ZSE Group
Biodiversity and Ecosystem Protection Strategy to 2050

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1. Introduction

Biodiversity constitutes the fundamental natural infrastructure that underpins the functioning of ecosystems and the provision of essential services for society and economy. Biodiversity degradation caused by climate change, pollution, urbanisation and infrastructure development results in habitat loss, landscape fragmentation and the weakening of the regulatory functions provided by nature and landscapes. These developments have a direct impact on the stability and functionality of the environment and represent an increasing environmental and operational risk, affecting not only the natural environment itself but, consequently, also inhabitants.

For the ZSE Group, biodiversity is of strategic importance, as the reliable operation of energy infrastructure depends directly on healthy and resilient landscapes and ecological processes. Well-functioning ecosystems provide essential ecosystem services, such as natural water regulation, soil stability and the preservation of vegetation cover, thus contributing to the safe and efficient operation of energy infrastructure. Conversely, degradation of the natural environment and loss of biodiversity increase the risk of operational disruptions, undermine the stability of the surrounding landscape and lead to higher operating and capital costs. They may also complicate permitting processes, increase regulatory and reputational risks and reduce public acceptance of the projects.

An active approach to nature and biodiversity protection is therefore not only an environmental commitment but also an important preventive tool for risk management and for ensuring the long-term resilience and sustainability of the ZSE Group's business. Investments in the protection and restoration of ecosystems help reduce future costs, strengthen operational and climate resilience of energy infrastructure and support more efficient permitting processes and project implementation.

The Strategy defines the ZSE Group's systematic approach to the protection and restoration of biodiversity as an integral part of risk management, operational resilience and the long-term sustainability of its business.



The Strategy applies to all relevant activities of the ZSE Group across its business portfolio. It takes into account the varying scale and nature of impacts associated with individual business segments, with particular emphasis placed on activities that have the most significant effects on biodiversity, especially those related to the operation and development of the electricity distribution infrastructure. The Strategy also covers the Group's other business activities, including energy services and e-mobility development, whose impacts on biodiversity are generally less significant but are managed appropriately where specific circumstances require.

2. Strategic context

The ZSE Group Biodiversity and Ecosystem Protection Strategy is based on global, European and national frameworks that define the direction of nature and biodiversity conservation through 2030, with a vision extending to 2050. Its key foundation is the Convention on Biological Diversity (CBD) and the Kunming–Montreal Global Biodiversity Framework which emphasize the need to halt and reverse biodiversity loss and achieve the vision of "living in harmony with nature".

At the European Union level, biodiversity protection is primarily embedded in the EU Biodiversity Strategy for 2030 and related legislation on nature protection and restoration. These frameworks place strong emphasis on the active protection and restoration of ecosystems and systematic integration of biodiversity across all sectors of the economy, including the energy sector. For businesses, this translates into increasing expectations to reduce adverse impacts on biodiversity, incorporate natural capital considerations into decision-making, and strengthen infrastructure resilience through preventive rather than additional measures.

At the national level, the Slovak Republic is progressively updating its strategic biodiversity policy framework in line with European and global commitments. Increasing emphasis is being placed on ecosystem restoration, landscape protection and the mainstreaming of biodiversity across sectoral policies, including the energy sector.

These frameworks provide the ZSE Group with a clear strategic orientation, under which biodiversity protection becomes an integral part of the planning, development and operation of energy infrastructure.

3. The ZSE Group's activities and impact

The ZSE Group operates in the electricity sector and energy infrastructure in Slovakia. Its core activities include supply of electricity and natural gas, distribution of electricity and the provision of comprehensive energy services, including development of infrastructure for emerging energy solutions such as e-mobility. Electricity distribution has a significant spatial and operational impact on the landscape and the natural environment. The Group's activities extend across large areas of Slovakia and intersect with a wide range of ecosystems, including areas of high ecological value. The impacts of these activities on biodiversity vary in both scale and nature, with the most significant effects associated with linear energy infrastructure.

Key interactions with biodiversity arise primarily during the planning, construction, modernisation and maintenance of infrastructure, as well as through the operation of electrical facilities. These activities may result in land-use change, habitat fragmentation or impacts on species. At the same time, they create opportunities to implement measures that support biodiversity conservation and restoration.

The electricity distribution network represents one of the most significant interfaces between the ZSE Group's operations and the natural environment. In particular, power line corridors and protection zones have the potential to play an important role in biodiversity conservation and restoration when managed appropriately.

The ZSE Group already implements measures aimed at reducing adverse impacts on biodiversity and enhancing the ecological stability of the landscape. These include ecological management of corridors, biodiversity-friendly design and retrofitting of electricity infrastructure, application of environmental management systems in accordance with ISO 14001 and cooperation with expert partners and local communities. These activities provide a solid foundation for the systematic advancement of the Group's approach to biodiversity protection in line with its strategic objectives.

In the development of e-vehicle charging infrastructure, the ZSE Group also considers the broader context of land use. The areas surrounding charging stations, particularly in urbanized or otherwise developed locations, can provide opportunities for complementary nature-based solutions, such as landscape planting or the establishment of wildflower meadows that support pollinators. These approaches can contribute to creating more suitable conditions for selected plant and animal species and to improving the quality of the built environment without a negative impact on infrastructure functionality.

The ZSE Group has already been implementing a number of practical projects of this kind, demonstrating how technical infrastructure can be successfully integrated with biodiversity enhancement at the local level. Although these interventions are generally modest in scale, their systematic implementation can contribute to increasing the proportion of green infrastructure and enhancing selected ecosystem functions in the built environment.



4. Key impacts and risks

Energy infrastructure gives rise to significant interactions with the natural environment.
These relationships are two-ways: infrastructure affects biodiversity, while the condition of ecosystems, in turn, influences the operation and resilience of the infrastructure.

Impacts of infrastructure on biodiversity and ecosystems

- **Land-use change and habitat fragmentation:** Construction and maintenance of infrastructure lead to interventions in the landscape, division of habitats and the weakening of ecological connectivity.
- **Impacts of infrastructure construction and operation on vegetation and fauna, particularly avifauna:** Overhead power lines and technical facilities pose a risk of collisions and injuries, especially for bird species.
- **Impacts of maintenance of protection zones on species composition and biodiversity:** The manner in which protection zones are managed influences the species composition of vegetation and fauna. Inappropriate interventions reduce species diversity and negatively affect habitats.
- **Spread of invasive species:** Interventions in the landscape may create conditions that facilitate the spread of invasive species and reduce the ecological stability of the area.
- **Cumulative impacts:** In combination with other infrastructure and development activities, individual interventions may lead to a significant weakening of ecosystems and their services.

Impacts of biodiversity and ecosystems on infrastructure

- **Weakened ecosystems and increased operational risks:** Degraded environments reduce landscape stability and increase the risk of infrastructure damage, particularly during extreme events.
- **Invasive species and vegetation management:** Poorly managed vegetation can complicate maintenance activities and increase operational costs.
- **Risks associated with wildlife:** Interactions with animals may lead to equipment damage or operational disruptions.
- **Extreme climatic and ecological events:** Changes in ecosystems and climatic extremes increase pressure on the resilience of energy infrastructure.

5. Strategic approach

The ZSE Group applies an integrated approach to biodiversity protection, systematically embedded across the entire lifecycle of energy infrastructure – from planning and design, through construction and operation, to modernisation and long-term asset management.

The foundation of this approach is the application of the hierarchy of measures, which includes avoiding negative impacts, minimising unnecessary interventions, restoring affected ecosystems, and compensating for residual impacts that cannot be avoided. This principle enables the systematic management of interactions between infrastructure and the natural environment and reduces their long-term consequences.

A key element of the Strategy is the integration of biodiversity protection into decision-making processes, particularly in spatial planning, investment preparation and infrastructure operation. Emphasis is placed on the early identification of environmental risks and on selecting solutions that minimise interventions in sensitive areas and support the preservation of landscape ecological stability.



The ZSE Group also systematically develops and applies nature-based solutions that combine technical and ecological approaches. A particularly important role is played by ecological corridor management, which helps create the conditions necessary to improve habitats for selected species and to preserve the ecological connectivity of the landscape.

An important component of this approach is the use of data, monitoring, and expert knowledge in managing impacts on nature and biodiversity, as well as in assessing the effectiveness of implemented measures. This process is supported by cooperation with expert institutions, the public sector and local communities.

The strategic approach also reflects increasing sustainability requirements and supports the long-term resilience of energy infrastructure, efficient land-use management, and the harmonious integration of technical solutions into the landscape. The scale and form of implemented measures are adapted to the scope and nature of individual ZSE Group activities, with particular emphasis placed on areas with the most significant potential impacts on biodiversity.

6. Strategic objectives

The ZSE Group's strategic objectives in the area of biodiversity are focused on the systematic management of impacts, the protection of sensitive areas, and the gradual transformation of the way energy infrastructure is planned and operated.

Monitoring and transparency

The ZSE Group is introducing systematic monitoring and transparent reporting of the impacts of its activities on biodiversity and ecosystems, including the monitoring of relevant environmental incidents and trends. The objective is to ensure data availability for effective management and continuous improvement of its approach.

Protecting areas with high natural value

In the planning of new infrastructure, the ZSE Group prioritises the minimisation of interventions in protected areas, high-biodiversity areas, and ecological migration corridors. Where such interventions cannot be avoided, appropriate mitigation and compensation measures are applied.

Minimising negative impacts

In areas where infrastructure interacts with nature, the ZSE Group implements technical and managerial solutions aimed at reducing adverse impacts on habitats, species, and ecological connectivity.

Restoring and enhancing the ecological value of areas

The ZSE Group implements measures focused on the protection and restoration of selected habitats and ecosystem elements particularly within infrastructure protection zones, through nature-based solutions and ecological corridor management, with an emphasis on the long-term management of these areas.

Integrating infrastructure into the landscape

In the development of infrastructure, the ZSE Group takes into account the landscape context and environmental aspects with the aim of reducing ecological and visual impacts. This approach includes the gradual modernisation of the network and the use of solutions that limit habitat and landscape fragmentation. This approach is also appropriately applied to the development of other types of infrastructure, including e-vehicle charging stations, where emphasis is placed in particular on the appropriate selection of locations and the minimisation of interventions in natural environments, with a preference for the use of existing urbanised or already disturbed areas.

Awareness and professional capacity

The ZSE Group develops internal professional capacities and supports the raising of awareness on nature and biodiversity protection among employees, partners and the public, including through cooperation with expert and educational institutions.

Innovation, research and partnerships

The ZSE Group supports research, pilot projects, and the implementation of innovative solutions the implementation of innovative solutions aimed at reducing negative impacts on nature and supporting biodiversity protection, including participation in international initiatives and partnership programmes.

7. Implementation and management

The implementation of the Biodiversity and Ecosystem Protection Strategy is managed at the ZSE Group level and is integrated into the Group's existing governance, investment and operational processes. Responsibility for the implementation of the Strategy is shared between central management and individual organisational units, which are responsible for delivering the relevant measures within their respective areas of competence.

The Strategy is managed through a continuous cycle of planning, implementation, and evaluation of adopted measures. This approach enables the ZSE Group to respond systematically to new knowledge, changing environmental conditions and evolving regulatory requirements.

A key element of implementation is the monitoring and use of data to support decision-making, assess the effectiveness of measures and drive their continuous optimisation. The resulting information is also used to ensure transparent communication with both internal and external stakeholders as part of ESG reporting.

Implementation of the Strategy is supported by cooperation across the organisation, as well as by external partnerships with expert institutions, public authorities, and the academic community. This approach facilitates the integration of technical, environmental, and local knowledge in the design and implementation of effective solutions.

The implementation process also includes the progressive development of professional, analytical and technological capabilities to support effective management of biodiversity impacts and long-term achievement of the Strategy's objectives.

The implementation of the Strategy will be monitored through a set of selected indicators reflecting biodiversity impacts, the implementation of measures and the performance of individual activities. These indicators will be further developed in line with data availability and evolving management needs.



8. Financing

Within the ZSE Group, the protection of biodiversity and ecosystems is regarded as a strategic investment in the long-term resilience and reliability of energy infrastructure. Accordingly, the financing of biodiversity-related measures is an integral part of investment and operational planning and is based on a diversified funding approach.

The primary source of funding consists of the ZSE Group's internal resources, with biodiversity measures incorporated into capital investment projects (CAPEX), operational activities (OPEX), and environmental management. Nature-based solutions and mitigation measures are implemented primarily through infrastructure modernisation, maintenance of corridors, retrofitting of power lines and technical improvements aimed at reducing long-term risks and operating costs.

Additional funding is obtained through external financing mechanisms, in particular European Union grant programmes, research and innovation funding schemes, and collaborative partnership projects. These instruments support the development and implementation of innovative solutions, testing and development of approaches, expert monitoring, and the development of methodologies. They also facilitate the gradual integration and wider deployment of proven measures into routine practice and long-term systemic solutions, particularly in areas where such approaches deliver clear environmental and operational benefits.

The financing of measures is aligned with the ZSE Group's ESG framework, including the integration of environmental criteria into investment decision-making and the management of associated risks. In this context, the Group also pursues the gradual alignment of its activities with the principles of the EU Taxonomy and makes use of relevant sustainable finance instruments.

The Group's approach also includes cooperation with the public sector, expert institutions, and the academic community. Where appropriate, a blended financing model is applied, combining internal resources, external grant funding, and partnership-based solutions.

The effectiveness of funding is regularly evaluated from the perspective of costs, benefits, and long-term impacts, including consideration of the value of ecosystem services and the costs of inaction. The results of these evaluations are used to optimise investment decisions and to further enhance biodiversity-related measures.



9. Conclusion

The ZSE Group Biodiversity and Ecosystem Protection Strategy to 2050 provides a framework for the systematic integration of environmental aspects into the planning, construction, and operation of energy infrastructure. It responds to evolving environmental and regulatory conditions while reflecting the ZSE Group's role as a major infrastructure operator whose activities have a significant influence on the landscape and its ecosystems.

Healthy and resilient ecosystems are a fundamental prerequisite for reliable and safe operation of energy infrastructure. Consequently, the protection of the natural environment can contribute to enhancing the resilience of the energy system, reducing operational risks and ensuring continuity of essential services.

A key principle of the Strategy is the progressive reduction of adverse impacts alongside the implementation of measures focused on restoring natural and landscape elements in the affected areas in which the ZSE Group operates. Particular emphasis is placed on nature-based solutions, responsible spatial planning, and cooperation with expert partners and local communities.

The Strategy is designed as a long-term framework that will continue to evolve in response to new knowledge, technological progress, and changing environmental and regulatory requirements. Its objective is to support sustainable development of energy infrastructure while contributing to the long-term preservation of natural values and ecosystem functions in areas affected by the activities of the ZSE Group.

