local	Permanent		Weak		Possible	L

**ROSCIO389 The salt marshes at Gura Ialomiței-Mihai Bravu
Mammals**

Existing conditions	Importance	Current/future pressure	Project phase	Consequences/impact	Impact characteristics								Probability of occurrence	Risk without implementation of measures	
					Nature of impact	Type of impact	Reversible	Spatial extension of the impact	Temporal extension of the impact	Receptor sensitivity	Severity of impact	Justification			
According to data from standard forms and specific conservation objectives, the vicinity of the project may represent a favorable habitat for ground squirrels.	<i>Spermophilus citellus</i>	IUCN: EN Habitats Directive: Annex 2, Annex 4	traffic on the DC2 communal road	Construction	AH	Negative	Direct	Reversible-AH	Local	Short term	Low	Minor	Both during construction and operation, the mammal species identified in the vicinity of the site may also reach the project area, posing a risk of disturbance to the species during the feeding period.	Rare	L
					PAS		Cumulative	Irreversible - PAS							
			Operation	PAS	Negative		Direct							Rare	L
							Cumulative	Irreversible	Local	Permanent	Low	Weak			

5.3.1.3 Mitigation measures and environmental safeguards management plan

International Finance Corporation Performance Standard 6 on Biodiversity Conservation and Sustainable Management of Living Natural Resources has the following objectives: to protect and conserve biodiversity, maintain the benefits derived from ecosystem services, and promote the sustainable management of living natural resources by adopting practices that integrate conservation needs and development priorities.

The site under review is located in a low-sensitivity area and does not overlap with the boundaries of protected natural areas.

Following the site visit by the Ramboll team and based on the information provided by the developer, no critical habitats were identified, i.e., habitats of major importance for endangered and/or critically endangered species, habitats for endemic and/or restricted distribution species, habitats supporting significant populations of migratory species and/or species forming large groups, extremely vulnerable and/or rare habitats, or habitats associated with fundamental evolutionary processes.

Given the considerable distances from protected natural areas and the manner of project implementation, no significant effects on biodiversity components have been identified. The project will not affect the conservation status of protected flora and fauna species and will not influence the integrity of any protected natural areas.

It should be noted that the project has undergone an environmental impact assessment (EIA) procedure but has not undergone an appropriate assessment procedure and no specific measures are proposed.

The measures proposed in this study to avoid and reduce the impact on other environmental factors cover all identified forms of impact, and the implementation of these measures is considered to be highly effective. Avoidance measures have been applied since the design stage. The minimum distance to be maintained from different types of areas important for birds has been taken into account.

The avoidance and mitigation measures have been designed to either avoid impacts or reduce them to an insignificant level. It is estimated that the residual impact will be insignificant for all habitats and species in the sites analysed. This also assumes that the implementation of the measures will ensure that the integrity of the Natura 2000 sites is not affected and that the fauna species identified in the project area are protected.

5.3.1.4 Residual impact

The environmental impact assessment for biodiversity (protected areas) showed that the project cannot have a significant negative impact.

By applying impact prevention and reduction measures and taking into account good construction practices, the residual impact is estimated to be negligible.

5.3.1.5 Cumulative impact

For this project, the cumulative impact assessment was carried out in accordance with: Good Practice Guide on Cumulative Impact Assessment and Management - Guide for the Private Sector in Emerging Markets, published by the IFC, which recognizes that due to the growing importance of system-level risk factors such as climate change, water availability, species biodiversity decline, and ecosystem service degradation, cumulative impact assessment and management is an essential framework for risk management.

The cumulative impact assessment and management study is conducted following a six-step process.

- **Stage 1: Phase I of defining the scope – Valuable components of biodiversity (VEC), spatial and temporal boundaries**

Physical, biotic, and ecological research was taken into account to define the spatial boundary. The entire project period was taken into account for the temporal boundary of the study.

- **Stage 2: Phase II of defining the scope – Other activities and environmental factors: Identification of all changes to environmental factors and natural and external stressors leading to climate change (VBC)**







Information on the initial state of VBCs is mainly based on the initial biodiversity information presented above.

No planned or ongoing projects were identified in the project's area of influence. The analysis of the possibility of cumulative impacts on potentially affected sites was carried out by following these steps:

- 1. Identification of current forms of impact**
Current pressures and threats to protected fauna species and Natura 2000 sites, according to information available in Specific Conservation Objectives, Natura 2000 Standard Forms, and Management Plan:

- 2. Identification of effects that may lead to cumulative impacts on identified species and habitats**

The applicability of cumulative impacts associated with the species identified in the project area is:

	D01.02 Roads D02.01.01 Underground power lines E03.01 Waste storage E01 Urbanized areas		PAS, AH
	D01.02 Roads A01 Cultivation		PAS, AH
	Invasive species		AH

- **Step 4: Assessment of cumulative impacts on ECVs**

Cumulative impact assessments are forward-looking, and project contributions are assessed as the difference between the expected future condition of the environmental value component in the context of all known stressors and the assessed project. This step of the cumulative impact assessment evaluates the future conditions of ECVs, taking into account impacts from the project or other projects.

- **Step 5: Assessment of the significance of expected cumulative impacts**

From the point of view of cumulative impact on biodiversity, the main forms of impact associated with the implementation of energy storage battery projects are:

- HL (habitat loss) – permanent occupation of habitats or habitats favorable to species;
- AH – habitat alteration;
- FH – habitat fragmentation;
- PAS – disturbance of species activity, nesting, feeding, and resting;
- REP (population reduction) – reduction in population numbers: animals injured by machinery, destruction of nests.

All these forms of impact can occur directly or indirectly, but they also manifest themselves on short or very large spatial and temporal scales. The multitude of forms of impact and levels of magnitude generated during the construction and operation of energy storage batteries can be amplified by the cumulative effects of other existing activities and proposed projects.

For this reason, cumulative impact assessment is essential to understand not only the impact generated by a single project, but all forms of impact and their magnitude as a result of all existing pressures and identifiable threats. Biodiversity components are attributes considered important in assessing the risks that a project poses to biodiversity.

For the cumulative impact assessment, bird species are relevant. Habitats and mammals were not selected as potentially eligible for CIA in all cases, either because they were not reasonably expected to be significantly affected by the project or because they would be carried out in accordance with applicable legislation. The cumulative impact assessment focused in particular on bird species. The main forms of impact, presented above, may affect all components of biodiversity, depending on the spatial extent of the impact area and the distribution of biodiversity components in the territory. The following table presents the cumulative impact assessment with the projects presented in section 2.9 of this report.

Table 57 : Assessment of the cumulative impact during the operation period of the investments proposed by this project and the activities generated by the projects under implementation and other similar existing objectives

VBC	Cumulative impact	Probability	Priority classification
Birds	The main forms of cumulative impact identified are: PAS—disturbance of species activity; AH—habitat alteration. In the case of BESS, disturbance of bird species is associated with both human presence and activity, which occurs at all stages of the project life cycle. The main causes of disturbance to bird species during battery operation are noise, vibration, and artificial lighting. This form of impact can extend to considerable distances from the BESS site, and the most important cause is increased noise levels.	Probably	Weak

• **Step 6: Cumulative impact management**

Most of the measures to reduce cumulative impact have been taken into account in the project.

The critical impact assessment considered the five qualifying criteria for Critical Habitat and the associated thresholds in IFC PS6. The critical impact assessment approach was as follows:

- An initial assessment of the region's ecological data was conducted to establish the study area for the critical impact assessment. This aimed to identify species or ecosystems within the project's "Area of Influence" that could meet the criteria for Critical Habitat. The study area covered the region affected by both the direct and indirect effects of the project and the landscape;
- A review of existing data on biodiversity characteristics in the study area was conducted to inform the critical impact assessment. A comprehensive list of potential biodiversity features, including species, key biodiversity areas, and protected areas, was compiled through a spatial analysis of global datasets accessible through the Integrated Biodiversity Assessment Tool.
- Biodiversity features that may occur in the study area were assessed against the five criteria defined in IFC Guidance Note 6 PS6:
 - Criterion 1: Habitat of significant importance for critically endangered and/or endangered species, as defined in the IUCN Red List of Threatened Species and relevant national legislation;
 - Criterion 2: Habitat important for the survival of endemic and/or restricted range species or unique assemblages of species;
 - Criterion 3: Habitat supporting globally significant migratory species;
 - Criterion 4: Highly threatened and/or unique ecosystems;
 - Criterion 5: Areas associated with key evolutionary processes.

Main findings of the critical impact assessment:

- The areas surrounding the project consist of modified habitat in the form of intensively farmed land;
- It is unlikely that the study area supports globally or nationally significant populations of fauna species that would meet or exceed IFC PS6 thresholds for qualification as Critical Habitat;

- The ROSCI0389 site Sărăturile de la Gura Ialomiței-Mihai Bravu has a single priority habitat, which does not intersect with the proposed project and is unlikely to be affected by the project's implementation.

5.4 Social impact assessment

5.4.1 Definition of the area of influence

The area of direct influence (Social AoI) comprises the geographical and demographic area in which the project subject to ESIA analysis may generate social effects on nearby communities and residents. In order to establish the area of social influence of the project, the following will be taken into account:

II. Defining the area in which:

- (1) The project and related facilities that are owned, operated, or managed directly (including by suppliers) for the purpose of the project are located. Facilities are understood to be those aspects of the project that would not have been built, expanded, or operated if the project had not existed (transport corridors, canals, tunnels, pipelines, transmission lines, railways, access roads, construction camps, etc.).
- (2) There may be economic, social, or environmental impacts (direct and foreseeable) on the affected communities (e.g., traffic congestion on community roads, dust, noise, landscape).
- (3) There may be indirect economic, social, or environmental impacts of the project on affected communities (identification of impacts in the value chain).

III. Establishment of the impact area through clear geographical boundaries:

Area of direct influence (500 m):

- (4) The area where the BESS system will be located, the location of the construction site and other facilities.
- (5) Distance from the first settlements in relation to the site: Establishing a proximity distance to the first residential area.
- (6) Impacts related to public health (where geographical boundaries can be determined in accordance with legislation):
 1. Noise pollution (noise and vibrations): The noise emission level of the equipment used during the execution of the works will comply with the requirements of HGR 1756/2006 on the limitation of noise emissions in the environment
 2. Air pollution: No major demolition works causing dust emissions are planned.
 3. Soil pollution: If applicable, during the construction period.
 4. Water pollution: Presence of lakes, rivers, water sources in the vicinity. The equipment provided for in this work does not produce pollutants for groundwater.
 5. Waste: The battery system used to store electricity is designed to allow recycling in specialized centers at the end of its operational life and reuse of recycled components in industrial processes. It is estimated that waste will result from construction/assembly work and from the decommissioning stage (at the end of the investment's life cycle).
 6. Emergency situations: Areas where risks may arise immediately and where evacuation, information, and intervention routes must be in place; areas where there may be sensitive receptors (homes, schools, protected natural areas).

7. Climate change: Although climate change has an impact on a regional or global scale, certain climatic effects also manifest themselves at the local level. The 500 m area was chosen as the primary area of influence where the direct climatic effects of the project may occur or intersect with local climatic vulnerabilities. Risk and adaptation assessments were reported for this perimeter, supplemented by observations on a larger scale where appropriate.
 8. The solutions adopted provide for constructive measures against the occurrence and spread of fires in the new containers, medium-voltage cells, transformers, as well as in the cable yard (technological separations, seals, etc.).
 9. Landscape: No significant visual impacts are expected.
- (7) Delimitation of adjacent land types and whether there are possible impacts or interdependencies at the local level (e.g., residential, industrial, agricultural grazing areas, forests).
 - (8) Area of direct economic impacts: Determination of the direct economic area (e.g., workforce in adjacent areas and localities, level of development, vulnerable communities).
 - (9) Distance from public institutions: Including schools, kindergartens, hospitals, town halls, religious institutions, and fire stations in the relevant localities, as well as heritage sites. It should be noted that there are no cultural heritage sites in the area of the plots or other elements of the project under analysis.
 - (10) Residences and public roads: The site has direct access to road transport, with Strada Gării at the property boundary, with direct access to Drumul Comunal – DC2. Outline of railway lines, if applicable/intersecting.
 - (11) Transmission lines and utilities: Marking of LES lines and connection points to visualize the works.

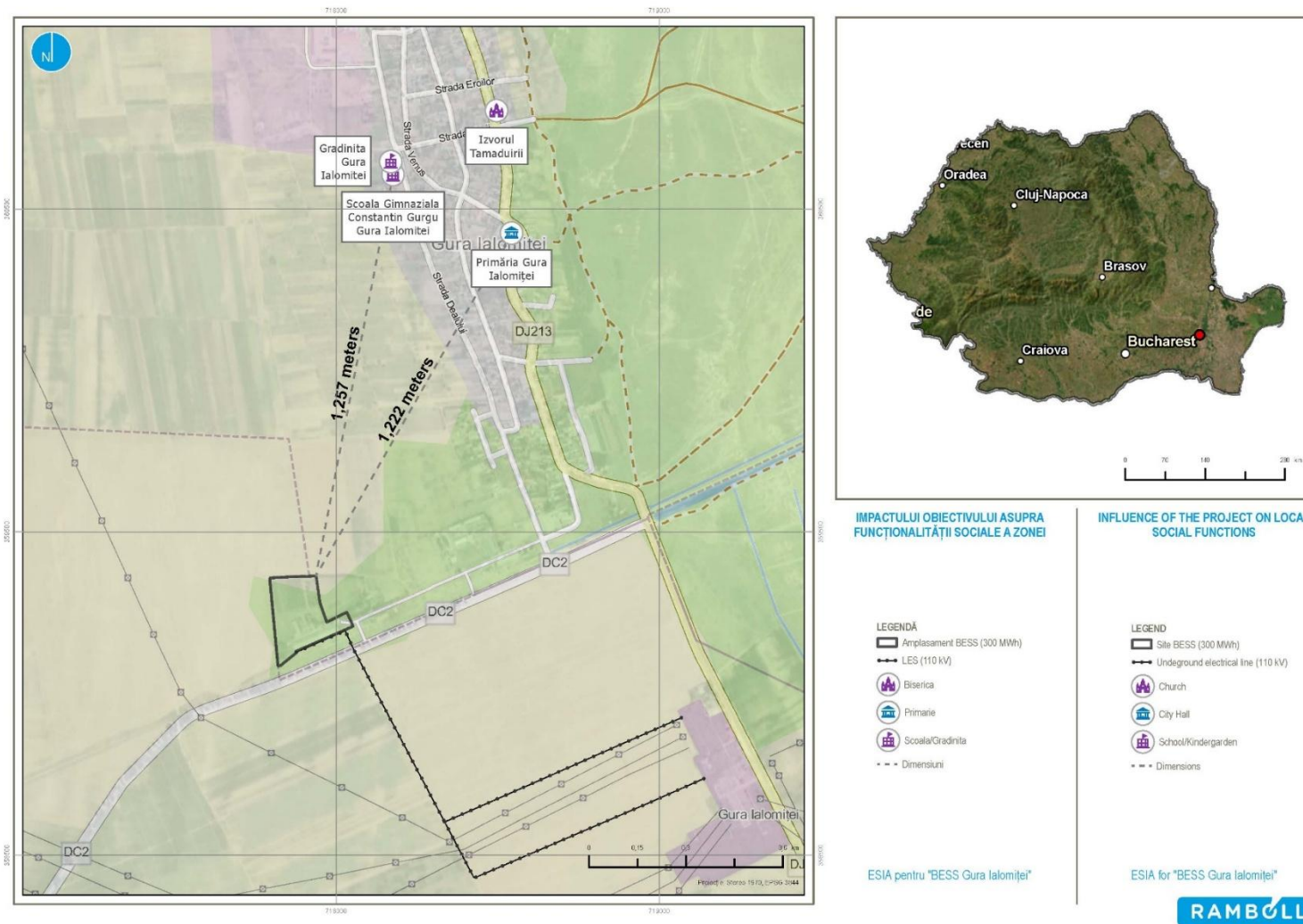
Area of indirect influence:

- a) **Location:** Definition of the location in relation to certain points of interest within a larger radius of action.
- b) **Transport corridors:** Roads used for transporting materials and transport connections.
- c) **Value chain and demand for services:** Identification of the value chain generated by the project and the additional demand for services in the indirect area.

Given the classification of the project as a Type B activity according to IFC standards and the fact that BESS technology is automated, with low impact during the operational phase and localized impact during the construction phase, the choice of a direct influence area of 500 m is justified and proportionate to the nature of the project. This distance allows for the identification and assessment of direct social effects on sensitive receptors (housing, roads, agricultural land, community), in accordance with IFC requirements, which provide for impact analysis based on proximity to inhabited areas and vulnerable social elements. Furthermore, a distance of 500 m is common practice in ESIA for projects without major emissions but with potential of local social interaction, thus ensuring an adequate framework for prevention measures and public consultation.

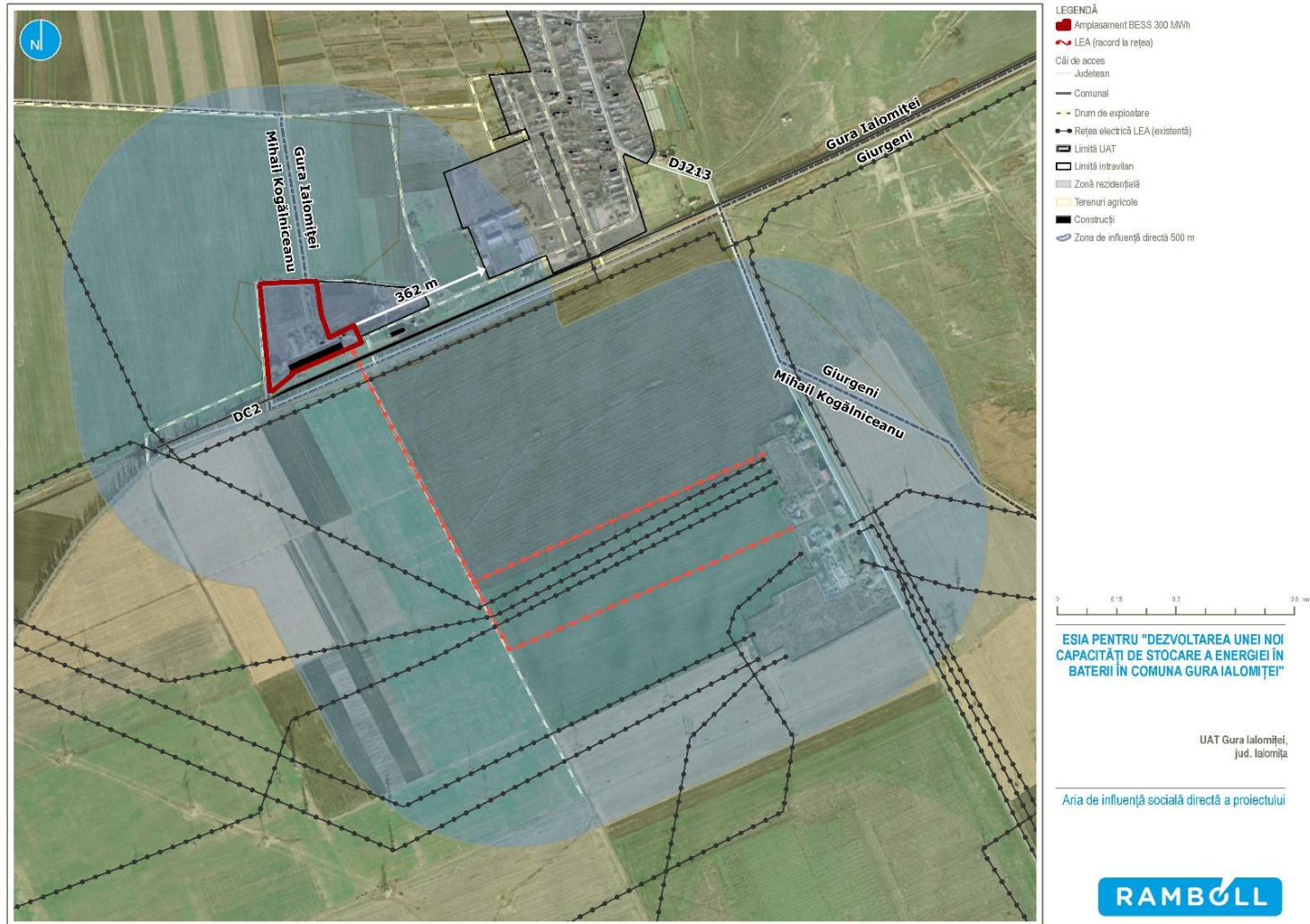
The distance from public interest targets, which may present elements of vulnerability at the local level, is shown in the map below. It can be seen that the future BESS elements are generally located more than 1 kilometer away from these targets (school, town hall, kindergarten), resulting in a low impact.

Figure 51: Map of public interest targets in relation to the BESS facility, Gura Ialomiței commune



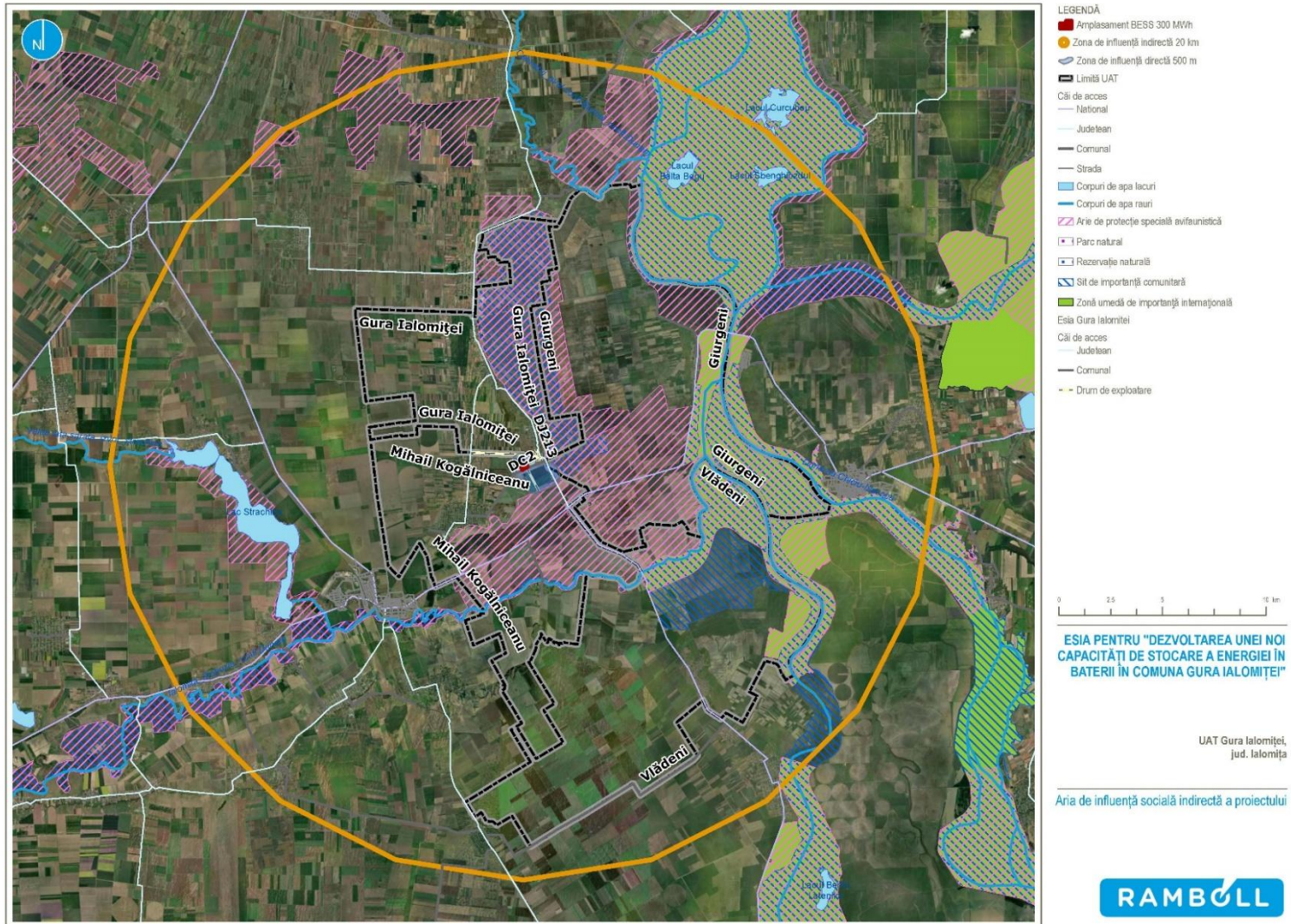
The area of direct influence is shown in the map below:

Figure 52 : Area of direct influence



The area of indirect influence is shown on the map below:

Figure 53 Indirect area of influence



5.4.2 Results of the social impact assessment

5.4.2.1 Effects and impact forms

The table below identifies the main effects and impacts generated by the project activity during the construction and operation phases. In addition, it identifies the risks and opportunities associated with the identified phases. In the social analysis, direct and indirect impacts take into account the material (tangible) and immaterial (intangible) effects of the project in social terms.

Table 58 : Effects and forms of social impact

Project phase	Type of activity/investment	Location	Activities	Effects which can generate an impact	Working conditions	Human rights	Community health and safety	Economic conditions	Occupational health and safety	Direct impacts	Indirect impacts	Risks	Opportunities	
Construction	Demolition of existing structures on site	Site	Demolition of non-functional buildings	<ul style="list-style-type: none"> – Generation of fine dust and particles (including asbestos) – Noise from machinery – Vibrations 			•		•	Inhalation of dust/asbestos; auditory and physical discomfort	Chronic respiratory/hearing disorders	Chronic exposure to dust	Reuse of space (former CAP, no need for new greenfield sites)	
			Waste transport and disposal	<ul style="list-style-type: none"> – Deposition of wet rubble on access roads – Noise and vibrations during loading/unloading 		•	•	•	•	Increase in waste volume; additional traffic from machinery	•	Loading/unloading accidents	•	
	Site organization	Location	Location of workers' barracks (offices, changing rooms, living quarters)	<ul style="list-style-type: none"> – Temporary occupation of land – Soil leveling and compaction – Waste generation 	•				•	Non-hazardous waste; water and electricity consumption	Negative perception if the premises are not maintained	Possible dissatisfaction from the community towards the staff stationed on site	Hiring local workforce	
			Transportation of materials for construction	<ul style="list-style-type: none"> – NOx and PM10/PM2.5 emissions – Noise 		•	•		•	Air pollution; increased traffic in the area	Discomfort for residents	Collisions between machinery and vehicles; exposure to vibrations and pollutants	Route optimization; low-emission vehicles	
			Installation of eco-friendly toilets	<ul style="list-style-type: none"> – Need for periodic emptying – Possible odor release 					•	•	Temporary unpleasant odors		Liquid spills; soil/groundwater contamination	•
			Temporary fencing/barriers	<ul style="list-style-type: none"> – Delimitation of the work area – Generation of metal and wood waste – Temporary modification of the landscape 			•		•	•	Restricting unauthorized access	Increased perimeter security	Installation accidents (falling objects, cuts)	
			Storage of materials needed for construction / waste and equipment	<ul style="list-style-type: none"> – Zoning on pallets/containers – Local dust generation – Possible scattering of light materials 			•		•	•	Soil contamination; windblown particles	Risk of waste dispersion in the community	Chemical contamination; accidents involving falling objects	Covering systems; separate storage by category
			Recruitment of working personnel (including local personnel, if applicable)	<ul style="list-style-type: none"> – Staff selection and interviews – Job advertisements 	•	•		•			•	Indirect job creation; increase in local revenues	•	labor conflicts; social fluctuations

Project phase	Type of activity/investment	Location	Activities	Effects which can generate an impact	Working conditions	Human rights	Community health and safety	Economic conditions	Occupational health and safety	Direct impacts	Indirect impacts	Risks	Opportunities
			Appointment of an OHS (Occupational Health and Safety) officer	<ul style="list-style-type: none"> - Establishing responsibilities and resources - Development of an OHS plan 	•	•			•	Strengthening preventive measures; regular training	Reduction of non-compliance and accidents at the construction site	Lack of resources; failure to apply procedures	Continuous improvement of safety culture
			Publication of the announcement of the start of works (information board, town hall notice board, website, etc.)	<ul style="list-style-type: none"> - Information board and notice board - Website update 	•	•	•			Increased transparency; reduced risk of conflict	Improving relations with the community	Misinformation if not updated	Online feedback platform
			Implementation of the SEP plan and consultation with local stakeholders	<ul style="list-style-type: none"> - Organizing meetings - Information 	•	•				Increased social acceptance; constructive dialogue	Project tailored to local needs	Reluctance to participate; distrust if consultation is formal	Adjustment of the project according to suggestions
			Establishment of OHS contractual clauses for subcontractors	<ul style="list-style-type: none"> - Introduction of clear requirements in contracts - Periodic checks 	•	•		•	•	Health and safety compliance; reduction in workplace accidents	Standardization of measures among all contractors	Delays in delivery of equipment/services; non-compliance by subcontractors	
			Marking of work areas, safety areas, and escape routes	<ul style="list-style-type: none"> - Marking of lines and arrows on the ground/concrete 					•	Clarification of evacuation routes; reduction of accident risks		Insufficient markings; rapid deterioration of signage	
			Clearing the land (removing vegetation, preparing flat surfaces)	<ul style="list-style-type: none"> - Removal of weeds/plant debris - Generation of dust and pollen 			•	•	•	Site preparation for works; removal of natural obstacles	Aesthetic improvement; first stage of work		•
			Construction site vehicle traffic/operation of machinery	<ul style="list-style-type: none"> - Heavy and light machinery traffic - Emissions and prolonged noise 			•		•	Increased air and noise pollution; traffic	Discomfort for residents	Collisions between machinery and small vehicles; accidents on construction sites, potential fires	Non-peak scheduling; clear zoning of routes
	Creation of access routes	Location	Removal of vegetation layer	<ul style="list-style-type: none"> - Exposure of soil to erosion - Generation of dust and mud - Temporary alteration of natural drainage - Continuous noise and vibrations in the soil - Layer of aggregates and ballast; - Generation of waste 			•		•	Reduction of vegetation cover; risk of erosion Flat and stable surface for further work Functional road for equipment access		Excessive compaction; risk of pollutant leakage onto impermeable surfaces	Filtering terraces; permeable paving
		Excavations and backfills						•					
		Leveling/compaction											
		Road structure construction and finishing											
			On-site roads										
	Works for access to utilities	Site	Installation of water tanks for domestic/industrial water supply	<ul style="list-style-type: none"> - Manual and mechanized handling of tanks and pipes - Excavation and installation of buried equipment 	•				•	Exposure to noise and dust	Improved access to water on site	Accidents at work (excavations, collapses) Accidental pollution (hydrocarbons)	
			Installation of hydrocarbon separator and										

Project phase	Type of activity/investment	Location	Activities	Effects which can generate an impact	Working conditions	Human rights	Community health and safety	Economic conditions	Occupational health and safety	Direct impacts	Indirect impacts	Risks	Opportunities	
	Excavations and foundation works		underground rainwater tank (transformer station)	- Use of heavy construction equipment - Periodic emptying/maintenance										
			Construction of foundations for battery containers, inverters, and other equipment	- Soil excavation - Dust and vibration generation					•	Stable foundations for containers		Electrocution in underground works	Low-impact excavation solutions	
			Construction of service roads and access platforms	- Additional waterproof layer; - Granular material consumption					•	Easy access for maintenance and operations	Site structure reinforcement	Excessive compaction; insufficient drainage		
			Cable ducts/drainage	- Mud and standing water; - Potential risk of slipping during excavation					•	Cable protection and rainwater drainage	Improved stormwater management			
	Transportation of BESS systems and installation	Site	Delivery and handling of battery and PCS containers	- Mud and standing water						•	On-time component supply	Optimized logistics flow	Accidents due to heavy handling; local pollution	
			Installation of BESS containers, inverters, and HVAC systems	- TIR truck and crane traffic;- Noise and emissions during unloading						•	High-standard installation; equipment protection	Improved thermal efficiency	Container falls; exposure to sharp edges	Cable recycling; modular equipment
			Installation of transformers, medium/low voltage cables	- Generation of metal waste and cut cables;- High need for PPE equipment						•	Stabilization of the internal medium voltage network	Increased electrical reliability	Soil/water contamination with oil; accidents during heavy handling	
	Internal electrical work	Location	Connection of systems to EMS (Energy Management System)	- Heavy equipment handling;- Possible insulating oil leakage						•	Centralized control and energy efficiency	Consumption display	Electrocution; programming errors	•
			Laying cables between equipment (AC and DC)	- Waste generation (excavated soil, packaging)						•	Internal equipment connectivity	Simplified maintenance	Cuts; accidental electrocution, Risk of cuts during handling	Modular cable routes with guides
			Installation of electrical panels, command and control equipment	- Use of sensitive materials;- Generation of electronic waste if equipment is defective						•	High level of automation and safety	Reduction of human error	Electronic defects; risk of electrocution	Recyclable components; compact design
Installation of security and safety systems	Location	SCADA system interconnection	- Increased software complexity;- Possible risk of human error during configuration						•	Real-time monitoring of the installation	Maintenance optimization	Programming errors; downtime	Advanced staff training	
		Installation of fire detection systems (sensors, automatic extinguishing)	- Noise generation during testing;- Use of chemical substances () in extinguishers					•	•	Increased fire protection	Reduced risk of major damage	Exposure to irritants; false alarms	Systems integrated with EMS; regular maintenance	

Project phase	Type of activity/investment	Location	Activities	Effects which can generate an impact	Working conditions	Human rights	Community health and safety	Economic conditions	Occupational health and safety	Direct impacts	Indirect impacts	Risks	Opportunities	
Connection to the electricity grid (SEN)	Exterior of the site	Installation of video surveillance systems (CCTV), perimeter lighting	Access control systems, safety signage	- Constant energy consumption; - Nighttime light pollution		•	•	•	•	Event detection and perimeter protection	Possible excessive surveillance	Breach of confidentiality; energy consumption	•	
				- Clarification of hazardous areas;- Restriction of unauthorized access		•	•		•	Monitored and secure access	Improved visitor management			
		Marking and preparing routes on agricultural land	Mechanized excavation for cable laying	- Temporary removal of vegetation;-		•	•	•	•	Precise cable positioning	Legal procedures and compensation	Complaints from landowners; impact on crops		
				- Dust and mud generation;- Intense mechanized noise		•	•		•	Buried protected cables	Reduced risk of theft and damage	Lateral collapses; mechanical cuts		
		Installation of medium voltage LES cables	Refilling and restoring land to its original condition	- Cable positioning in trenches			•		•	Medium voltage network connection	Increased distribution reliability	Electrocution; damage to underground pipes	Double-protected cables; integrated monitoring	
				- Soil compaction; use of fill material;- Final leveling			•	•	•	Surface stabilization	Landscape restoration	Uneven compaction; subsequent settlement		
		Minor works to cross agricultural roads or canals (if applicable)	Setting up the connection point in the station	- Temporary interruption of agricultural traffic;-		•	•	•	•	Continuity of the electricity network	Minimal impact on farmers	Road accidents; damage to agricultural equipment	•	
				- Generation of waste from construction materials;- Cable organization and safety			•		•	Secure connection to the network	Improved technical access	Handling live cables; accidents during installation	Clear signaling	
		Power-up and synchronization with the grid	Structural reinforcement of the building	- Noisy equipment testing;- Risk of power surges		•	•		•	System startup	Local network stability	Electrocution; network failures		
				- Generation of dust and masonry waste	•			•	•	Long-term building stability	•	Auditory discomfort; cement dust allergen	Waste recycling	
Building renovation (headquarters)	Location	Interior work (painting, installations)	- Emissions from paints;- Generation of household waste and materials	•	•		•	Aesthetic and functional improvement of premises	Increased employee comfort	Exposure to toxic substances; accidents involving ladders and tools	Waste management plans			
			Restoration of temporarily affected land areas: Waste disposal leveling grass planting			•		•	Visual restoration of the landscape	Landscape improvement	Community-wide dust dispersion; uneven compaction	Green zoning		
Restoration of areas affected by construction work	Site		- Removal of construction debris - Leveling and planting of grass/local species - Moderate compaction to protect the soil											
Operation	Operation, monitoring, and maintenance	Location	Continuous monitoring of parameters (SCADA)	- Alarm/report generation - Data storage in database				•	Early detection of anomalies	Energy consumption optimization	False positives/false alarms; staff overload	Predictive maintenance		

Project phase	Type of activity/investment	Location	Activities	Effects which can generate an impact	Working conditions	Human rights	Community health and safety	Economic conditions	Occupational health and safety	Direct impacts	Indirect impacts	Risks	Opportunities		
			Periodic visual inspection of containers and cables	- Identification of cracks, corrosion, or damage	•				•	Prevention of major damage	Increased reliability	Exposure to sharp edges	Technician training; standardization of procedures		
			Battery maintenance (cycle tests, replacement of defective cells)	- Recording capacity and internal resistance - Replacement of worn modules				•		•	Maintaining rated capacity	Extended service life	Electrochemical exposure; thermal risk; rough handling	Circularity; agreements with recyclers	
			Cleaning and maintenance of HVAC/cooling systems	- Removal of dust and debris from filters - Adjustment of air and fluid flow	•	•	•			•	Optimal thermal efficiency	Reduced risk of overheating	Dust inhalation; contact with refrigerants		
			Fire protection system testing and maintenance	- Alarm and extinguishing simulation - Pressure and extinguishing agent check					•		•	Increased safety in case of fire	Community trust	False alarms; exposure to irritants	•
			Battery thermal management (temperature control)	- Start-up/cooling or heating system			•	•			•	Stability of operating parameters	Increased energy efficiency	Temperature fluctuations; excessive consumption, risk of short circuit or overheating (thermal runaway)	Adaptive systems; heat recovery
			Implementation of emergency plans provided for in operation	- Periodic drills	•			•	•		•	Staff training; reduction in response time	Community trust	Human error; fear of inappropriate reactions	
			Hazardous waste management (used batteries)	- Collection in ADR containers - Labeling and delivery for recycling					•	•	•		•	Electrolyte leaks; soil/water contamination, Improper transport	•
			Security service integrated into plant operation	Security systems, CCTV, perimeter fencing							•			Unauthorized access, intent	
			Renewable energy charging/discharging	- Transfer of solar/wind energy to the BESS system - Injection of stored energy into the grid or local consumption						•	•	•	Reduction of CO ₂ emissions; grid stabilization; energy flexibility	Improved air quality; energy independence; stimulation of the green economy	
Decommissioning	Site layout and organization	Location	Land development	- Site preparation activities (stripping, leveling, ballast laying); heavy site traffic					•	Exposure to dust and noise Increased traffic in the area	Discomfort for local residents	Work/vehicle accidents Accidental fuel pollution	Land reuse		
Topsoil removal															
Storage of stripped soil															
Ballast layer laying works															
Compaction/leveling work															
			Use of vehicles on site/operation of equipment necessary to carry out the works												

Project phase	Type of activity/investment	Location	Activities	Effects which can generate an impact	Working conditions	Human rights	Community health and safety	Economic conditions	Occupational health and safety	Direct impacts	Indirect impacts	Risks	Opportunities
	Dismantling of BESS systems	Site	Dismantling of all facilities	-Dismantling of heavy equipment, handling of electrical components					•	Waste generation		Accidents, exposure to hazardous substances Risk of electrocution	Equipment recovery, recycling
	Decommissioning of technological platforms and foundations	Site	Vegetation clearing Stripping of topsoil Storage of stripped soil Foundation demolition work Compaction/leveling work Construction site vehicle traffic/operation of machinery necessary to carry out the works	-Mechanical and manual work on the ground, demolition, site traffic			•		•	Exposure of workers to dust, noise, heavy machinery	Temporary changes to the landscape Community discomfort	Noise, risk of injury	Land rehabilitation
	Disconnection of electrical connections and removal of underground cables	Site	Vegetation clearing works Topsoil removal works Trench digging work Storage of soil from excavations Removal of electrical cables Filling of trenches and leveling of the ground Restoration of vegetation cover Site traffic of vehicles/operation of machinery necessary to carry out the works	-Excavation and work near electrical infrastructure, land restoration			•		•	Exposure of workers to electrical and physical hazards		Accidents, soil contamination if cables are not properly marked	Rehabilitation, reduction of post-decommissioning risks
	Decommissioning of access roads	Site	Stripping of the topsoil layer Storage of soil from excavations Removal of ballast layer Compaction/leveling works Construction site vehicle traffic/operation of machinery necessary to carry out the works	-Dismantling of temporary road infrastructure			•		•	Exposure of workers to machinery, dust, and traffic	Restoration of land to its original condition	Accidents, dust, discomfort	
	Land restoration works upon	Site	Restoration of the site where the works were carried out and	-Rehabilitation of temporarily used			•		•	Improvement of landscape and soil quality		Strenuous physical work, risk of minor injuries	

Project phase	Type of activity/investment	Location	Activities	Effects which can generate an impact	Working conditions	Human rights	Community health and safety	Economic conditions	Occupational health and safety	Direct impacts	Indirect impacts	Risks	Opportunities
	completion of construction		rehabilitation of temporarily used areas	areas, reinstallation of topsoil									
		Location	Clearing all installations, machinery, and waste, and reinstalling the topsoil on areas that were temporarily used				•		•				
	Recycling of end-of-life batteries	Outside site	Transport of used batteries, handling and processing for recycling, contracting a specialized company	Transportation of used batteries, handling and processing for recycling, contracting a specialized company			•		•	<ul style="list-style-type: none"> Reducing environmental impact by avoiding the disposal of batteries as waste 		<ul style="list-style-type: none"> Accidental pollution (spills, emissions), noise, additional traffic, improper management of hazardous waste 	Recovery of recovered materials, promotion of sustainability

5.4.2.2 Receptor sensitivity

Table 59 : Receptor sensitivity (social)

Receptor sensitivity	Description
High	An already vulnerable receiver with very little capacity and means to absorb change.
Moderate	A non-vulnerable receiver, but with limited capacity and means to absorb change.
Low	A non-vulnerable receptor with sufficient capacity and means to absorb changes.

Determining the sensitivity of receptors starts with analyzing the current state of socio-economic factors in the social impact area under study. In the social impact assessment, the relevant receptors are identified as the workforce (including the value chain) and the communities directly affected by the project, which are identified in the stakeholder analysis.

The sensitivity of receptors in social terms is assessed based on the type of receptor and its vulnerability to various categories of identified social factors. The sensitivity analysis takes into account the capacity of receptors to cope with the impacts associated with the project, in relation to the baseline context. In this sense, some social groups have a greater capacity to adapt and can capitalize on the opportunities created by the project, while others are more vulnerable and feel the negative effects more intensely. The sensitivity of recipients is assessed according to their vulnerability to relevant social factors, according to the following criteria:

Table 60 Table: Recipient sensitivity to socio-economic factors

Recipient	Labor force				Recipient sensitivity	Affected communities			Receptor sensitivity
	Working conditions	Health and safety at work	Human rights	Economic conditions		Community health and safety	Human rights	Economic conditions	
Vulnerability to factor	Low	Moderate	Moderate	Low	Moderate	Moderate	Moderate	Moderate	Moderate
	Working conditions are regulated by Romanian legislation, and the vulnerability of the receiver is low given the small number of personnel required to operate the BESS. Contractual clauses for contractors/contractors set out clear conditions for compliance with these standards.	During the construction/decommissioning phase, the workforce is exposed to risks related to exposure to harmful substances, dust, and working in special conditions (in the value chain, there may be a risk of non-compliance with clauses and non-reporting of accidents at work). During the operation phase, the vulnerability of the receptor decreases due to process automation and remote monitoring.	Moderate vulnerability is considered due to risks in the value chain and those adjacent to the subcontracting of services necessary for project execution. Furthermore, vulnerabilities are identified in the supply chain for battery components.	The vulnerability of the workforce to changes in economic conditions is low. During the execution phase, the construction sector benefits from minimum wages above the national average, which reduces the risk of workers being directly affected by possible economic fluctuations. During the operational phase, the BESS system will be maintained by qualified personnel with specific technical skills, for whom demand is relatively stable on the labor market.	Following the analysis of the receptor's vulnerability to the identified socio-economic factors, it is considered that the sensitivity of the workforce, including employees in the value chain, is moderate , given the background situation.	The area of social influence is classified as an area with low pollution and insignificant anthropogenic pressures (rural area, agricultural activities). However, there is limited access to basic medical facilities and care, requiring travel to other localities.	According to the basic data, the resident population is vulnerable in terms of respect for basic human rights, such as non-discrimination, access to basic utilities such as sewage, drinking water supply, and others. It is therefore considered to be of medium vulnerability. The human rights risk analysis can be found in the dedicated chapter.	The area studied has low economic potential, with a marked aging and declining population. There is a notable presence of vulnerable groups with low incomes and predominantly engaged in agricultural activities.	Following the analysis of the receptor's vulnerability to the identified socio-economic factors, the sensitivity of the affected communities is considered moderate , given the background situation.

5.4.2.3 Impact magnitudes

The project magnitude assessment was carried out according to the methodology presented in Chapter 4, with the specification that the descriptions of the magnitude classes were adapted to the socio-economic context of the assessment and presented in the table below. The assessment is carried out in an integrated manner for each identified socio-economic factor, taking into account the affected communities and the workforce:

- Working conditions
- Human rights
- Community health and safety
- Economic conditions
- Health and safety at work

$$\text{Magnitude/Severity} = (\text{Nature of impact} \times \text{Temporal extent (Duration)} \times \text{Spatial extent (Scale)} \times \text{Reversibility}) / 4$$

²⁵ e magnitude of impact is the extent to which an activity affects the community, taking into account the duration, spatial extent, reversibility, and nature of the effect. It reflects the intensity of the impact before taking into account the sensitivity of the affected receptor.

Table 61 : Magnitude classes and definitions (social)

Magnitude Class	Description
No change	The project does not produce any perceived changes in the lives of communities/employees or is very unlikely to have a noticeable effect.
Very low	The project causes minor, reversible, and temporary (less than 1 year) socio-economic changes, limited to a small area and without significantly affecting the quality of life or social structure.
Low	The project causes visible social changes in the short term (less than 1 year) that affect the local community but do not generate major changes in the socio-economic structure.
Medium	The project causes moderate changes in the social and economic life of communities/the workforce. These changes are felt in the medium term (less than 5 years) and affect neighboring communities.
High	The project causes significant social and economic changes that will be felt in the long term (over 5 years) or throughout the life of the project. These changes affect the structure of communities, labor markets, and socio-economic dynamics at the regional level.
Very high	The project causes irreversible and permanent changes in the social and economic structure, with very long-term or even permanent consequences. These changes affect vital social and economic resources at the national or global level and have an 80-100% probability of occurring (the impact is certain).

Table 62: Magnitude assessment (social)

²⁵ Probability of occurrence (frequency) is not taken into account in the assessment of magnitude because it is analysed in the risk assessment.

Socio-economic factor	Magnitude of impact during the execution period		Magnitude of impact during the operational period	
Working conditions	Low	Appropriate working standards will be applied, but the temporary nature and low volume of personnel involved limit the magnitude of the effect.	Low	During the operational phase, the workforce requirement will be low due to the automation of the BESS system. The impact on working conditions will be limited and manageable.
Human rights	Very low	No human rights violations are anticipated. National and international standards regarding workers' and communities' rights will be applied.	Very low	The project does not involve significant interactions with the local population or vulnerable populations. The automation and monitoring of the system limits the occurrence of relevant risks.
Community health and safety	Low	Construction works will have a limited impact on communities, as the site is not located in the vicinity of residential areas and does not affect sensitive areas or points of public interest. The project reuses industrial land (former CAP) in an agricultural area, and access by machinery and works will not pose significant risks to the health of the population.	Low	During operation, the system does not generate significant emissions, noise, or traffic. Risks are mainly associated with emergency situations (e.g., fires, malfunctions), but these are unlikely and manageable through prevention and training measures.
Economic conditions	Low	During the construction period, a number of new jobs will be created locally indirectly through the subcontracting of necessary services in the value chain. No significant effects will be generated given the temporary nature of the works. Local personnel will be used to the extent that labor resources are available and qualified.	Medium	During the operational phase, the project will contribute to balancing the SEN by responding quickly to frequency variations, providing important regulation and stability services. It will facilitate the integration of renewable sources by storing excess energy and delivering it at peak consumption times, thus reducing peak prices. The project will also bring additional tax revenue to the annual local budget and increase the attractiveness of the area for related investments in renewable energy.
Health and safety at work	Medium	Construction activities involve occupational risks (working at height, handling equipment, heavy traffic). Strict OHS standards will be applied, but the nature of the work justifies a moderate impact.	Low	Once commissioned, the BESS system will operate automatically and can be monitored remotely, so the number of operating and maintenance personnel will be reduced. Given the automation, no significant change in OHS conditions is expected.

5.4.2.4 Significant impact

The significance of the impact was assessed taking into account all the socio-economic components defined in the categories in section 5.2.2.1. The assessment was carried out on two levels, taking into account the significance of the impact and the potential risk level of the project, assessed without mitigation measures according to the risk matrix below. The significance of the impact is classified as Significant/Insignificant depending on the magnitude of the impact and the sensitivity of the receptor.

Table 63: Risk matrix and risk assessment (left and right)

Risk matrix for social aspects							
Probability	Severity/Magnitude						
	Score	0	1	2	3	4	5
		No change	Very low	Low	Average	High	Very high
Almost certain: expected to happen	5	N	M	H	C	C	C
Probable: likely to happen	4	N	L	M	H	C	C
Possible: could happen in some circumstances	3	N	L	M	M	H	C
Unlikely: may happen at some point	2	N	L	L	M	M	H
Rare: only in exceptional circumstances	1	N	L	L	L	L	M
Impossible: cannot happen	0	N	N	N	N	N	N

Risk level		Score Risk
N	No risk	0
L	Low	1
M	Moderate	5
H	High	10
C	Critical	15

Risk = Severity/Magnitude X Probability

Probability of occurrence	Description	Probability
Almost certain	The impact is inevitable or already present.	80%-100
Likely	There is a high chance that the impact will occur, but it is not certain.	60%-80
Possible	The impact could occur, but there are uncertainties.	40%-60
Unlikely	Impact is possible, but with a low probability.	20%-40
Rare	Impact is unlikely.	0%-20

Table 64 : Assessment of impact significance and types of impact (social) – left and right

Significance of impact	Description
Significant	The impact has a clear, measurable, or perceived effect on the community or affected groups. It may alter access to resources, social welfare, health, safety, or social cohesion. It requires management or compensation measures.
Insignificant	The impact is minor, temporary, or limited to a small number of people, without visibly affecting living conditions, social relations, or community perception. It can be ignored or dealt with through routine measures.

Types of impact	
Direct impact	Social effect generated directly by project activities, including infrastructure, emissions, noise, or local disturbances. Includes material effects (e.g., loss of access to land, traffic, accident risks) and non-material effects (e.g., stress, loss of sense of security, damage to landscape with symbolic value).
Indirect impact	Social effect resulting from activities caused by the project but not part of it. Includes material effects (e.g., pressure on public services, increased cost of living) and non-material effects (e.g., social tensions, change in community identity).
Cumulative impact	Social effect generated by the interaction of the project with other projects or regional trends (e.g., urbanization, industrialization). Includes material effects (e.g., land use change) and non-material effects (e.g., loss of social cohesion, cultural alienation).
Residual impact	Social effect that persists after all prevention, reduction, and compensation measures have been applied. Includes material effects (e.g., permanent economic losses) and non-material effects (e.g., mistrust, sense of injustice).

Significance of impact = Magnitude X Sensitivity

Table 65: Assessment of impact significance during construction (social)

Project stage	Interventions/Activities	Effects that may generate an impact	Potential impact/risks/opportunities	Impact Characteristics										Probability of manifestation	Risk without implementing measures	
				Impact nature	Impact type	Cumulative/Residual	Reversible	Spatial extension of the impact	Temporal extension of the impact	Receptor sensitivity	Impact severity	Impact significance	Justification			
Construction	Demolition of existing structures on site	Demolition of non-functional buildings	<ul style="list-style-type: none"> Generation of fine dust and particles (including asbestos) Noise from machinery Vibrations transmitted to adjacent buildings 	<ul style="list-style-type: none"> Inhalation of dust/asbestos; Auditory and physical discomfort Respiratory/hearing disorders Exposure to dust Reuse of space (former CAP, no need for new greenfield sites); 	Positive and negative	Direct and indirect	Cumulative impact	Reversible	At site level	Short term (<1 year)	Moderate	Low	Significant	<p>During the execution phase, the site is being prepared for the future BESS system, which includes the demolition of old structures belonging to a former agricultural cooperative production unit for industrial use. Thus, there is a positive impact through the reuse of brownfield land without the need for intervention in new land. Fine dust and particle emissions will be generated, but the magnitude is localized at the site for a short period of time, given the limited purpose of the demolitions (small structures). No major demolition works are planned that would cause significant dust emissions. There are OHS risks related to the inhalation of fine dust/particles and auditory discomfort.</p> <p>The organization of the construction site and logistics flows ensure appropriate working conditions for personnel. Temporary occupation of land, generation of non-hazardous waste, traffic, noise and particle pollution can create community discomfort and accident risks. The impact is localized, reversible, and short-term, and OHS standards, waste management plans, and the dedicated OHS role keep the likelihood of incidents very low.</p> <p>The installation of energy storage and management equipment involves heavy lifting, the generation of metal waste, and risks of electrocution and mechanical accidents. Some work will also take place outside the site to connect the BESS station to the transformer station operated by CNTEE Transelectrica, over a length of approximately 800 m.</p> <p>The implementation of safety measures, the consultation plan, and OHS requirements reduce the risk of accidents at work and create channels of communication with the local community. The completion and restoration of the land to its original condition will ensure that visual discomfort is limited. The aesthetic value of the landscape is low, as it is located in an agricultural area.</p> <p>The impacts identified during the execution period are those specific to construction, assembly, and demolition activities, but the scope of the works is limited, in a low-density location, well delimited from the public interest objectives of the commune. The area does not have high vehicle traffic, as it is served by a communal road for agricultural purposes.</p> <p>The effects are temporary and easy to manage through measures, but may cause some discomfort to the population in the short term.</p>	Probable	M
		Waste transport and disposal	<ul style="list-style-type: none"> Deposition of wet rubble on access roads Noise and vibrations during loading/unloading 	<ul style="list-style-type: none"> Increase in waste volume; Additional traffic from machinery Accidents during loading/unloading 	Negative	Direct and indirect	Cumulative and residual	Reversible	At site level	Short term (<1 year)	Moderate	Low	Insignificant		Possible	L
	Site organization	Location of workers' barracks (offices, changing rooms, living quarters)	<ul style="list-style-type: none"> Temporary occupation of land Soil leveling and compaction Generation of packaging waste and wood debris 	<ul style="list-style-type: none"> Non-hazardous waste; Water and electricity consumption Negative perception if the premises are not maintained, Possible dissatisfaction from the community towards the staff stationed on site 	Negative	Direct and indirect	Residual	Reversible	At the site level	Short term (<1 year)	Moderate	Low	Insignificant		Unlikely	L
			Transport of materials for construction	<ul style="list-style-type: none"> NOx and PM10/PM2.5 emissions Noise 	<ul style="list-style-type: none"> Air pollution; increased traffic in the area Discomfort for residents, Collisions between machinery and vehicles; exposure to vibrations and pollutants, Route optimization; low-emission vehicles 	Negative	Direct	Cumulative	Reversible	At site level	Short term (<1 year)	Moderate	Medium		Significant	Possible
		Installation of eco-friendly toilets	<ul style="list-style-type: none"> Need for periodic emptying Possible odor release 	<ul style="list-style-type: none"> Temporary unpleasant odors, Liquid leaks; soil/groundwater contamination 	Negative	Direct	Residual	Reversible	At site level	Short (<1 year)	Moderate	Low	Insignificant		Unlikely	L
		Installation of protective panels and temporary fences	<ul style="list-style-type: none"> Delimitation of the work area Generation of metal and wood waste Temporary modification of the landscape 	<ul style="list-style-type: none"> Restriction of unauthorized access Increased perimeter security Accidents during assembly (falling objects, cuts) 	Positive and negative	Indirect	Residual	Reversible	At the site	Short (<1 year)	Moderate	Low	Insignificant		Possible	M
		Storage of materials needed for construction / waste and equipment	<ul style="list-style-type: none"> Zoning on pallets/containers Local dust generation Possible windblown light materials 	<ul style="list-style-type: none"> Soil contamination; wind-borne particles, Risk of waste dispersion in the community, Chemical contamination; accidents due to falling objects, Covering systems; separate storage by category 	Negative	Direct and indirect	Cumulative	Reversible	At site level	Short term	Moderate	Medium	Significant		Possible	M
		Recruitment of staff (including local staff, if applicable)	<ul style="list-style-type: none"> Staff selection and interviews Job advertisements 	<ul style="list-style-type: none"> Indirect job creation Increase in local income Development of local skills; training programs 	Positive	Direct	Residual		At site level	Short term (<1 year)	Moderate	Low	Significant		Likely	N/A
		Appointment of the OHS (Occupational Health and Safety) manager	<ul style="list-style-type: none"> Establishing responsibility and resources Development of an OHS plan 	<ul style="list-style-type: none"> Strengthening preventive measures; regular training, Reduction of non-compliance and accidents at the construction site, Lack of resources; failure to apply procedures, continuous improvement of safety culture 	Positive	Indirect	Residual		Limited	Short term (<1 year)	Moderate	Low	Insignificant		Unlikely	L

Project stage	Interventions/Activities	Effects that may generate an impact	Potential impact/risks/opportunities	Impact Characteristics										Probability of manifestation	Risk without implementing measures
				Impact nature	Impact type	Cumulative/Residual	Reversible	Spatial extension of the impact	Temporal extension of the impact	Receptor sensitivity	Impact severity	Impact significance	Justification		
	Publication of the announcement of the start of works (information board, town hall notice board, website, etc.)	- Information board and notice board - Website update	<ul style="list-style-type: none"> Increased transparency; reduction of conflict risks, Improvement of relations with the community, Misinformation if not updated, Online feedback platform 	Positive	Indirect	Residual		Local	Medium term (< 5 years)	Moderate	Very low	Insignificant	<p>Conducting public information activities, consulting the community, and establishing occupational health and safety measures contribute to minimizing risks. By publishing an information board, consulting stakeholders, and constantly updating communication channels (e.g., website), the project ensures a high level of transparency.</p> <p>At the same time, the introduction of clear contractual clauses on OHS for all subcontractors, the appointment of an occupational health and safety officer, and the marking of work areas and escape routes increase safety on the construction site. These measures are complemented by regular training for workers.</p> <p>Site preparation through vegetation clearance, minor levelling and demarcation of work areas is limited in time and space, generating low dust or pollen emissions without affecting sensitive natural habitats. Construction site traffic and the operation of machinery may temporarily generate noise and emissions, but these are localized and managed through optimized routes and scheduling outside peak hours.</p> <p>Cumulatively, these interventions have a minimal impact on the community, maintaining a balance between the technical needs of the project and the protection of public health.</p>	Unlikely	L
	Implementation of the SEP plan and consultation with local stakeholders	- Organizing meetings - Information	<ul style="list-style-type: none"> Increased social acceptance; constructive dialogue, Project adapted to local needs, Reluctance to participate; mistrust if consultation is formal Adjusting the project according to suggestions 	Positive	Direct	Residual		Local	Long term (> 5 years)	Moderate	Medium	Significant		Possible	L
	Establishment of OHS contractual clauses for subcontractors	- Introduction of clear requirements in contracts - Periodic checks	<ul style="list-style-type: none"> OSH compliance; reduction of work-related incidents, Standardization of measures among all contractors, Delays in delivery of equipment/services; non-compliance by subcontractors 	Positive	Direct	Residual		Local	Long term (> 5 years)	Moderate	Low	Insignificant		Possible	M
	Marking of work areas, safety areas, and escape routes	- Marking lines and arrows on the ground/concrete - Installation of signage	<ul style="list-style-type: none"> Clarification of escape routes; reduction of accident risks Insufficient markings; rapid deterioration of signage 	Positive	Direct			At site level	Short term (< 1 year)	Moderate	Low	Insignificant		Unlikely	N/A
	Land clearing (removal of vegetation, preparation of flat surfaces)	- Removal of weeds/plant debris - Dust and pollen generation	<ul style="list-style-type: none"> Site preparation for works; reduction of natural obstacles, Aesthetic improvement; first stage of work 	Positive and negative	Direct		Reversible	At the site level	Short term (< 1 year)	Moderate	Low	Insignificant		Unlikely	L
	Construction site vehicle traffic / operation of machinery	- Heavy and light machinery traffic - Emissions and prolonged noise	<ul style="list-style-type: none"> Increased air and noise pollution; Traffic Discomfort for residents, Collisions between machinery and small vehicles; accidents on construction sites, potential fires, Non-peak scheduling; clear zoning of routes 	Negative	Direct and indirect		Irreversible	At site level	Short term (< 1 year)	Moderate	Low	Significant		Possible	M
	Creation of access routes	Removal of vegetation	- Exposure of soil to erosion - Generation of dust and mud - Temporary alteration of natural drainage - Continuous noise and vibrations in the soil - Reduction of water infiltration - Layer of aggregates and ballast; - Generation of inert waste	<ul style="list-style-type: none"> Reduction of vegetation layer; risk of erosion Flat and stable surface for further work Functional road for equipment access Excessive compaction; risk of pollutant runoff on impermeable surface Filtering terraces; permeable paving 	Positive and negative	Direct and indirect		Reversible	At the site level	Short term (< 1 year)	Moderate	Low	Insignificant	Unlikely	L
		Excavations and fillings													
		Levelling/compaction													
	Road structure construction and finishing														
	Drivable roads within the premises														
	Works for access to utilities	Installation of water tanks for domestic/industrial water supply Installation of hydrocarbon separator and underground rainwater tank (transformer station)	- Manual and mechanized handling of tanks and pipes - Excavation and installation of buried equipment - Use of heavy construction equipment - Periodic emptying/maintenance	<ul style="list-style-type: none"> Exposure to noise and dust Improving access to water on site Accidents at work (excavations, collapses) Accidental pollution (hydrocarbons) 	Positive and negative	Direct and indirect		Reversible	At the site level	Short term (< 1 year)	Moderate	Very low	Insignificant		

Project stage	Interventions/Activities	Effects that may generate an impact	Potential impact/risks/opportunities	Impact Characteristics										Probability of manifestation	Risk without implementing measures
				Impact nature	Impact type	Cumulative/Residual	Reversible	Spatial extension of the impact	Temporal extension of the impact	Receptor sensitivity	Impact severity	Impact significance	Justification		
Excavation and foundation work	Construction of foundations for battery containers, inverters, and other equipment	- Soil excavation; - Dust and vibration generation	<ul style="list-style-type: none"> Stable foundations for containers, electrocution during underground work, low-impact excavation solutions 	Positive and negative	Direct and indirect		Reversible	At the site level	Short term (<1 year)	Moderate	Medium	Significant	<p>The excavation and foundation work for the main equipment (battery containers, inverters) involves digging and levelling, the construction of service roads, and the installation of drainage pipes and cables to reduce the risk of water accumulation. Although these may generate dust, vibrations, noise, or temporary mud, they are localized, reversible, and manageable through standard construction site measures.</p> <p>The transport and installation of BESS equipment involves activities with a high mechanical risk due to the handling of heavy containers and the use of equipment such as trucks and cranes. Risks such as entrapment accidents, noise, and temporary emissions are noteworthy. The installation of transformers and medium- and low-voltage cables involves the generation of metal waste and requires appropriate PPE equipment to avoid accidental contamination with insulating oil or electrocution.</p> <p>Connection to the energy management system (EMS) brings significant benefits in terms of system control and operational efficiency, but involves risks associated with programming errors or incorrect handling of equipment.</p> <p>Overall, these works are necessary for the safe and efficient operation of the storage system, and by implementing technical and organizational protection measures, the identified risks remain at a controllable and insignificant level for the environment and human health.</p>	Unlikely	L
	Construction of access roads and platforms	- Additional waterproof layer; -	<ul style="list-style-type: none"> Easy access for maintenance and operations, Site structure reinforcement, Excessive compaction; Insufficient drainage, 	Positive and negative	Direct and indirect		Reversible	At the site level	Short term (<1 year)	Moderate	Medium	Significant			
	Cable ducts/drainage	- Mud and standing water; - Potential risk of slipping during excavation	<ul style="list-style-type: none"> Cable protection and rainwater drainage, Improved rainwater management, 	Positive and negative	Direct and indirect		Reversible	At the site level	Short term (<1 year)	Moderate	Medium	Significant			
Transportation of BESS systems and installation	Delivery and handling of battery and PCS containers	- Mud and standing water	<ul style="list-style-type: none"> Timely supply of components Optimized logistics flow, Accidents due to heavy handling; local pollution 	Positive and negative	Positive and negative		Reversible	At site level	Short term (<1 year)	Moderate	Low	Insignificant	<p>Connection to the energy management system (EMS) brings significant benefits in terms of system control and operational efficiency, but involves risks associated with programming errors or incorrect handling of equipment.</p> <p>Overall, these works are necessary for the safe and efficient operation of the storage system, and by implementing technical and organizational protection measures, the identified risks remain at a controllable and insignificant level for the environment and human health.</p>	Unlikely	L
	Installation of BESS containers, inverters, and HVAC systems	- TIR truck and crane traffic;- Noise and emissions during unloading	<ul style="list-style-type: none"> High-standard installation; team protection, Improved thermal efficiency, Falling containers; exposure to sharp edges, Cable recycling; modular equipment 	Positive and negative	Positive and negative		Reversible	At site level	Short term (<1 year)	Moderate	Medium	Significant			
	Installation of transformers, medium/low voltage cables	- Generation of metal waste and cut cables; - High demand for PPE equipment	<ul style="list-style-type: none"> Stabilization of internal medium voltage network Increased electrical reliability, Soil/water contamination with oil; Accidents during heavy handling 	Positive and negative	Positive and negative		Reversible	At site level	Short term (<1 year)	Moderate	Medium	Significant			
	Connecting systems to EMS (Energy Management System)	- Handling heavy equipment;- Possible insulating oil leakage	<ul style="list-style-type: none"> Centralized control and energy efficiency, Consumption display, Electrocution; programming errors 	Positive and negative	Positive and negative		Reversible	At site level	Short term (<1 year)	Moderate	Low	Insignificant			
	Laying cables between equipment (AC and DC)	- Waste generation (excavated soil, packaging)	<ul style="list-style-type: none"> Internal equipment connectivity, Simplified maintenance, Cuts; accidental electrocution, Risk of cuts during handling, Modular cable routes with guides 	Positive and negative	Direct and indirect		Reversible	At site level	Short term (<1 year)	Moderate	Medium	Significant			
Internal electrical work	Installation of electrical panels, command and control equipment	- Use of sensitive materials;- Generation of electronic waste if equipment is defective	<ul style="list-style-type: none"> High level of automation and safety Reduction of human error, Electronic defects; Risk of electrocution, Recyclable components; 	Positive and negative	Direct and indirect		Reversible	At site level	Short term (<1 year)	Moderate	Medium	Significant	<p>The execution phase continues with the completion of internal electrical works, including the laying of cables</p>	Unlikely	M
	SCADA system interconnection	- Increased software complexity;- Possible risk of human error during configuration	<ul style="list-style-type: none"> Real-time monitoring of the installation, Maintenance optimization, Programming errors; downtime, Advanced staff training 	Positive and negative	Direct and indirect		Reversible	At the site level	Short term (<1 year)	Moderate	Very low	Insignificant			
				Positive and negative	Direct and indirect		Reversible	At the site level	Short term (<1 year)	Moderate	Very low	Insignificant			

Project stage	Interventions/Activities	Effects that may generate an impact	Potential impact/risks/opportunities	Impact Characteristics										Probability of manifestation	Risk without implementing measures	
				Impact nature	Impact type	Cumulative/Residual	Reversible	Spatial extension of the impact	Temporal extension of the impact	Receptor sensitivity	Impact severity	Impact significance	Justification			
Installation of security and safety systems	Installation of fire detection systems (sensors, automatic extinguishing)	- Noise generation during testing;- Use of chemicals in extinguishers	<ul style="list-style-type: none"> Increased fire protection level Reduction of major damage risks, Exposure to irritating substances; false alarms, Systems integrated with EMS; Regular maintenance 	Positive and negative	Direct			At site level	Long term (>5 years)	Moderate	Medium	Significant	between AC/DC equipment and the installation of electrical panels and command and control equipment. However, risks such as the generation of packaging or electronic waste, accidents due to cuts or accidental electrocution should be noted.	Possible	M	
	Installation of video surveillance systems (CCTV), perimeter lighting	- Constant energy consumption;- Nighttime light pollution	<ul style="list-style-type: none"> Event detection and perimeter protection, Possible excessive surveillance , Breach of confidentiality; energy consumption 	Positive and negative	Direct and indirect	Residual impact	Reversible	At site level	Short term (<1 year)	Moderate	Very low	Insignificant	Security systems—such as fire detection, video surveillance, and perimeter lighting—are designed to prevent events with a severe impact on infrastructure and personnel. Testing these systems can generate noise and involve the use of irritants (extinguishing agents). The implementation of CCTV and energy-efficient lighting will contribute to perimeter protection, but may raise concerns about privacy or light pollution if not properly calibrated.	Possible	L	
	Access control systems, safety signage	- Clarification of hazardous areas;- Restriction of unauthorized access	<ul style="list-style-type: none"> Monitored and secure access, Improved visitor management, 	Positive	Direct			At site level	Short term (<1 year)	Moderate	Very low	Insignificant		Possible	N/A	
	Connection to the electricity grid (SEN)	Marking and preparing the route on agricultural land	- Temporary destruction of vegetation;- Need for cadastral registration and approval	<ul style="list-style-type: none"> Precise positioning of cables, Legal procedures and compensation, Complaints from landowners; impact on crops 	Negative	Direct and indirect		Reversible	Local	Short term (<1 year)	Moderate	Very low	Insignificant	At the same time, connecting to the national electricity grid involves specific activities: route planning on agricultural land, mechanized excavation, laying medium-voltage LES cables, and land restoration. These works generate noise, dust, temporary disturbance of vegetation, and potential conflicts with landowners, but they are reversible. They are essential for integrating the system into the energy grid and are accompanied by impact mitigation measures (compensation, soil restoration, signage, and use of environmentally friendly materials).	Possible	L
		Mechanized excavation for cable laying	- Generation of dust and mud;- Intense mechanical noise	<ul style="list-style-type: none"> Burying of protected cables, Reduced risk of theft and damage, Lateral collapses; mechanical cuts 	Negative	Direct		Reversible	Local	Short term (<1 year)	Moderate	Very low	Insignificant		Possible	L
		Installation of medium voltage LES cables	- Cable positioning in trench	<ul style="list-style-type: none"> Medium voltage network connection, Increased distribution reliability, Electrocution; damage to underground pipes, Double-protected cables; integrated monitoring 	Negative	Direct		Reversible	Local	Short term (<1 year)	Moderate	Medium	Significant		Unlikely	M
		Refilling and restoring the land to its original condition	- Soil compaction; use of fill material;- Final leveling	<ul style="list-style-type: none"> Surface stabilization, Landscape restoration, Uneven compaction; subsequent settlement, Environmentally friendly fill material 	Positive	Direct			Local	Short term (<1 year)	Moderate	Very low	Insignificant		Likely	N/A
		Minor works to cross agricultural roads or canals (if applicable)	- Temporary interruption of agricultural traffic;- Installation of prefabricated parts	<ul style="list-style-type: none"> Continuity of the electrical network Minimal impact on farmers, Road accidents; damage to agricultural equipment, ; warning farmers 	Negative	Direct and indirect		Reversible	Local	Short term (<1 year)	Moderate	Low	Insignificant		Unlikely	L
		Setting up the connection point in the station	- Generation of construction waste;- Cable organization and safety	<ul style="list-style-type: none"> Secure connection to the network, Improved technical access, Handling live cables; accidents during installation, Modular protective enclosures; Clear signage 	Positive and negative	Direct and indirect		Reversible	Local	Short term (<1 year)	Moderate	Low	Significant		Likely	M
		Power-up and synchronization with the grid	- Noisy testing of equipment;- Risk of power surges	<ul style="list-style-type: none"> System start-up, Local network stability, Electrocution; network failures 	Positive and negative	Direct and indirect		Reversible	Local	Short term (<1 year)	Moderate	Low	Insignificant		Unlikely	L
Building renovation (headquarters)	Structural reinforcement of the building	- Generation of dust and masonry waste	<ul style="list-style-type: none"> Long-term building stability, Cement dust allergen, waste recycling 	Negative	Direct		Reversible	At site level	Long term (>5 years)	Moderate	Low	Insignificant	In the project completion phase, work focuses on the physical and electrical integration of the system into the national grid, as well as the rehabilitation of temporarily affected areas. The installation of the connection point in the electrical substation involves the organization of cables and the installation of protective equipment. Although construction materials generate waste, the work brings direct benefits in terms of system safety and operability, and the impacts are reversible and localized.	Unlikely	L	
	Interior work (painting, installations)	- Emissions from paints;- Generation of household waste and materials	<ul style="list-style-type: none"> Aesthetic and functional improvement of headquarters Increased employee comfort Exposure to toxic substances; accidents involving ladders and tools Waste management plans 	Positive and negative	Direct and indirect		Reversible	At site level	Short term (<1 year)	Moderate	Medium	Significant		Possible	M	

Project stage	Interventions/Activities		Effects that may generate an impact	Potential impact/risks/opportunities	Impact Characteristics								Probability of manifestation	Risk without implementing measures		
					Impact nature	Impact type	Cumulative/Residual	Reversible	Spatial extension of the impact	Temporal extension of the impact	Receptor sensitivity	Impact severity			Impact significance	Justification
	Restoration of areas affected by construction works	Restoration of temporarily affected land areas: Waste removal leveling re-seeding	– Removal of construction debris – Leveling and planting of grass/local species – Moderate compaction to protect the soil	<ul style="list-style-type: none"> Visual restoration of the landscape, landscape improvement Dust dispersion at community level; uneven settlement, 	Positive and negative	Direct			At site level	Long term (>5 years)	Moderate	Very low	Insignificant	The restoration of areas affected by construction aims to restore the land to its original condition by removing waste, levelling and planting grass.	Likely	L

Conclusions: The assessment of the significance of the impact and the risk analysis identified a series of direct effects that are limited in intensity, duration, and scope on the socio-economic factors analyzed. The level of risk identified is Low-Medium, with a generally low or very low severity and a possible or unlikely probability of occurrence. Although most of the direct impacts are temporary and manageable through appropriate mitigation measures, some risks have been identified, particularly with regard to OSH conditions and public health.

Red flags identified:

- Dust generation and emissions in areas close to the site.
- Risk of accidents at work in work areas or during the transport of materials.
- Temporary disruption of traffic and local access during the works.

The project also presents social and economic opportunities, particularly through indirect job creation and stimulation of the local economy (green flags):

- Indirect creation of temporary jobs for the local community, particularly in construction and logistics.
- Opportunity to collaborate with local suppliers and subcontractors, stimulating the regional economy.
- Implementation of a feedback mechanism.
- Raising awareness of the energy transition and energy storage technologies (information, presentations).
- Improving the company's image among stakeholders by promoting sustainable investments

Probability	Score	Severity/Magnitude					
		0 No change	1 Very low	2 Low	3 Average	4 High	5 Very high
Almost certain: expected to happen	5	N	M	H	C	C	C
Probable: likely to happen	4	N	L	M	H	C	C
Possible: could happen in some circumstances	3	N	L	M	M	H	C
Unlikely: may happen at some point	2	N	L	L	M	M	H
Rare: only in exceptional circumstances	1	N	L	L	L	L	M
Impossible: cannot happen	0	N	N	N	N	N	N

Table 66: Assessment of the significance of the impact during the operating period (social)

Project phase	Interventions/Activities	Effects which can generate an impact	Potential impact/risks/opportunities	Impact Characteristics										Probability of manifestation (Likelihood)	Risk without implementing measures	
				Impact nature	Impact type	Cumulative/Residual potential	Reversible	Spatial extension of the impact	Temporal extension	Receptor sensitivity	Impact severity	Impact significance	Justification			
Operation	Operation, monitoring, and maintenance (Periodic activities, as provided for in the operating plan/legislation)	Continuous monitoring of parameters (SCADA) (routine activity, not a compensatory measure).	<ul style="list-style-type: none"> – Generation of alarms/reports – Data storage in database 	<ul style="list-style-type: none"> • Early detection of anomalies • Energy consumption optimization • False positives/false alarms; staff overload, • Predictive maintenance 	Positive and negative	Direct			At site level	Long term (>5 years)	Moderate	Very low	Insignificant	<p>During the operational phase, the impacts and probability of occurrence of the identified risks are long-term, localized at the site with a low probability of occurrence.</p> <p>The BESS system will operate automatically and will be monitored remotely by complex systems, involving a small number of personnel in its operation and maintenance (an estimated 6 people directly involved, in shifts).</p> <p>The site is located at a safe distance from the more densely populated areas of the commune, surrounded by agricultural land. The BESS operates completely autonomously and does not require any involvement from personnel.</p> <p>The battery control and management system will measure the operating parameters of the BESS and perform the appropriate actions to ensure automatic operation in conditions of safety and energy and operational efficiency. SCADA monitoring, periodic inspections, and maintenance plans already in place minimize the occurrence of critical failures, while battery maintenance and HVAC systems prevent battery overheating.</p> <p>There are residual risks with a low probability of occurrence in rare (extreme) situations, but with a high magnitude, in terms of thermal runaway (triggered by an internal short circuit or extreme temperature conditions, in which the battery temperature rises rapidly, risk of violent fire and generation of flammable gases) and electrolyte leaks (due to corrosion, mechanical cracking, manufacturing defects, or handling with risk of chemical burns, respiratory tract irritation, and environmental contamination).</p> <p>The identified OHS risks include electrocution, electric shock, exposure to noise and vibration. There are also risks associated with the movement of battery modules, both during delivery and during disassembly and recycling.</p>	Probable	L
		Periodic visual inspection of containers and cables	<ul style="list-style-type: none"> – Identification of cracks, corrosion, or damage – Status report 	<ul style="list-style-type: none"> • Prevention of major damage, • Increased reliability, • exposure to sharp edges, • Technician training; standardization of procedures 	Positive and negative	Direct and indirect		Reversible	At site level	Long term (> 5 years)	Moderate	Very low	Insignificant		Likely	L
		Battery maintenance (cycle testing, replacement of defective cells)	<ul style="list-style-type: none"> – Recording capacity and internal resistance – Replacement of worn modules 	<ul style="list-style-type: none"> • Maintain rated capacity, • Extended service life, • Electrochemical exposure; thermal risk; rough handling, • Circularity; agreements with recyclers 	Positive and negative	Direct and indirect		Reversible	At site level	Long term (> 5 years)	Moderate	High	Significant		Rare	L
		Cleaning and maintenance of HVAC/cooling systems	<ul style="list-style-type: none"> – Removal of dust and debris from filters – Adjustment of air and fluid flow 	<ul style="list-style-type: none"> • Optimal thermal efficiency • Risks of overheating, • Dust inhalation; contact with refrigerants 	Positive and negative	Direct and indirect		Reversible	At site level	Long term (> 5 years)	Moderate	High	Significant		Rare	L
		Fire protection system testing and maintenance	<ul style="list-style-type: none"> – Alarm and extinguishing simulation – Pressure and extinguishing agent check 	<ul style="list-style-type: none"> • Increased safety in case of fire, • Community trust, • False alarms; exposure to irritants, Toxic gas emissions (HF, etc.) in case of fire 	Positive and negative	Direct and indirect	Residual impact	Reversible	At site level	Long term (> 5 years)	Moderate	High	Significant		Rare	L
		Battery thermal management (temperature control)	<ul style="list-style-type: none"> – Start-up/cooling or heating system – Setpoint adjustment 	<ul style="list-style-type: none"> • Stability of operating parameters, • Increased energy efficiency, • Temperature fluctuations; excessive consumption, • Adaptive systems; heat recovery, risk of short circuit or overheating (thermal runaway) 	Positive and negative	Direct and indirect	Residual impact	Reversible	At site level	Long term (> 5 years)	Moderate	High	Significant		Rare	M

Project phase	Interventions/Activities	Effects which can generate an impact	Potential impact/risks/opportunities	Impact Characteristics										Probability of manifestation (Likelihood)	Risk without implementing measures
				Impact nature	Impact type	Cumulative/Residual potential	Reversible	Spatial extension of the impact	Temporal extension	Receptor sensitivity	Impact severity	Impact significance	Justification		
	Implementation of emergency plans provided for in operations	- Periodic drills	<ul style="list-style-type: none"> Staff training; reduction in response time, Community trust, Human error; fear of inappropriate reactions 	Positive and negative	Direct and indirect		Reversible	At the site level	Short term (<1 year)	Moderate	Very low	Insignificant	During operation, the project also has the potential for cumulative impact, with positive effects: <ul style="list-style-type: none"> Promoting the integration of renewable energy resources and mitigating environmental impact: <ul style="list-style-type: none"> Additional installed storage capacity: 300 MWh (phase I) and 500,000 MWh (after completion of phase II) Annual CO₂ equivalent emissions avoided: 70,285.99 tons (phase I) and 117,239 tons (after completion of phase II) SRE capacity supported for installation: up to 57.577 MW (phase I) 	Unlikely	L
	Security service integrated into facility operation	Security systems, CCTV, perimeter fencing	<ul style="list-style-type: none"> Unauthorized access, intent 	Negative	Direct		Reversible	At site level	Short term (<1 year)	Moderate	Medium	Insignificant		Rare	L
	Hazardous waste management (used batteries)	- Collection in labeled containers - Labeling and delivery for recycling	<ul style="list-style-type: none"> Electrolyte leaks; soil/water contamination, improper transport 	Negative	Direct		Reversible	At site level	Long term (>5 years)	Moderate	High	Significant		Rare	M
	Renewable energy charging/discharging	- Solar/wind energy transfer to the BESS system - Injection of stored energy into the grid or local consumption	<ul style="list-style-type: none"> CO₂ emissions reduction; grid stabilization; energy flexibility, Improved air quality; Energy independence; green economy stimulation Renewable grants/subsidies; green branding 	Positive	Direct and indirect	Cumulative impact		Local	Long term (>5 years)	Moderate	Medium	Significant		Likely	N/A

Conclusions: Overall, the operation of the Li-Ion-based BESS system produces impacts/risks with a low probability of occurrence, with effects localized at the site and long-term manifestation. The BESS system generates a positive impact by reducing CO2 emissions, increasing grid reliability, and encouraging the development of SRE capacities, while maintaining a well-controlled residual risk profile.

Red flags:

- Fire risk generated by various external conditions/errors/phenomena
- Electrolyte leaks
- Possible errors/defects/cracks during delivery, handling, transport

Green flags:

- Significant reduction in CO2 emissions
- Energy flexibility and stability
- Additional tax revenue for the local budget
- Monitoring and prevention systems
- Preventive maintenance

Probability	Score	Severity/Magnitude					
		0 No changes	1 Very low	2 Low	3 Average	4 High	5 Very high
Almost certain: expected to happen	5	N	M	H	C	C	C
Probable: likely to happen	4	N	L	M	H	C	C
Possible: could happen in some circumstances	3	N	L	M	M	H	C
Unlikely: may happen at some point	2	N	L	L	M	M	H
Rare: only in exceptional circumstances	1	N	L	L	L	L	M

Impossible: cannot happen

0

N

N

N

N

N

N

Table 67 : Assessment of the significance of the impact during the decommissioning period (social)

Project phase	Interventions/Activities		Effects which can generate an impact	Impacts/Risks/Opportunities	Impact Characteristics										Risk without implementing measures	
					Impact nature	Impact type	Cumulative/Residual potential	Reversible	Spatial extension of the impact	Temporal extension of the impact	Receptor sensitivity	Impact severity	Impact significance	Justification		Probability of manifestation (Likelihood)
Decommissioning	Site layout and organization	Site preparation	- Site preparation activities (stripping, leveling, ballast laying); heavy site traffic	<ul style="list-style-type: none"> Exposure to dust and noise Increased traffic in the area Discomfort for local residents Work/vehicle accidents Accidental fuel pollution Land reuse 	Positive and negative	Direct and indirect		Reversible	At the site level	Short term (<1 year)	Moderate	Low	Insignificant	Stripping, ballast laying, and site traffic generate temporary impacts of low magnitude that are reversible. These are common during site preparation phases and do not involve permanent changes to the site.	Unlikely	L
		Topsoil removal														
		Storage of stripped soil														
		Ballast layer laying works														
Compaction/leveling work																
Dismantling of BESS systems	Dismantling of all facilities	-Dismantling of heavy equipment, handling of electrical components	<ul style="list-style-type: none"> Waste generation Accidents, exposure to hazardous substances Risk of electrocution Equipment recovery, recycling 	Positive and negative	Direct and indirect		Reversible	At site level	Short term (<1 year)	Moderate	Medium	Significant	Dismantling heavy equipment and electrical components involves technical and environmental risks, but these can be controlled through standard dismantling and waste collection procedures. Recycling equipment reduces pressure on resources.	Unlikely	M	
Decommissioning of technological platforms and foundations	Vegetation clearance work	-Mechanical and manual work in the ground, demolition, site traffic	<ul style="list-style-type: none"> Exposure of workers to dust, noise, heavy machinery Temporary changes to the landscape Community discomfort Noise, risk of injury Land rehabilitation 	Positive and negative	Direct and indirect		Reversible	At the site level	Short term (<1 year)	Moderate	Medium	Significant	Demolition and stripping works involve temporary discomfort and may generate dust and noise, but are typical activities for returning the land to its original state. OHS measures can significantly reduce the impacts.	Unlikely	M	
																Topsoil removal works
																Storage of stripped soil
																Foundation demolition works
																Compaction/leveling work
Disconnection of electrical connections and removal of underground cables	Vegetation clearing works	-Excavation and work near electrical infrastructure, land restoration	<ul style="list-style-type: none"> Exposure of workers to electrical and physical risks Accidents, soil contamination if cables are not properly marked Rehabilitation, reduction of post-decommissioning risks 	Positive and negative	Direct and indirect		Reversible	At site level	Short term (<1 year)	Moderate	Medium	Significant	Activities involve work near electrical infrastructure, with controllable risks. Replanting vegetation and restoring the land helps return the land to its original condition.	Unlikely	M	
																Work to remove the topsoil layer
																Trench digging works
																Storage of soil from excavations
																Removal of electrical cables
Filling of trenches and leveling of the ground																

Project phase	Interventions/Activities	Effects which can generate an impact	Impacts/Risks/Opportunities	Impact Characteristics										Risk without implementing measures			
				Impact nature	Impact type	Cumulative/Residual potential	Reversible	Spatial extension of the impact	Temporal extension of the impact	Receptor sensitivity	Impact severity	Impact significance	Justification		Probability of manifestation (Likelihood)		
		Restoration of vegetation cover Construction site traffic/operation of machinery necessary to carry out the works															
	Decommissioning of access roads	Removal of topsoil Storage of soil from excavations Works to remove ballast layer Compaction/leveling works Construction site vehicle traffic/operation of machinery necessary to carry out the works	-Dismantling of temporary road infrastructure	<ul style="list-style-type: none"> Exposure of workers to machinery, dust, and traffic Restoration of land to its original condition Accidents, dust, discomfort 	Positive and negative	Direct and indirect		Reversible	At the site level	Short term (<1 year)	Moderate	Low	Insignificant	The works have a low and temporary impact, with significant benefits in terms of restoring the land to its natural state.	Unlikely	L	
	Land restoration works upon completion of construction	Restoration of the site where the works were carried out and rehabilitation of temporarily used areas Work to clear all installations, equipment, and waste and to reinstall the topsoil on areas that were used temporarily	-Rehabilitation of temporarily used surfaces, reinstallation of topsoil	<ul style="list-style-type: none"> Improvement of landscape and soil quality Demanding physical work, risk of minor injuries 	Positive and negative	Direct and indirect		Reversible	At site level	Short term (<1 year)	Moderate	Low	Insignificant	Restoration of vegetation cover contributes to landscape improvement, with positive social and environmental impacts, but low magnitude.	Unlikely	L	
	Recycling of end-of-life batteries	Transport of used batteries, handling and processing for recycling, contracting a specialized company	Transport of used batteries, handling and processing for recycling, contracting a specialized company	<ul style="list-style-type: none"> Accidental pollution (spills, emissions), noise, additional traffic, improper management of hazardous waste Reducing environmental impact by avoiding the disposal of batteries as waste Incorrect handling Recovery of recovered materials, promotion of sustainability 	Positive and negative	Direct		Reversible	Outside the scope	Short term (<1 year)	Moderate	Medium	Significant	The battery system used for electricity storage is designed to allow recycling in specialized centers at the end of its service life and reuse of recycled components in industrial processes. During the decommissioning phase, ensuring that used batteries are handed over to authorized recycling companies will prevent pollution from hazardous waste.	Unlikely	L	

Conclusions: Although the activities in the decommissioning phase involve direct interventions on equipment and land (e.g., dismantling, stripping, site restoration), the associated impacts are generally temporary, localized, and reversible.

Given that these works are carried out after the end of the operating period, without introducing new operational risks, the level of risk is considered to be lower compared to the execution phase.

The current assessment also takes into account technological developments in equipment (e.g., modular BESS systems that are easy to disassemble, efficient recycling of components), as well as modern standards for hazardous waste management.

Thus, the impact analysis was carried out rather at a cumulative/theoretical level, based on probable scenarios, and the probability of risks occurring is assessed as low in all cases, if minimum control measures are applied.

Risk matrix in the decommissioning phase							
Probability	Severity/Magnitude						
	Score	0	1	2	3	4	5
		No change	Very low	Low	Average	High	Very high
Almost certain: expected to happen	5	N	M	H	C	C	C
Probable: likely to happen	4	N	L	M	H	C	C
Possible: could happen in some circumstances	3	N	L	M	M	H	C
Unlikely: may happen at some point	2	N	L	L	M	M	H
Rare: only in exceptional circumstances	1	N	L	L	L	L	M
Impossible: cannot happen	0	N	N	N	N	N	N

5.4.2.5 Human rights risk assessment

Benchmark for risk assessment

The human rights risk assessment was carried out in accordance with the best practices set out in the "Guidance on the Implementation of Human Rights Assessments under the Equator Principles," which mentions conducting an initial screening to identify potential risks in the project's activities. If major risks are identified, they are to be assessed in detail.²⁶ The assessment was carried out using recognized international standards as a reference point, including the Universal Declaration of Human Rights, the International Covenants on Civil and Political Rights and Economic, Social and Cultural Rights, as well as the eight fundamental conventions of the International Labour Organization (ILO) and the UN Guiding Principles on Human Rights and Business (UNGPs).

Risk assessment methodology

The risk assessment was carried out considering five levels of risk, expressing the severity of the impact and the probability of occurrence. The analysis considered two assessment scenarios, with and without mitigation measures, to determine the existence of residual risks. The assessment methodology answers the following questions:

- Scale: how serious are the impacts for the victim?
- Scope: how many people could be affected by the harm?
- Remediability: will the remediation process bring the victim to the same or an equivalent position as before the harm; how easy or difficult would it be for the victim to obtain remediation?
- Probability: how likely is the impact to occur?

²⁶ In the initial stage, a high-level screening is conducted to identify human rights risks, assessing their severity and likelihood. If the risks are low, a summary of the findings is prepared. The assessment takes into account any differences between local legislation and international human rights standards.

Table 68 : Criteria for assessing human rights risks

Risk level			Severity		Occurrence
Level	Definition	Designations (Examples)	Scale & Irremediability	Scope (People Affected)	Likelihood
No risk	No potential harm identified	No foreseeable negative impact	<ul style="list-style-type: none"> No expected impact on physical, psychological, or economic well-being No remediation necessary 	0	No impact expected
Low	Minor impacts, easily remedied	Administrative problems, isolated complaints	<ul style="list-style-type: none"> Unlikely to cause damage or changes in living standards Remediation is simple and fully restores the previous situation 	1–9	Unlikely to occur
Moderate	Visible damage, with temporary or reversible effects	Repeated complaints, local disturbances	<ul style="list-style-type: none"> May cause physical/psychological damage or economic impact Remediation is possible, but may not fully restore the previous situation 	10–99	Likely to happen (≥50% chance)
High	Significant or lasting impact on well-being	Community-wide impact, legal violations	<ul style="list-style-type: none"> May lead to serious or irreversible harm/long-term disruption Remediation is unlikely to restore the situation to its previous state 	100–999	Likely or already underway
Critical	Severe, extensive, and often irreversible harm	Death, permanent disability, systemic abuse of human rights	<ul style="list-style-type: none"> May lead to death or permanent loss of physical/mental capacity/irreversible socio-economic damage Remediation is not feasible or cannot restore the previous situation 	1,000	Almost certain or already underway

Romania has ratified most international conventions relevant to the protection of human and labor rights and has transposed European conventions into national law. The project assessment took into account both the local context and the national and international legislative framework for the protection of human rights.

Table 69 : Human rights risk assessment screening table

Rights Category	Human Rights Issue	Assessment of local and project context	Risk to Workers	Risk to Community Members	Project-related risk without implementing measures	Risk Mitigation Measures	Residual risk
Labor	Child Labor & Protection	<p>Child labor is prohibited in Romania, according to Article 45, paragraph 3 of the Romanian Constitution and Convention No. 182/1999 of the International Labor Organization, ratified by Law No. 203/2000. Children have the right to be protected from exploitation and cannot be forced to perform work or domestic activities. If a child wishes to take up employment, it must be ensured that the work is appropriate to their abilities and to the minimum age established by law for children, which is 16 years. Rural areas in Romania face problems related to child welfare: limited access to quality education and high rates of child poverty.</p> <p>In fact, Romania has one of the highest rates of child poverty in the EU, affecting ~35% of children (compared to the EU average of ~24%), with children in rural areas and Roma communities being the most vulnerable to educational exclusion and material deprivation²⁷. In Ialomița, many families depend on subsistence farming or the income of parents working abroad, which can leave children without direct supervision. Children, especially those from disadvantaged backgrounds, are often involved in household work, with negative consequences for their education.</p> <p>A 2021 report by World Vision Romania shows that in Romania, the involvement of children in household work, especially in rural areas, is common practice. 80% of households included in the World Vision study stated that they had children who participated in work. Animal care is present in 40% of families in 2020, and caring for other household members occurs in 14% of households.</p>	✓	✓	Moderate	<ul style="list-style-type: none"> Contractors are required to carry out a transparent recruitment process in compliance with legal requirements (verification of the identity documents of all employees and workers on the construction site to confirm the minimum legal age). Clear communication with local subcontractors that the use of child labor is illegal and intolerable. For the protection of children in the community: complete fencing of the construction site and battery storage area, installation of visible warning signs ("No unauthorized access," "Danger of electrocution"), as well as active surveillance of the perimeter, especially during work. Plan heavy equipment transport routes to avoid routes in the immediate vicinity of schools and enforce speed limits within the town. 	Low
Labor	Collective Bargaining and Freedom of Association	<p>At the end of 2022, Romania adopted a law on social dialogue (Law No. 367/2022), aimed at improving collective bargaining and extending the coverage of collective agreements. This law gives trade unions more power in the negotiation process, facilitating employee representation through a simplified procedure. The main goal is to increase the influence of trade unions in determining working conditions and to promote employee rights. Collective bargaining has become mandatory for all employers with at least 10 employees (compared to 21 in the old regulation), without the conclusion of a collective labor agreement being mandatory.</p>	✓		Low	<ul style="list-style-type: none"> Each contractor is required to ensure employees' right to social dialogue and collective bargaining. The project ensures the availability of a complaint mechanism for employees involved in the project to report any violations of legal provisions. 	Low
Labor	Modern Slavery (Forced Labor/Human Trafficking)	<p>In Romania, forced labor is prohibited (Article 3(4) of the Labor Code). The term forced labor refers to any work or service imposed on a person under threat or for which the person has not freely given their consent. The most vulnerable people are women, children, and people with disabilities. Under EU law, slavery, servitude, forced or compulsory labor are prohibited (Article 5(2) of the Charter of Fundamental Rights of the EU). Child labor is also prohibited (Article 32 of the Charter).</p> <p>According to the Ministry of Internal Affairs, the number of victims of human trafficking for labor exploitation was 8.6% in 2021, down from 16.1% in 2020. Men, women, and children were victims of labor trafficking in agriculture, construction, domestic services, hotels, and manufacturing. More than half of the victims were exploited in animal care, domestic servitude, forestry and wood processing, car washes, and meat processing facilities.</p>	✓		Moderate	<ul style="list-style-type: none"> The ESMP Plan introduces clear conditions for compliance with the legislation in force, as well as contractual clauses stipulating compliance with legal rights. 	Low
Labor	Job Security / Right to Work / Wage Equity	<p>The law establishes a national minimum wage above the poverty level, which has increased nearly threefold since 2012. In the construction sector, the guaranteed gross minimum wage is set at 4,582 lei per month, according to current legislation. This amount is higher than the national minimum wage, which was increased to 3,700 lei as of July 1, 2024, according to Government Decision No. 598/2024.</p> <p>A report in the construction sector shows that 53% of employers estimate that over 30% of the workforce is completely undeclared ("black"), and 52% estimate that the same proportion is partially undeclared ("gray").²⁸ Undeclared work creates a source of vulnerability for workers, as they do not benefit from social protection, health insurance, or pension rights, and are exposed to risks in the event of accidents or illness.</p> <p>The rural environment in Ialomița is characterized by limited employment opportunities and high poverty (relative poverty rate 10 times higher than in the Bucharest-Ilfov area). Relatively high local unemployment and low education create vulnerability to accepting precarious working conditions. Many rural workers work without a formal contract or social protection, suggesting a risk of exploitation through undeclared work or below-minimum wages.</p>	✓		Moderate	<ul style="list-style-type: none"> Ensure strict compliance with labor legislation: all employment based on written and transparent contracts, payment at least at the minimum wage level, compliance with legal working hours and holidays. Contractors are required to adhere to a code of conduct regarding workers' rights and a complaint mechanism so that workers can report abuses. By hiring local workers for unskilled or support jobs where appropriate, the project can contribute to the income of families in the area. 	Low

²⁷ Eurostat (2024). Available [here](#).

²⁸ The labor market in the construction sector 2022, available [here](#).

Rights Category	Human Rights Issue	Assessment of local and project context	Risk to Workers	Risk to Community Members	Project-related risk without implementing measures	Risk Mitigation Measures	Residual risk
Labor	Non-discrimination	In Romania, legislation provides clear measures to protect employees. Government Ordinance No. 137/2000 prohibits any form of discrimination based on criteria such as gender, ethnicity, religion, disability, age, or sexual orientation. However, there are reports of frequent cases of discrimination, particularly related to gender, age, and disability. (More details in the section on Group Rights).	✓	✓	Moderate	<ul style="list-style-type: none"> The Code of Conduct includes the principle of zero tolerance for discrimination in recruitment and employment. The possibility of reporting cases of discrimination through the complaints mechanism. 	Low
Occupational	Occupational Health and Safety	In Romania, occupational health and safety (OHS) standards are regulated by specific regulations that establish employers' obligations and employees' rights regarding risk prevention and health protection in the workplace. Although these standards are adequate for the main industries, their application and enforcement vary. Employees have the right to withdraw from situations that are hazardous to their health or safety without risking their job, according to the law. However, sectors such as construction, agriculture, and small manufacturing units face difficulties, both due to incomplete reporting of workplace accidents and non-compliance with OSH regulations. The project involves construction work and electrical installations for the BESS (high-voltage batteries) system, which requires a strong OSH culture.	✓		Moderate	<ul style="list-style-type: none"> Strict implementation of OSH standards (in accordance with the Occupational Safety and Health Act): mandatory training for all workers, adequate personal protective equipment, safe working procedures (lock-out/tag-out, careful handling of batteries) and emergency response plans. Monitoring of working conditions and compliance with international standards (ILO conventions ratified by Romania on occupational safety). An OHS officer will be appointed on site and regular training will be provided. 	Low
Labour	Standard of Living	The rural environment in Ialomița County is affected by poverty and limited access to basic services – rural areas in Romania have a high risk of poverty, much higher than in urban areas, and infrastructure and economic opportunities are insufficient. In this context, an energy project can bring modest economic benefits: a few jobs during construction, potential contracts for local suppliers, and a contribution to the local budget through taxes. There will be no population displacement or loss of agricultural land, as the BESS facility reuses the land of a former CAP. Thus, no impact on the community's standard of living is expected.	✓	✓	Low	<ul style="list-style-type: none"> Ensuring socially responsible implementation in accordance with the SEP plan. 	Low
Labor	Working Hours	The law provides for a standard working week of 40 hours or five days. On average, the working week must not exceed 48 hours over a four-month reference period, although exceptions are allowed in certain sectors or professions. The law also requires a 48-hour rest period per week, and most employees are entitled to two days off per week. Certain economic activities, such as construction, agriculture, and hospitality services, present an increased risk of staff overwork and physical exhaustion, which can lead to a higher probability of errors and accidents at work.	✓		Moderate	<ul style="list-style-type: none"> Draw up a work schedule that does not lead to employee overwork and strictly adhere to the rest period. 	Low
Civil and Political	Freedom of Expression	Rural communities often have limited access to information and consultation mechanisms. In Ialomița, the population is partly aged and has limited access to the internet, so many residents may learn about new initiatives late. The BESS project has a low impact (category B), but transparency and public information remain central. Romanian law (transposing the Aarhus Convention) guarantees access to information and public participation in environmental decisions, but in practice the level of rural civic engagement is low.	✓	✓	Moderate	The SEP plan includes: <ul style="list-style-type: none"> Ensuring transparency and dialogue with the community: proactively informing villagers about the purpose and benefits of the project (meetings at the town hall, public display of technical details in a way that everyone can understand). Organizing a public consultation that gives locals the opportunity to ask questions and be heard. Respecting the right to free expression – residents (including the workforce) can submit petitions or complaints, which will receive a prompt response. Involving local authorities (mayor, local council) in communication, as well as appointing a project contact point for the community. 	Low
Civil and Political	Privacy	In Romania, the right to privacy is protected by a legislative framework aligned with European regulations, such as the GDPR, and reinforced by normative acts such as Law No. 190/2018 on the application of the GDPR at national level. The Romanian Constitution guarantees privacy and the protection of correspondence, and the Labor Code ensures the confidentiality of employee data.		✓	Moderate	<ul style="list-style-type: none"> Implementation of the GDPR policy for data protection. 	Low
Environmental rights	Right to a clean environment	The rural area of Ialomița is predominantly agricultural, with a relatively clean environment and few local sources of pollution. The Romanian Constitution recognizes the right of every person to a healthy and ecologically balanced environment, which requires projects to prevent pollution and protect ecosystems. The BESS system itself does not produce emissions during operation, but the batteries contain hazardous chemicals (lithium, flammable electrolytes) that may pose a risk to the environment and people in the event of a malfunction (fire or leakage).		✓	Moderate	<ul style="list-style-type: none"> Strict application of environmental protection standards: design of the facility with safety and fire prevention systems (overheating sensors, automatic extinguishing systems with substances suitable for battery fires), placement of batteries on an impermeable tank (to retain any chemical leaks and prevent infiltration into the soil). Preparation of an emergency plan in collaboration with the local fire department Continuous monitoring of the facility (for early detection of any irregularities) and regular preventive maintenance will reduce the risk of malfunctions. During the decommissioning phase, ensuring that used batteries are handed over to authorized recycling companies will prevent pollution from hazardous waste. 	Low

Rights Category	Human Rights Issue	Assessment of local and project context	Risk to Workers	Risk to Community Members	Project-related risk without implementing measures	Risk Mitigation Measures	Residual risk
Group Rights	Disability Rights	<p>In Romania, there is a legislative framework that regulates the rights of persons with disabilities and aims to integrate them. Law No. 448/2006 on the protection and promotion of the rights of persons with disabilities provides for social and professional integration measures, facilities and benefits, as well as the obligation to adapt workplaces. Furthermore, the Labor Code – Art. 5 prohibits discrimination in the workplace on the basis of disability.</p> <p>There have been reports of persons with disabilities being unable to access public services such as education, health services, public buildings, and transportation on an equal basis with others. Laws and regulations require such access, but discrimination against persons with disabilities remains a problem. According to a report by the National Council for Combating Discrimination (CNCD), in 2019 there were 1,064 complaints of discrimination, of which 9.2% concerned discrimination on the basis of disability.²⁹</p>		✓	Moderate		Low
Group Rights	Migrants' Rights	<p>The biggest problem in the construction market at the moment is the lack of labor, which has an impact on how projects are managed and carried out. Over 75% of entrepreneurs say they have a shortage of employees, as shown by various profile analyses. To make up for the shortage of workers, one in three construction companies (31.68%) hires foreign workers.³⁰ Thus, in 2022 and 2023, the government approved the admission of 100,000 foreigners annually to the labor market. In Romania, Emergency Ordinance No. 194/2002 on the regime of foreigners in Romania regulates the conditions for the entry, stay, and exit of foreigners from Romanian territory. Furthermore, Law No. 76/2002 on the unemployment insurance system and the promotion of employment includes provisions on migrants' access to the labor market.</p> <p>According to the Migrant Integration Policy Index, immigrants in Romania face as many obstacles as opportunities for social integration, with the country scoring 49 out of 100 points on the MIPEX scale, similar to the index average. Immigrants enjoy basic rights and relatively favorable long-term security, but do not have equal opportunities and access to the labor market.</p>	✓		Moderate	<ul style="list-style-type: none"> Compliance with anti-discrimination legislation at all stages of the project: application of the Law on Equal Opportunities. Recruitment and selection based exclusively on skills, without criteria that exclude any gender or group; equal pay for men and women in similar positions; zero tolerance for harassment and discrimination in the workplace. The community will be involved in a non-discriminatory manner: women, young people, and representatives of vulnerable groups are invited to public meetings. Materials are prepared in such a way as to be accessible to all. Implementation of anti-GBV policies in the SEP and ESMP plans. 	Low
Group Rights	Women's Rights	<p>Although Romania has a solid legislative framework that guarantees gender equality and equal pay for equal work, in practice significant discrimination against women persists, particularly in terms of economic participation and access to services. Women are overrepresented in low-paid jobs, and the gender pay gap has increased from 2.4% in 2020 to 3.6% in 2021.</p> <p>In rural areas, where gender roles are more rigidly defined, women are twice as likely to be inactive as men, and in counties such as Ialomița, new opportunities in male-dominated fields (construction, technology) risk excluding them. Women from vulnerable communities—Roma, poor areas, or with disabilities—face additional barriers to accessing education, health care, housing, and justice (including against GBV—gender-based violence), often exacerbated by a lack of public services or discriminatory attitudes.</p>		✓	Moderate		Low
Supply chains	Human rights in supply chains and ethical sourcing	<p>There are certain risks of human rights violations along this value chain, given the limited capacity for comprehensive monitoring. The lithium-ion batteries required for the project come from complex global supply chains. The extraction of raw materials often involves practices that violate human rights in the countries of origin. This context creates the risk that the project may be indirectly associated with the exploitation of vulnerable workers in the supply chain (child labor, forced labor, exhausting hours, and very low wages). The extraction and processing of minerals for batteries has major environmental consequences in the regions of origin. In the DRC (Democratic Republic of Congo) and other countries in Africa and South America, the expansion of cobalt, lithium, and copper mines has led to soil and water pollution, habitat destruction, and even the forced displacement of local communities. Amnesty International reported in 2023 cases of entire villages being displaced and agricultural land being confiscated to make way for industrial mining.</p> <p>It is worth noting that the technology used (LFP - LiFePO₄) is a lower-risk option for supply chains, especially when compared to other types of lithium-ion batteries, such as NMC (nickel-manganese-cobalt) or NCA (nickel-cobalt-aluminum).</p>	✓		Moderate	<p>According to the new EU Regulation 2023/1542 (Battery Regulation), companies must implement a due diligence system on the battery supply chain to identify, prevent, and mitigate risks of human rights and environmental violations. The project will ensure that selected suppliers comply with these obligations by requesting evidence/certification and, where possible, material traceability. Under the EU Battery Regulation, manufacturers are required to report the recycled content and carbon footprint of batteries, as well as to ensure their collection and recycling at the end of their life cycle. The project will purchase batteries from those who comply with these requirements and will ensure that, after use, the batteries are returned to the circular economy.</p>	Moderate

²⁹ CNCD Activity Report 2019, available at cncd.ro.

³⁰ Labor market in the construction sector 2022, available [here](#).

Conclusions: Based on the assessment criteria established and the analysis carried out, the risk to human rights and vulnerable groups is considered low. Potential impacts on stakeholders will be managed through the implementation of a set of measures such as: the Environmental and Social Management Plan (ESMP), compliance with national labor protection and anti-discrimination legislation, the Code of Conduct for employees and contractors, strict safety and security measures, detailed requirements in the tender specifications, the complaint management mechanism, and the Stakeholder Engagement Plan (SEP).

There remains a residual risk associated with the supply chain, particularly with regard to critical materials, the extraction of which may involve human rights violations in certain regions of the world. Future European regulations, such as the new EU Batteries Regulation, are expected to help reduce these risks by imposing stricter standards on traceability, sustainability, and respect for human rights in supply chains.

5.4.2.6 Occupational health and safety assessment

The risk and impact analysis includes a separate initial assessment of OHS risks at all stages of the project, with the analysis to be updated following specific risk assessments in accordance with legislation. The analysis categorised risks according to categories, potential causes and scenarios, including mitigation measures.

Table 70 : OHS risk assessment

Hazard category	Hazard Source	Project phase	Scenario	Consequences (to people)		Risk (without measures)	Key control measures (Prevention/Mitigation)	Residual risk
				Construction/Decommissioning	Operation/Maintenance			
Electricity	Electrical equipment and live cables	Construction & Operation/Maintenance	Accidental contact with live parts	Electric shock, burns, possible death	Electric shock, electric arc	High	<ul style="list-style-type: none"> Testing before intervention Insulating PPE equipment (gloves, footwear) • Training and periodic checks 	Low
Fall from height	Scaffolding, ladders, roofs	Construction & Maintenance	Panel installation, inspections at height	Fractures, contusions, serious trauma	Occasional falls during maintenance	Environment	<ul style="list-style-type: none"> • Collective protection (fences, railings) • Personal equipment (harnesses, lifelines) • Regular inspection of equipment for access at height 	Low
Manual handling	Lifting containers, batteries, panels	Construction & Operation/Maintenance	Manual moving of heavy loads	Lower back pain, hernias, musculoskeletal injuries	Lower back pain, hernias, musculoskeletal injuries	Environment	<ul style="list-style-type: none"> • Use of cranes, wheelbarrows • Team lifting and ergonomic techniques • Training on manual handling and correct postures 	Low
Vehicle traffic	Trucks, cranes, construction site machinery	Construction & Operation/Maintenance	Machinery handling and traffic	Contusions, fractures, crush injuries	Contusions, fractures, trauma during container handling	Environment	<ul style="list-style-type: none"> • Internal traffic plan (separate areas for pedestrians/vehicles) • Signage 	Low
Noise and vibrations	Excavators, generators, HVAC pumps	Construction & Operation/Maintenance	Continuous work with heavy machinery	Hearing loss; vibrations transmitted to hands/forearms	Prolonged exposure to noise and vibration	Environment	<ul style="list-style-type: none"> • Noise level monitoring • Hearing protection (attenuating headphones) • Regular maintenance of equipment • Rotating breaks for teams 	Low
Chemical exposure	Battery electrolytes, cooling substances	Assembly & Operation/Maintenance	Leaks, work on installations with corrosive liquids	Chemical burns, eye irritation, respiratory problems	Chemical burns, eye irritation, respiratory problems	High	<ul style="list-style-type: none"> • Spill response kits • Local ventilation and extraction • PPE equipment: chemical-resistant gloves, goggles, coveralls • Leak detectors 	Low
Fire and explosion	Battery thermal runaway, short circuits	Operation/Maintenance	Battery failure, overcharging, electric arc	Severe burns, toxic smoke inhalation, explosion	Severe burns, toxic smoke inhalation, explosion	High	<ul style="list-style-type: none"> • Automatic detection and extinguishing system • Emergency and evacuation plan • Continuous monitoring of cell temperature • Emergency response training 	Low
Dust inhalation	Demolition, excavation, leveling	Construction	Generation of fine dust during demolition and excavation	Respiratory irritation, risk of chronic lung disease	–	Low	<ul style="list-style-type: none"> • Wetting of work surfaces • FFP2/FFP3 respirator masks 	Low

Conclusions: The risks identified are specific to construction site work and the operation/maintenance of the BESS system. The risk level without measures is moderate to high, but with the implementation of measures and good practices, the residual risk becomes low. Key measures include staff training, protective equipment, and the implementation of emergency plans. Furthermore, the BESS system will be equipped with state-of-the-art systems for remote detection and control of equipment (the project analysis is available in Chapter 2). During the construction phase, the main risks include accidental contact with live electrical equipment, manual handling of heavy components, accidents caused by the movement of machinery, exposure to noise, vibrations, and dust generated by demolition or excavation work. During the operational phase, risks are associated with interventions on live electrical equipment, possible battery defects (thermal runaway), handling of chemicals (electrolytes, coolants), and noise generated by HVAC equipment.

5.4.2.7 Mitigation measures and social safeguards management plan

This section describes the main measures designed to mitigate the impacts and risks identified in the analyses in the previous chapters. The measures will be included in the ESMP and SEP plans, which will be implemented throughout the project's lifetime, including both the measures required by regulatory acts and good practices derived from IFC standards. The measures have been classified according to the socio-economic factor analyzed.

Working conditions

The developer promotes a series of principles among its own staff and in relation to its partners, which also underpin the activities analyzed:

- a) compliance with the legislative and regulatory provisions applicable at a given time
- b) behavior characterized by integrity and the highest ethical standards;
- c) protection of health and safety at work;
- d) protection and conservation of the environment in all its aspects;
- e) respect for employees and the development of their professional skills
- f) responsibility towards the community in which the company's facilities are located.

During the execution and operation phase, the following aspects will be taken into account, addressed to both contractors and the project developer, as applicable, in accordance with the Specifications, the legislation in force, and the contractual terms:

- There shall be a sufficient number of employees, in accordance with the complexity of the project. These employees shall have the skills and experience necessary for the proper progress and execution of the works.
- In fulfilling their contractual obligations, the contractor(s) shall comply with the laws in force and shall ensure that their staff, agents, and employees also comply with these laws.
- Recruitment will be based on objective criteria related to the skills required for construction (e.g., welders, electricians, plumbers) and operation (e.g., maintenance technicians, SCADA operators) activities.
- The provisions of the Labor Code and legislation on equal opportunities between women and men will be respected, prohibiting discrimination based on gender, ethnicity, age, sexual orientation, religion, etc.
- A transparent recruitment process will be guaranteed, including for temporary or seasonal staff.
- Local hiring will be encouraged, where possible, to support the economic development of the locality.
- All workers will have written employment contracts that comply with national legislation and are registered with the ITM.
- Minimum wage rights, legal working hours (including overtime compensation), and daily and weekly rest periods will be respected.
- No forms of forced labor, child labor, or undeclared work will be permitted.

- A non-discriminatory human resources policy based on merit and performance will be applied.
- Implementation of policies such as:
 - Zero tolerance for discrimination in the workplace;
 - prevention and management of labor disputes;
 - equal access to training and professional development regarding the new BESS system.
- Basic facilities will be provided: drinking water, toilets, protective equipment, rest areas, and access to first aid points.
- Informing staff about the existence of the complaint resolution mechanism.
- The main contractor is obliged to ensure compliance with working and wage conditions throughout the value chain, including at the level of subcontractors.
- The project will include a complaint management mechanism accessible to all employees, including those of subcontractors and the affected community:
 - This mechanism will allow for the confidential reporting of issues related to working conditions, abuse, discrimination, or rights violations.
 - Complaints will be handled promptly and confidentially.
- The SEP plan includes specific actions for community consultation and engagement, disseminating information in an accessible and equitable format.

Human rights

The developer implements a due diligence system and policies that align with international standards and minimum social safeguards enshrined in the EU Taxonomy. The information below outlines the alignment with the main elements of a due diligence system, as presented in the UN Guiding Principles on Business and Human Rights (UNGPs) and related guidelines.³¹

The developer has included in its internal Code of Conduct a commitment to respect and promote the protection of fundamental human rights in all its operations and partnerships. All activities will be carried out with full respect for the dignity, freedom, and rights of each individual. Discrimination, harassment, abuse, and exploitation of any kind are strictly prohibited. These include, but are not limited to:

- discrimination based on gender, age, race, ethnicity, religion, disability, political opinion, national origin, or any other status protected by law;
- forced or compulsory labor, including any form of human trafficking;
- child labor, in violation of minimum age laws and international standards;
- physical, verbal, or psychological abuse, harassment, threats, or intimidation of any kind, including sexual harassment;
- unequal treatment in hiring, compensation, access to training, promotion, termination, or retirement that is unrelated to an individual's qualifications or performance.

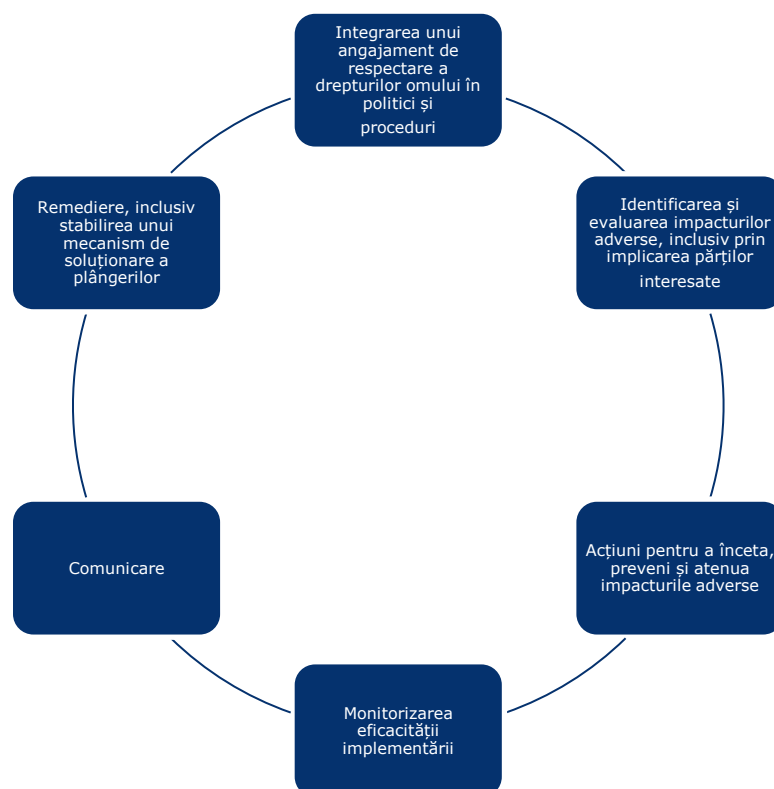
Respect for human rights is not limited to internal operations. The developer expects all suppliers, subcontractors, consultants, and business partners to adhere to the same high standards. Human rights

³¹ Available [here](#).

due diligence processes are integrated into supply chain management to identify, prevent, and mitigate any negative impact on human rights. When risks are identified, the developer will proactively work with partners to develop corrective action plans and, if necessary, reassess the business relationship. The complaints mechanism that's been put in place makes it possible to address any concerns that might come up about the project. Plus, steps have been taken to monitor how well the measures and complaints mechanism are working.

As part of the ESIA process, the identified communities and stakeholders were actively involved and informed about the project under review. A description of the actions and results of the discussions can be found in the SEP Plan, annexed to the ESIA study.

Figure 54: Stages in the due diligence process



Health and safety of communities

Both during the construction and operation phases, the project incorporates a series of mitigation measures through specific documents and procedures:

- Quality management and assurance plan (PAC)
- Quality control, verification, and inspection plans (QCVI) and/or inspection and testing plans (ITP)
- Environmental Protection Management Plan (EPMP)
- Health and Safety Management Plan (HSMP)

- Traffic Management Plan (TMP)
- Fire and Security Management Plan (FSP)
- ESMP Plan

The following elements resulting from the requirements of the PS4- Community Health, Safety, and Security standard and local legislation are addressed:

1. Protecting public health

The equipment used during operation does not produce significant noise, is not polluting, and does not affect the environment. It is located in accordance with regulations on minimum protection distances:

- For energy capacities (PT+LES), Article 19(1), (2), and (3) shall be complied with—protection zones and safety zones in accordance with Law No. 13/2007 (with all subsequent amendments and additions). The areas are determined in accordance with ANRE Order No. 239/2019 on the delimitation of protection and safety zones related to energy capacities.
- Any other future construction must comply with the distances from existing capacities. In accordance with ANRE Order No. 239/2019.

In accordance with environmental protection regulations, the works shall be carried out in such a way as to minimize dust, noise, and vibration emissions from equipment, machinery, and tools. Machinery that complies with the requirements of HGR 1756/2006 on the limitation of noise emissions in the environment produced by equipment intended for use outside buildings and HG 674/2007 shall be used. In the event of accidental spills of oil or other hazardous substances, the soil shall be decontaminated using biodegradable absorbent materials. The contractor is obliged to limit the impact on the environment, both inside and outside the construction site, and to avoid damage to persons or public property.

The discharge of fuels, oils, or other hazardous substances onto the ground or into surface waters is prohibited. The contractor shall use sealed containers for the temporary storage of these materials.

The contractor shall selectively store the waste resulting from the construction works (concrete, ferrous and non-ferrous metals, ceramics, insulating oil, etc.), keeping it in custody until it is collected by the service provider with whom the Beneficiary has a contract for waste collection and recovery.

The contractor shall keep records of the waste it recovers or disposes of, in accordance with HGR 856/2002 and OUG 92/2021. The contractor shall comply with the requirements of OG 2/2021 on waste storage, Order 1230/2005 amending the annex to MMGA Order No. 757/2004 approving the Technical Regulation on waste storage, and MMP Order No. 794/2012 on reporting data on packaging and packaging waste.

Recoverable waste of any type (e.g., equipment, cells, cables) shall be handed over in accordance with the recovery procedures based on the handover formalities to the facility manager. The contractor is obliged to clean the site upon completion of the works, to rearrange the green spaces, and to hand over the affected areas in their original condition.

The battery system used for electricity storage is designed to allow recycling in specialized centers at the end of its service life and reuse of recycled components in industrial processes.

2. Traffic safety

Road access to the site will be via the DC2 communal road, which has low traffic volume. The site does not require additional work to ensure road access to the premises.

During the execution of the works, in order to ensure traffic safety, speed limits will be imposed on trucks entering and leaving the site, and a traffic management plan will be implemented. Access roads will be marked and signposted accordingly, in compliance with applicable traffic regulations. In addition, all access routes, parking lots, and parking areas within the site will be equipped with lighting, especially in areas with potential for accidents. All maneuvers will be adapted to avoid the risks generated by heavy traffic in the work area.

The roads within the premises will be constructed with a maximum width of 5 m, made of crushed stone, in accordance with the technical specifications. These will allow easy access to the main objectives of the facility: transformer station, connection and transformer posts, inverters, and battery racks.

In addition, access routes, parking lots, and parking areas will be equipped with exterior perimeter lighting using IP65 globe-type LED luminaires mounted on poles approximately 5 m high with a folding galvanized steel pipe support, including a protective box and electrical connections.

The lighting system will be managed by automatic systems (timers, motion sensors) to ensure both energy efficiency and road and perimeter safety.

3 Construction safety and infrastructure design

According to the data presented in chapter 3.2, the site is not located in an area with significant vulnerability to flooding or extreme precipitation, being in the vicinity of a dikeed area. The administrative-territorial unit of Gura-Ialomiței is classified as an area of moderate to high seismic hazard (the design ground acceleration value $a(g)$ is 0.25)³². Thus, the following adaptation measures are considered:

- Fire – During construction, materials with high fire resistance will be used. The administrator will develop and implement a firefighting plan.
- Extreme temperatures - The equipment to be used for the development of the investment objective has factory specifications for high temperature resistance.

³² Classification according [to the interactive seismic zoning map based on the peak value of horizontal ground acceleration.](#)

- Earthquakes – The crisis management plan provides for a series of measures to be taken in the event of earthquakes. These provisions will be complied with when selecting materials and operating equipment.

The following will be taken into account:

- All products and equipment purchased must be accompanied by CE certificates provided by the suppliers.
- The design and construction of equipment and buildings must comply with fire, earthquake, explosion, and leak protection standards, as certified by accredited specialists.
- Installation of fire detection and extinguishing systems compatible with the battery technology used.
- Provision of safe access routes for emergency response and evacuation.
- The supplier shall deliver to the customer, together with the BESS system, an O&M manual describing the operation of the batteries and bidirectional inverters and the tasks required for its maintenance.
- The storage system will be cooled individually at the level of each container (HVAC system based on water-glycol mixture or similar).
- The technological consumption associated with the air conditioning of the battery systems will be approximately 131.40 MWh/year.
- The 33 kV station will be installed in a special metal skid-type structure dedicated to this project, next to which the control room will be set up, from where both the BESS system and the auxiliary electrical equipment will be controlled and commanded via a dedicated SCADA system.
- The building will comply with the principles of minimum energy performance, in accordance with the legal provisions in force (Net Zero Energy Building – NZEB).
- Thermal insulation will be provided by sandwich panels with a maximum heat transfer coefficient of 0.19 W/m2.
- The site will be protected against atmospheric discharges by a lightning protection system. Lightning protection systems with a protection radius of at least 70 m will be used.

The planned maintenance activities are presented in the table below.

Table 71: Planned maintenance activities (preliminary in the SF phase)

No.	Activity	Category	Frequency	Measuring instrument	Description
1	Refrigerant inspection	planned	At 6 months	Visual	Check and top up/replace refrigerant
2	Battery cells	Scheduled	Every 6 months	Visual, thermal imaging camera	Temperature check, leak check
3	Smoke detector	Scheduled	Every 6 months	Test kit	Smoke detection system check, test, and calibration

No.	Activity	Category	Frequency	Measuring instrument	Description
4	Fire detector	Planned	Every 6 months	Test kit	Verification, testing, and calibration of flame detection system
5	Emergency shutdown	Scheduled	Every 12 months	N/A	Check emergency stop buttons
6	Inverters	Scheduled	Every 6 months	Visual, test kit	Temperature check, cleaning, electrical connection check
7	Analyzer/meters	Scheduled	Every 12 months	N/A	Calibration
8	EMS	planned	Every 12 months	N/A	Calibration

The lighting of specially designed spaces will be similar to that of industrial areas. The poles will be equipped with 1 light fixture fitted with an economical LED light source, mounted on extensions. This system will enable video surveillance using CCTV cameras located on the lighting poles. The minimum characteristics of the CCTV system are:

- Video camera
- Minimum resolution: 720p;
- Focal lens: 6 mm;
- Night vision capability (IR sensor).
- CCTV system monitor:
- Diagonal: minimum 24";
- Video matrix with 12 inputs
- DVR-type video processing and recording system.

The project will also include an access control system and an anti-theft system.

5. Emergency preparedness

The solutions adopted provide for constructive measures against the occurrence and spread of fires in the new containers, medium-voltage cells, transformers, as well as in the cable room (technological separations, seals, etc.).

All cable passage holes between rooms will be sealed with non-combustible materials, in accordance with the regulations for indoor installations. The storage of inappropriate materials is prohibited in transformer stations and is only permitted in areas designated for operation and maintenance.

Firefighting shall be carried out using portable CO₂, powder, or foam extinguishers, depending on the specific equipment (oil, electricity). In case of fire, the affected part of the installation and adjacent parts shall be de-energized.

An Emergency Response Plan shall also be drawn up, including:

- Risk scenarios (fire, leaks, earthquake, explosion, severe storms);
- clear assignment of responsibilities for the response team;
- provision of first aid equipment, fire extinguishers, and alarm systems.
- Informing the community through:
 - visible signs with safety instructions;
 - brochures or information sessions;
 - a dedicated emergency telephone line for the project.

The fire detection and warning system will be configured by zone, with addressable smoke and temperature detectors for indoors and temperature detectors for outdoors. The system will be integrated into the station's SCADA and will send alarms to both the internal dispatcher and the ISU.

The station will be equipped with a PSI picket, and a fire safety scenario will be developed in accordance with standard PE 118-3/2015 and Law No. 307/2006 on fire protection.

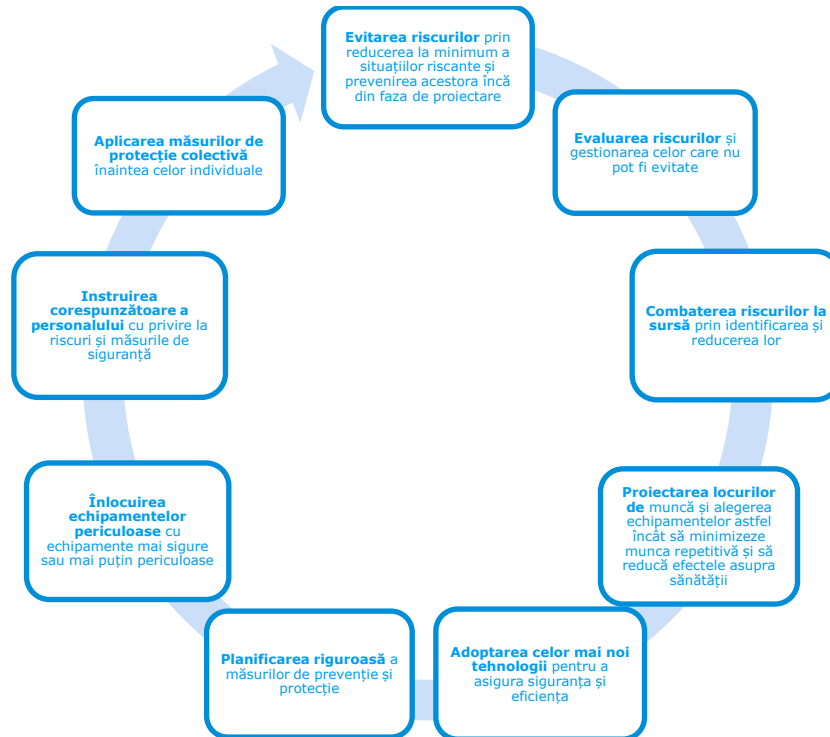
If the distance to the military fire department is >10 km, the site will be equipped with a firefighting ring and PSI utility vehicles, in accordance with Chapter 8, letter k of PE 009/1993.

Work on installations in operation shall only be carried out after de-energizing, locking, grounding, and clearly demarcating the work area. All teams shall be trained and authorized in accordance with FDEE TN-IP 65/2015 (rev. 4) instructions.

Health and safety at work

In Romania, health and safety at work are regulated by Law No. 319/2006 on occupational health and safety, Government Decision No. 300/2006 on minimum requirements for temporary and mobile construction sites, as well as by European Directives, in particular Directive 89/391/EEC. An OHS coordinator will be appointed to implement a comprehensive OHS plan tailored to the specific nature of the project.

Figure 55 : OSH principles



During the execution of the works and in the construction operation phase, both the contractor and the beneficiary are required to comply with all applicable legal regulations, with an emphasis on the provisions of the Regulation on occupational safety and health in construction. The purpose of applying these rules is to ensure safe working conditions and prevent accidents at work.

At the same time, the contractor is responsible for taking appropriate measures to prevent the risk of accidents, adapted to the working technology used and the equipment provided.

The technical solutions proposed by the project comply with the applicable occupational safety requirements and aim to maintain an adequate level of safety in the performance of activities, contributing to the prevention of accidents at work.

Risk assessment and prevention involves a comprehensive analysis of all activities on the construction site. All workers, including temporary workers, will receive initial and periodic training, as well as additional training for high-risk activities.

For individual protection, all workers will be provided with appropriate personal protective equipment (PPE) as appropriate: insulated gloves, protective footwear, helmets, goggles, reflective vests, harnesses, and FFP2/FFP3 masks. Depending on the identified risk scenarios (electrocution, electrolyte spills, fire, electric arc), specialized equipment will be used. The condition of the equipment will be monitored, and worn equipment will be replaced immediately.

In addition to individual measures, collective protection measures such as railings, safety nets, fences, and clear signage will be implemented. Hazardous areas will be marked with visible warning signs (e.g., "chemical hazard," "electric arc," "no unauthorized access").

Facilities such as changing rooms, toilets, drinking water, rest areas, and equipped first aid points will be made available to workers on site. Staff will undergo medical checks upon hiring and periodically, and unauthorized persons will be prohibited from entering. A competency matrix will be used to ensure that only qualified and authorized personnel perform work on or near the BESS system.

All equipment and materials used in the project must comply with the minimum safety requirements according to GD 1146/2006 and be accompanied by a declaration of conformity and CE marking, according to GD 457/2003.

The BESS system will be delivered together with an operation and maintenance manual provided by the manufacturer. The beneficiary's personnel will be trained, and the system will operate autonomously, with monitoring of cell temperature and operating parameters, ensuring safe and efficient operation.

Economic conditions

The project does not negatively impact the economic conditions in the analyzed social influence area and will take into account the principles of fair remuneration and equal pay for work of equal value. The investments made contribute additional taxes to the local budget, additional amounts that can be redirected to community development. The project does not involve the displacement of the local population or affect local welfare through the occupation of agricultural land. Nor does it affect the livelihoods of local residents. Section 5.2.2.9 analyses the cumulative positive effect of the project on local economic conditions.

5.4.2.8 Residual impact

The project incorporates a series of measures that significantly limit the residual impacts identified in the analysis phase, which are likely to occur only in exceptional circumstances:

- Fire and thermal runaway risks: Automatic extinguishing systems may not be fast or effective enough in the event of a severe incident. A fire in one module may spread before the insulation or extinguishing systems can fully take effect.
- Human error and electrocution: Even with sensors and interlocks, an operating error or unauthorized intervention can lead to accidents.
- Electrolyte leaks or, in the event of thermal failure or fire, batteries may emit toxic gases (e.g., hydrogen fluoride – HF).
- In extreme cases, batteries can be affected by water infiltration, even if they are protected.
- In terms of human rights, there remains a residual risk regarding the origin of components in the value chain, given the complexity and low capacity to monitor the entire supply chain. New regulations such as the EU Batteries Regulation are expected to significantly reduce this risk.

It should be noted that the chosen technology presents a significantly lower social and environmental risk compared to the other technologies analyzed. LFP (LiFePO₄) batteries are considered a lower-risk option for supply chains, especially compared to other types of lithium-ion batteries, such as NMC (nickel-manganese-cobalt) or NCA (nickel-cobalt-aluminum), which contain cobalt or nickel, the most socially problematic materials³³.

The chosen technical solution also integrates advanced systems that significantly contribute to reducing the risk of thermal runaway. According to the technical data sheet, the physical separation between the electrical cabinet and the battery cabinet, combined with an intelligent liquid cooling system, allows for efficient heat dissipation and stable thermal control even under demanding conditions.

In addition, the system includes electrical safety management mechanisms, fast-acting overcurrent protection, and electric arc protection. These functions are complemented by specific detection and protection components (gas, temperature, smoke detection, and overpressure valves), which act preventively to quickly isolate any fault points.

5.4.2.9 Cumulative impact

The project to store energy from renewable sources in batteries is in line with European and national objectives to support the transition to green energy sources. The BESS facility plays an important role in balancing energy production and consumption at the national level and reduces the need for intervention by conventional power plants (e.g., gas or coal) by:

- Storing RES energy during periods of overproduction (e.g., during the day in the case of solar energy);
- Releasing stored energy when production falls but demand remains high (e.g., in the evening);
- Cushioning production fluctuations and reducing imbalances between supply and demand in the SEN.

The project makes use of an existing site, a former CAP facility in a state of disrepair. The choice of this site contributes to the conservation of soil resources and limits the expansion of construction on productive land. The necessary interventions are minimal, and the planned works do not involve significant changes, which means that the impact on the environment is very low. Also, Ialomița County has seen an expansion of RES projects over the last decade, with the table below showing the facilities built or planned (non-exhaustive list).

³³ <https://www.spglobal.com/market-intelligence/en/news-insights/research/electric-vehicles-supply-chain-country-risks-lithium-supply>.

Table 72: RES installations in Ialomița County (planned/active)

No.	Project name	Description (Type, Capacity, Year)	Location (Commune/City)	Developer(s)	Status
1	Făcăeni Wind Farm	Onshore wind farm, capacity 132 MW (44 Vestas turbines), 2015	Făcăeni, Vlădeni, Mihail Kogălniceanu	EDP Renewables Romania (EDPR)	Active (operational since 2014)
2	Țândărei Photovoltaic Park	Photovoltaic park, capacity 45.15 MW, planned for ~2024/25. Includes new 110 kV station and grid connection.	Țândărei	Tenersolar Park S.R.L.	Planned (EPC contract signed in Nov. 2024)
3	Coșereni Photovoltaic Park	Photovoltaic solar park, capacity 4.5 MW, commissioned in 2013. Produces ~7,500 MWh/year.	Coșereni	Tryba Energy (France)	Active (operational since 2013)
4	Giurgeni Photovoltaic Park ("Ialomița I")	Photovoltaic park, capacity ~8 MW. Initiated in 2012 by the County Council & Gigawatt Global; completed and connected in 2018 after delays. Operated by concessionaire (Minex & Premier Com) since 2022.	Giurgeni	Ialomița County Council (public initiative); concessioned to Minex S.R.L. & Premier Com S.R.L. in 2022	Active (commissioned in 2018)
5	Slobozia Solar Project	Large photovoltaic park, capacity 70.2 MW. Won CfD contract in 2024 – ~€54.18/MWh for 10 years.	Slobozia (suburb)	Nofar Energy (Israel)	Planned (CfD auction winner, 2024)
6	Ialomița Nord Wind Farm (Grivița)	Onshore wind farm ~247 MW (ATR approved). Planned installation ~253 MW (according to PUZ).	Gheorghe Lazăr, Țândărei, Ograda	Țândărei Solar S.R.L.	Planned (ATR obtained in Oct. 2023)
7	Giurgeni Wind Project	Onshore wind farm, planned ~193 MW. Provides for connection to the 400 kV grid (Bucharest South–Gura Ialomiței line).	Giurgeni	ICEWIND Regenerabil S.R.L.	Planned (in the EIA study phase)
8	Făcăeni Eolian II	Wind farm expansion ~226.5 MW (44 new turbines) planned near the existing Făcăeni wind farm.	Făcăeni, Vlădeni, Mihail Kogălniceanu	EDP Renewables Romania (current operator)	Planned (environmental permit pending)
9	Bărbulești I & II Solar Parks	Two photovoltaic projects (~5 MW cumulative). Approximately 18,000 solar panels planned, total capacity ~5 MWp. Environmental permits issued between 2020–2023.	Bărbulești	Area Energy Solar S.R.L.; STI Green Words Energy S.R.L.	Planned (under development)
10	Vlădeni Photovoltaic Cluster	Large-scale PV development on 638 ha of county land (divided into 4 lots). Planned multi-park complex (>300 MW potential). Concession awarded in 2021, but legally challenged.	Vlădeni (west of Ialomița)	Not specified	Planned (concession awarded in 2021; under dispute)
11	CEF Ialomița 1	Large-scale photovoltaic park, 225 MW	Axintele	Infinity Power Park S.R.L.	ATR approved

Source: ANRE, Annex 9.1 - List of technical connection approvals (ATR) and connection contracts (CR) issued for electricity generation facilities from renewable and other sources

The cumulative impact of the project is determined by the following characteristics:

1. Reduction of carbon emissions

The project contributes to reducing greenhouse gas emissions by avoiding the use of conventional energy sources during peak consumption periods. An annual reduction of approximately 70,285.99 tonnes of CO₂ equivalent is estimated.

2. Support for the development of renewable energy at the local level

Given the need to integrate renewable energy sources (RES) installations, the project supports this objective by contributing to the balancing of the national electricity transmission network (SEN). It is estimated that the development of new RES installed capacity of up to 57.577 MW will be supported.

The project also generates local benefits by increasing the attractiveness of the area for new investments (spillover effect), due to the availability of land and the storage system (BESS).

3. Contribution to the local budget

Although the project will generate a limited number of jobs indirectly, the local economic effects are notable. An annual contribution of approximately EUR 100,000 is estimated in the form of taxes, permits, and other contributions, which will support the development of the local community in Gura Ialomiței.

4. Storage of energy from renewable sources

The project contributes to increasing the installed operational capacity in electricity storage systems, with a volume of 300 MWh. It thus supports the achievement of the objectives set out in the PNRR and PNIESC regarding the development of energy storage, which aims to install a total of 1,200 MW by 2030.



6. Environmental and social management plan

6.1 Objective of the plan

The objective of the Environmental and Social Management Plan is to establish the framework through which the potential environmental and community impacts associated with the implementation of the BESS (Battery Energy Storage System) project will be managed and mitigated during the construction and operation phases.

The plan is designed to ensure the project's compliance with national legislation, relevant international standards (e.g., IFC, EBRD), and good industry practices in the field of environmental protection and social responsibility.

6.2 Responsibilities in impact management

Effective implementation of the plan involves clearly assigning responsibilities to all actors involved in the project. These responsibilities are distributed as follows:

- **The project owner** will appoint an **Environmental and Social Manager (ESM)** who will oversee the implementation of the PMMS, monitor compliance with environmental measures, and liaise with authorities, contractors, and stakeholders.
- **Contractors** are responsible for implementing impact mitigation measures.
- **The E&S Officer** will report regularly on progress and non-compliance.
- **Authorities** may conduct independent inspections and audits.

6.3 Impact mitigation measures and monitoring plan

This section presents the main measures to reduce the negative impacts identified in the assessment and establishes how they will be monitored during the construction and operation phases. The measures are grouped according to the environmental and social factors affected and are supplemented by monitoring frequencies and responsible actors.

Table 73 : Impact mitigation measures and monitoring plan - construction phase

Aspect	Potential impact	Proposed mitigation measures	Monitoring frequency	Responsible
Air quality	Dust emissions, exhaust gases	Road watering, material covering, vehicle and machinery maintenance	Weekly	Contractor / RMS
Noise	Localized noise generated by machinery	Quiet equipment, limiting working hours, sound barriers if necessary	Weekly	Contractor / RMS
Soil and water	Accidental spills, erosion	Waterproof platforms, spill kits, protective fencing	Bimonthly	Contractor
Waste	Improper disposal	Separate collection, controlled temporary storage, disposal by authorized operator	Continuous	Contractor
Traffic	Increased traffic in the area	Traffic plan, signage, pre-established routes	Daily	Contractor / RMS
Work safety	Risk of injury	Training, PPE, OHS manager, first aid kit	Daily	Contractor
Social interactions	Temporary discomfort for the population	Public information, billboards, complaints mechanism	When necessary	RMS

Table 74 : Impact mitigation measures and monitoring plan – operational phase

Aspect	Potential impact	Proposed mitigation measures	Monitoring frequency	Responsible
Air/Climate	Indirect GHG emissions from the grid	Preference for renewable sources, performance tracking	Annually	RMS/Operator
Noise	Cooling and inverters	Acoustic enclosures, noise monitoring	Twice a year	Operator
Security/fire	Technical risk to BESS systems	BMS management system, thermal sensors, automatic extinguishing systems	Quarterly	Operator
Hazardous waste	Battery replacement	Disposal by authorized operators, quantitative records	As needed	Operator
Social aspects	Public perception, safety	Communication and emergency response plan	Annual / per incident	RMS / Operator

6.4 Training and capacity building

Continuous staff training is essential for the proper implementation of environmental protection measures and social aspects. All workers and subcontractors will receive specific training covering the following areas:

- Risks and control measures
- Emergency situations
- Prevention of accidental pollution
- Complaints procedure

Sessions will be repeated every six months or whenever there are significant changes in personnel or technology.

6.5 Complaints resolution mechanism

A formal and accessible complaints management mechanism will be implemented to allow the community, employees, and other stakeholders to express their concerns. This mechanism will include the following features

- The ability to submit complaints in person, by telephone, in writing, or anonymously
- Prompt investigation of reported cases
- Provision of a response within a maximum of 15 working days
- Publication of the GRM procedure in accessible areas and online

6.6 Reporting and review

To ensure transparency and continuous improvement, the environmental and social performance of the project will be monitored and reported as follows:

- Monthly internal reporting during the construction phase and quarterly during the operation phase
- Publication of an annual summary of environmental and social performance
- Annual review of the PMMS for updating based on results, incidents, or feedback



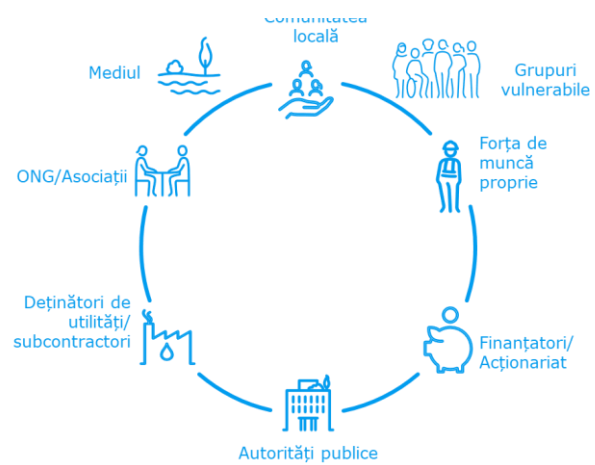
7. Stakeholder Involvement

7.1 Stakeholder identification

The engagement process begins by identifying stakeholders who may have a potential interest in or may be directly/indirectly impacted by the project under review. In order to develop a list of stakeholders, a number of project-specific criteria and potential categories of stakeholders were considered³⁴ :

- Identifying all stakeholders, including individuals, groups, local communities, and other entities that may be affected by the project, positively or negatively, directly or indirectly—with a particular focus on those directly and negatively affected, including vulnerable or disadvantaged individuals;
- Identifying factors that influence project outcomes – these may be part of the affected communities or may have political or administrative influence over them;
- Identifying legitimate representatives of stakeholders, such as elected officials, unelected community leaders, representatives of local structures, and others;
- Mapping impact areas by geographically delimiting affected communities and placing them within the project's area of influence, in accordance with Performance Standard 1.

Figure2 : Stakeholder categories



After identifying the stakeholders, the consultation methods were developed according to the specifics of each stakeholder, taking into account the matrix below. In this way, we ensured that the consultation process was relevant and focused on the needs of each stakeholder.

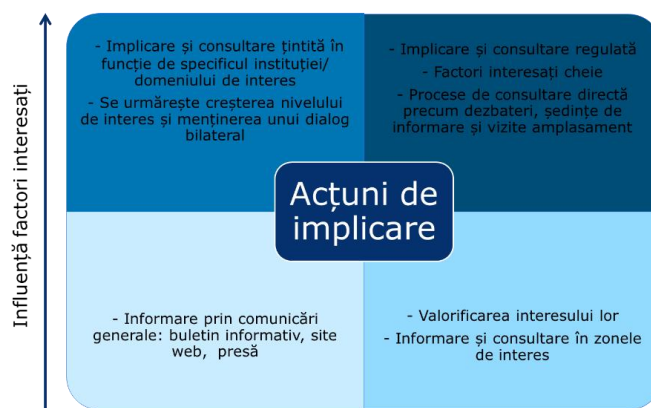


Figure 56 : Stakeholder prioritization matrix

³⁴ Thus, a list of stakeholders has been drawn up, which can be consulted in the SEP Plan.

7.2 Stakeholder involvement to date

Before the ESIA study phase began, the project underwent an environmental impact assessment (EIA) in accordance with the legislation in force in order to obtain environmental approval. Stakeholder consultation is a mandatory step in this process. Thus, stakeholders had access to the project documentation, were able to submit comments and observations, and were notified of the status of the procedure at each stage:

- 08.02.2023 - Coordination with authorities - Ialomița Environmental Protection Agency: The initial assessment stage decision was issued, following which the environmental impact assessment procedure was requested.
- 01.09.2023 - Correspondence with utility owners: It was established that the project site does not fall within the safety zone of the energy networks managed by Transelectrica.
- 10.10.2024 - Public information announcement: An announcement was published on the developer's website and in the local press to inform the public about the submission of the application for the issuance of the environmental agreement. The information was available for consultation at the headquarters of the Ialomița Environmental Protection Agency and the developer, and the public had the opportunity to submit comments.
- 17.10.2024 - Information on the scoping decision: An announcement was published on the scoping decision, which was available for consultation on the Ialomița Environmental Protection Agency website. The public had 10 days to submit comments on the draft decision.
- 28.10.2024 - Coordination with authorities - Ialomița Environmental Protection Agency: The scoping decision was officially issued following the meeting of the Technical Analysis Commission, which confirmed that the project meets the regulatory requirements for environmental impact assessment.
- 12.12.2024 - Public information announcement: In December 2024, the developer published a press release in a local newspaper to announce the start of the project to develop a battery energy storage facility. The project received funding through the PNRR and was promoted to ensure transparency and full public information on its implementation.
- February 10, 2025 - Coordination with authorities - Ialomița County Department of Culture: An opinion was requested from the Ialomița County Department of Culture to verify whether or not the land affected by the project is located in a cultural heritage area. Following the assessment, it was determined that an opinion from the institution was not necessary, as the land is not located near any cultural heritage sites and the project can continue without objection in this regard.

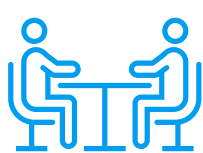
Figure 57: Information on the scoping decision



7.3 ESIA involvement

During the Environmental and Social Impact Assessment (ESIA) study development phase, stakeholder engagement consisted of a series of actions presented in the figure below. A full description of stakeholder information and consultation actions can be found in the SEP Plan for all phases of the project life cycle. The actions were designed to ensure equal access to the information distributed and the opportunity for all stakeholders, including vulnerable groups, to participate in the events organized. The sections below describe the results of the public debates and discussions with stakeholders, focusing on how they contributed to the conclusions of the ESIA.

Figure 58 : Stakeholder engagement methods



Dezbateri și discuții publice



Diseminarea informațiilor prin elaboare de prezentări, anunțuri și dialog cu comunitatea locală



Implementarea mecanismului de soluționare a plângerilor



Pregătire de materiale informaționale și actualizarea politicilor relevante



Colaborare cu presa locală

7.3.1 Results of public debates

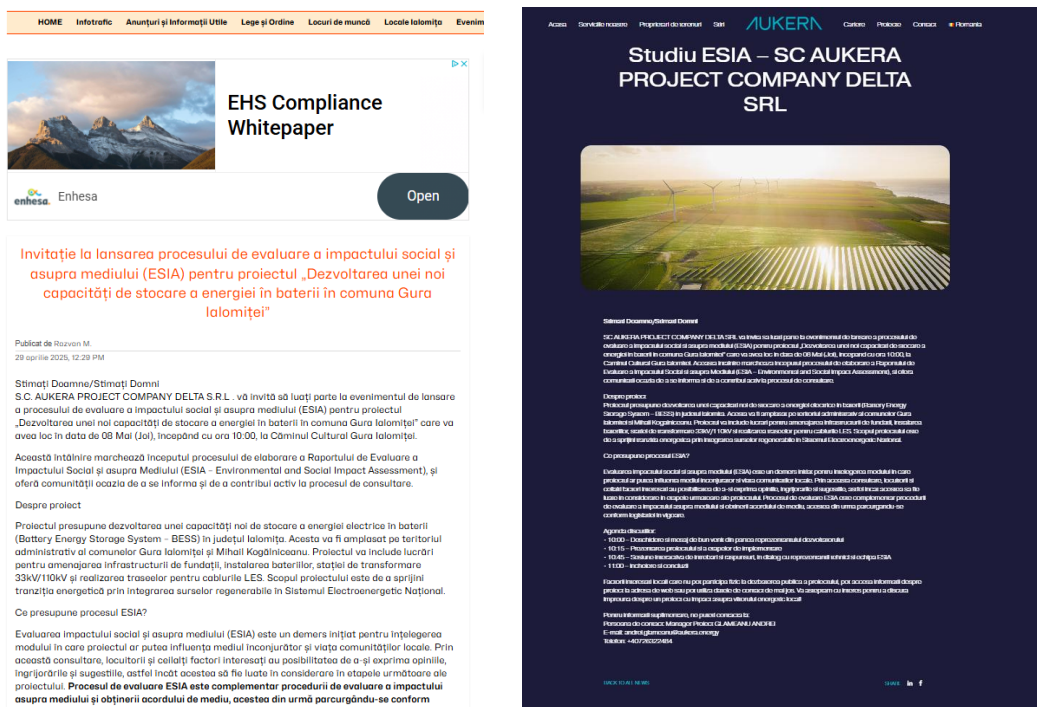
7.3.1.1 Project presentation

On May 8, 2025, the developer and the ESIA study team organized a public debate with the local community in Gura Ialomiței. The meeting took place at the commune's Cultural Center and had the following objectives:

- Presentation of the project to the local community and the works to be carried out, as well as the benefits
- Disseminating information on how to file complaints or contact the project team
- Understanding the perception and confidence in the results of ESIA studies
- Collecting information on the impact of the project or potential synergies (local needs, development directions, or others).

The local community was informed about the organization of the debate through the dissemination of information announcements in the local press, on the developer's website, and at the town hall. The announcement was written in non-technical language, explaining the project and the specificity of an ESIA study.

Figure 59 : Announcements for public debate, May 8, 2025



A total of 14 people participated in the debate, most of whom were residents of the commune of Gura Ialomiței and representatives of local stakeholders (Gura Ialomiței Town Hall, represented by the Mayor, Deputy Mayor, and employees of the institution, the local police, the local press, the developer's team, and the technical consultant). The agenda for the discussions was organized around the following topics:

1. Opening and welcome message from the developer's representative

2. Presentation of the project and implementation stages
3. Interactive question and answer session with technical representatives and the ESIA team
4. Closing and conclusions

Discussions focused on the benefits of the project for the locality and community, with an emphasis on the significant annual contribution to the local budget through taxes and fees, and the increased attractiveness of the area for complementary renewable energy projects. The mayor of Gura Ialomiței emphasized the support of local authorities for this type of project, given the locality's need to attract investment in infrastructure and create jobs. No comments or concerns were raised by the local community regarding the project's impact on the environment or local health. The session ended with a reiteration of openness to dialogue and information about the project's complaint mechanism.

Figure 60 : Images from the presentation and discussions, May 8, 2025



7.3.1.2 Consultation on the conclusions of the ESIA study

Five people, including representatives of the City Hall and the developer, participated in the public debate organized on June 19, 2025, at the Gura Ialomiței City Hall. The technical team presented the preliminary results of the environmental and social impact assessment (ESIA) study, highlighting the measures proposed to prevent or reduce possible effects on the environment and the local community. This was followed by a question and answer session, but the participants did not make any additional comments or observations.

Figure 61 Images from the presentation and discussions, June 19, 2025

The complete documentation will be published online, and anyone interested who was unable to attend will have the opportunity to consult the materials and submit comments or suggestions through the contact channels provided by the developer.





8. Conclusions

The project "Development of a battery energy storage capacity," implemented by Aukera Project Company Delta SRL in Gura Ialomiței, Ialomița County, aims to create a modern BESS (Battery Energy Storage System) facility.

The project is proposed to be carried out in two phases:

- in the first phase, the investment objective is to develop an electricity storage capacity in batteries, with an installed capacity of 300 MWh, which will have a minimum charge-discharge cycle efficiency of 90.50%, at a charge/discharge rate of 0.5C, a standard temperature of 25 degrees Celsius, and a SoH of 50%. The installed power will be 150 MW. This stage will be financed through the PNRR.
- in Phase II, the investment objective is to develop a battery-based electricity storage facility using lithium-ion (LFP) technology, with an installed energy capacity of 200 MWh and an installed power of 100 MW. The system is designed to achieve a minimum charge–discharge cycle efficiency of 90.50%, at a 0.5C charge/discharge rate and a standard temperature of 25°C, delivered as a modular, containerized solution (battery containers, bidirectional inverters, and 33/0.69 kV transformer stations).

In total, the storage facility will have a capacity of 250 MW/500 MWh.

The main objective is to support the stability of the national energy system and facilitate the transition to renewable sources through efficient electricity storage solutions. The project is financed through the PNRR and complies with the environmental and social requirements of international lending institutions.

The environmental assessment of the "Development of battery energy storage capacity – Gura Ialomiței" project aimed to identify potential impacts in all phases of the project (pre-construction, construction, operation, and decommissioning) and to formulate measures to prevent, reduce, or compensate for them.

The analysis was carried out on the basis of national legislation, but also in accordance with applicable international standards (such as those of the IFC and the Equator Principles), based on field data, direct observations, consultations with stakeholders, and detailed technical studies.

According to the study's conclusions, the project has a limited environmental footprint, with the vast majority of potential negative impacts being local, temporary, reversible, and easily manageable through the implementation of the environmental plans and control measures set out in the ESMP. The main findings for each environmental factor analyzed are summarized below:

A detailed analysis of the environmental impacts showed that the project falls into category B – with moderate, local, and manageable impacts.

The main conclusions for each factor analyzed are as follows:

- **Air:** The potential impact is low, temporary, and localized. Dust and gas emissions are minimal and will be controlled through site measures (watering, speed limits, compliant equipment).
- **Noise:** Noise sources are limited to the construction phase and will be managed through modern equipment, time limits, and monitoring. During the operational phase, noise levels will be low and below legal limits.

- **Soil and subsoil:** The works do not involve significant excavations that would affect soil stability or generate pollution. Measures will be implemented to prevent contamination with oils or hazardous substances.
- **Water and hydrogeology:** No impacts on surface or groundwater are anticipated. The project does not involve intensive water use and is located outside floodplains or water protection areas.
- **Biodiversity:** There are no sensitive habitats or protected species on the site. The project does not affect Natura 2000 sites or other protected areas. The works will be carried out with respect for sensitive biological periods.
- **Landscape:** The project will have a low visual impact, as it is located in an industrial or agricultural area with no valuable natural landscape features. Land restoration measures will be implemented upon completion of the works.
- **Cultural heritage:** The project does not fall under heritage regulations, but monitoring measures may be taken during the works.
- **Climate and climate change:** The project contributes positively by supporting renewable sources. Direct GHG emissions are insignificant, and the contribution to energy resilience is a strategic benefit.
- The climate change risk assessment showed that the project presents high risks for the following climate hazards: Heat waves, Fires, and Drought, and moderate risks for the following climate hazards: Extreme wind, Temperature change, and Precipitation pattern change. Risks with a medium and high risk score must be managed at an acceptable level through climate change adaptation measures. Such measures have been taken since the planning/design stage of the project. The proposed climate change adaptation measures are part of the project and include investment measures, operational measures, and strategic measures. By implementing these adaptation measures, the risk is reduced to an insignificant/acceptable level.
- **Waste:** Waste management will comply with the principles of the circular economy. Specially designed spaces and authorized operators are provided for collection, transport, and disposal.
- **Technological risks and accidents:** The BESS system includes safety equipment (sensors, fire extinguishers, SCADA systems), and the risks of fire or leaks are considered very low and controllable.

By implementing this project – from phase I, energy from renewable sources (wind and solar) will be stored and approximately 300 MWh of energy will be delivered annually, resulting **in a reduction** in greenhouse gas emissions of over 70,285 tonnes of CO₂ equivalent/year.

Upon completion of this project after phase II, energy from renewable sources (wind and solar) will be stored and approximately 201,749.5 MWh/year of renewable energy will be delivered annually, resulting in a reduction in gas emissions of 117,239 tCO₂e/year (after phase II).

In social terms, the area of direct influence analyzed does not intersect with densely populated residential areas or public interest sites. The site reuses a former agricultural production cooperative (CAP) unit, without the need for major development work. According to the data analyzed and discussions with stakeholders, the area is predominantly rural and agricultural, with limited access to basic utilities. The

population is showing a trend of aging and sharp decline, with a medium to low level of development and low economic potential. There are elements of social vulnerability in the community near the project, but the nature of the storage activities is not likely to exacerbate these vulnerabilities. The project operates autonomously, in a well-defined area, and does not affect local livelihoods.

The impact assessment during the construction phase identified a low to moderate risk, with generally low or very low severity and a possible or unlikely probability of occurrence in terms of the socio-economic factors analyzed. The impact significance assessment and risk analysis identified a number of direct effects, limited in intensity, duration, and scope. The estimated risk level is low-medium, with low severity and low probability. Although most direct impacts are temporary and manageable through appropriate mitigation measures, some risks have also been identified, particularly related to OHS conditions and public health.

In the course of preparing the ESIA, the Ramboll team attended the site for the purposes of the flood risk assessment and the geotechnical investigation, and also participated in consultations with project-relevant stakeholders.

Identified risks (red flags):

- Generation of dust and emissions in areas close to the site;
- Risk of accidents at work in work areas or during the transport of materials;
- Temporary disruption of traffic and local access during the works.

Green flags – social and economic opportunities:

- Creation of temporary jobs, especially in construction and logistics;
- Opportunity to collaborate with local suppliers and subcontractors, stimulating the regional economy;
- Implementation of a feedback mechanism;
- Raising awareness of the energy transition and energy storage technologies (through information, presentations);
- Improving the company's image among stakeholders by promoting sustainable investments.

During the operational phase, the impact is generally low. A higher severity of impact is anticipated only in rare or extreme situations (e.g., fires, earthquakes, thermal runaway phenomena). Mitigation measures are integrated into specific plans and risk analyses throughout the project (see ESMP Plan).

A central element of the analysis is the involvement of stakeholders and the integration of human rights due diligence principles. The risk analysis indicates a low risk profile due to the application of the measures set out in the SEP Plan and the complaint resolution mechanism. Given the assessment criteria and the analysis performed, the risks to human rights and vulnerable groups are considered low. Potential impacts on stakeholders will be managed through the implementation of the following measures:

- Environmental and Social Management Plan (ESMP);
- Compliance with national legislation on labor protection and anti-discrimination;
- Code of Conduct for employees and contractors;
- Strict safety and security measures;

- Detailed requirements in the tender specifications;
- Complaints management mechanism;
- Stakeholder Engagement Plan (SEP).

A residual risk remains associated with the supply chain, particularly with regard to critical materials, the extraction of which may involve human rights violations in certain regions of the world. Future European regulations, such as the new EU Batteries Regulation, are expected to reduce these risks by imposing stricter standards for traceability, sustainability, and respect for human rights. It should be noted that the chosen battery technology (LFP) is considered, according to studies in the field, to have fewer residual risks in the value chain than other types of batteries (NMC/NCA).

The main social contribution of the project is to significantly increase the storage capacity of energy produced from renewable sources, helping to balance the national energy system at times when consumption peaks do not match production peaks. Thus, the project is aligned with the national objectives of increasing Romania's storage capacity (1.2 GWh by 2030), in parallel with the development of energy production from renewable sources. At the local level, the project can stimulate the development of other initiatives and contribute to the local budget through taxes and fees paid.

In conclusion, the BESS Gura Ialomiței project is an investment aligned with national and European objectives on energy transition and sustainable development. The ESIA assessment confirms that the environmental and social impacts are moderate, well understood, and manageable. The proposed mitigation measures and monitoring plans are adequate, and the project can be implemented safely and responsibly towards the environment and society.



9. Annex

Annex 1 - Site plan

Annex 2 - Site plan

Annex 3 - Urban planning certificates

Annex 4 - Proof of ownership (land registry extracts and surface rights contract)

Annex 5 - EIA procedure documents

Annex 6 - Environmental and social management plan (ESMP)

Annex 7 - Stakeholder Engagement Plan (SEP)

Annex 8 – Equator and IFC compliance analysis table