Capacity Building Tools for Raising Awareness about Biodiversity Mainstreaming: BISON E-learning Platform by SPECTRA

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The BISON project, funded by the European Union's Horizon 2020 research and innovation programme, is focused on tackling the research and innovation challenges related to biodiversity mainstreaming in the complete life cycle of transportation infrastructure. Project's main objective is to support European Member States, stakeholders,

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and associated countries by offering them recommendations and tools to integrate biodiversity considerations throughout the entire lifespan of transportation infrastructure, including design, construction, and operation.

The objective of this paper is to present and demonstrate the need for creation of possibilities how the awareness of and the knowledge about the biodiversity protection and transport infrastructure. It is an ongoing challenge for many years and the rapid pace of road and railway connection development in the Alps and Carpathians, some of the last strongholds of biodiversity in Europe, is alarming and underlining the need to improve the current state in form of research projects such as BISON. Nearly every day we can see road kills during our commutes, and these are just the most visible signs of biodiversity losses. Climate change and its impacts on landscapes, regions and cities is chasing us and is reinforcing the current problems in the landscape and urban areas. We need to raise awareness about this topic among various stakeholder groups, including decision-makers and for experts who are working daily in their professional life with these challenges, we need to create a source for up-to-date and sustainable knowledge.

To contribute to achieving these objectives, the BISON E-learning platform is being produced and, in this paper, we would like to present its rationale, its structure and functioning and outline the next steps.

The BISON e-learning platform to help stakeholders integrate biodiversity into transport infrastructure

The BISON website *(https://bison-transport.eu)* will include the E-learning Platform by fall 2023 which is an open access tool for all interested parties to access training/capacity

building courses managed by the Slovak University of Technology in Bratislava[1] (STUBA). It contains the data available at European and national levels including research, policies, legislation and different kinds of interactive data and e-learning materials based on deliverables managed by technical work packages. These materials are aimed at providing a platform where various stakeholders can come, and they will find resources that will help them to learn more about the topic and increase their knowledge about the topics of biodiversity protection and transport infrastructure. The content varies and is adjusted top the needs of diverse stakeholder group in accordance with the foreseen depth of their previous knowledge on the subjects as well as the level of details about specific topics differs reflecting the expected demands of the stakeholder groups' profile.

The BISON E-learning Platform is an inherent part of the dissemination and implementation activities of the BISON project consortium. This project is focused on biodiversity and infrastructure synergies and opportunities for European transport networks. BISON addresses the whole scale of problems and challenges related to safeguarding and enhancing biodiversity on the European continent and supporting social and economic development through safe, efficient, and sustainable transport systems that are accessible and affordable to all citizens. To face these ambitious challenges, the awareness and cooperation capacities of all relevant stakeholders need to be developed. The BISON E-learning Platform aims to support

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[1] https://www.stuba.sk/english

this development by addressing key stakeholder groups identified according to their position in the process of developing, using, and maintaining biodiversity and transport or on their interest on specific issues concerning the harmonization of biodiversity conservation and transport development.

The BISON e-learning platform offers different channels for delivering information and creating synergies

Being aware about different capacities of stakeholders to deal with the complex of relevant information for active participation in these processes, the BISON E-learning Platform reflects the existence of different channels for conveying the information and creating proper environments for their synergy avoiding the overload and disorientation of the focuses. Complementarity of information provided, and avoidance of their inefficient overlapping is an essential part of the concept.

There are several objectives of the E-learning platform listed as follows:

• To raise awareness of the stakeholders about the need, potentials, and limits to harmonize the transport infrastructure and biodiversity protection.
• To develop user-friendly access to relevant information from BISON outputs addressing particular interest groups based on their interest in issues and/or on their belonging to stakeholders' group.

• To provide proper access to selected data for active engagement of stakeholder groups.
• To guide particular interest groups through the big pool of data and knowledge accumulated by BISON consortium.
• To interlink the BISON valuable outputs with the outputs from the other EU funded projects.
• To safeguard sustainable access to the know-how on harmonization of the transport infrastructure and biodiversity protection.

The BISON E-learning platform for both biodiversity experts and non-experts

As an expert in the field of biodiversity protection, one can access many thematic blocks of knowledge on transport infrastructure and biodiversity protection. For experts, it is considered that their level of existing knowledge is broad, and they are looking for in-depth, specific information that was produced lately to expand their professional horizons. The platform is also suitable for non-biodiversity experts for several reasons. Experts working on issues not related to biodiversity are also provided with information to increase their awareness about biodiversity. Via this platform, it is planned to highlight the importance of biodiversity in developing transportation infrastructure and bring it more to the agenda, not only being suitable for fields of expertise, but also benefiting in the context of environmental impact and assessment.

The E-learning platform offers the possibility to select cross-fertilization of knowledge between different transport infrastructures since more than 70% of the knowledge from

Themes / Stakeholders	Technological innovations in transport and biodiversity	Climate change, biodiversity and eco-connectivity	Transport development challenges for biodiversity	Strategic environmental assessment / Environmental impact assessment	Planning the infrastructure	Designing the infrastructure
EU and national level of government						
Regional and local governance						
Infrastructure management companies and authorities						
Planners, designers and infrastructure professionals						
Academia and specific community						
NGOs and civil society						

Illustration 1 - Matrix of stakeholders' groups and themes for the E-learning platform
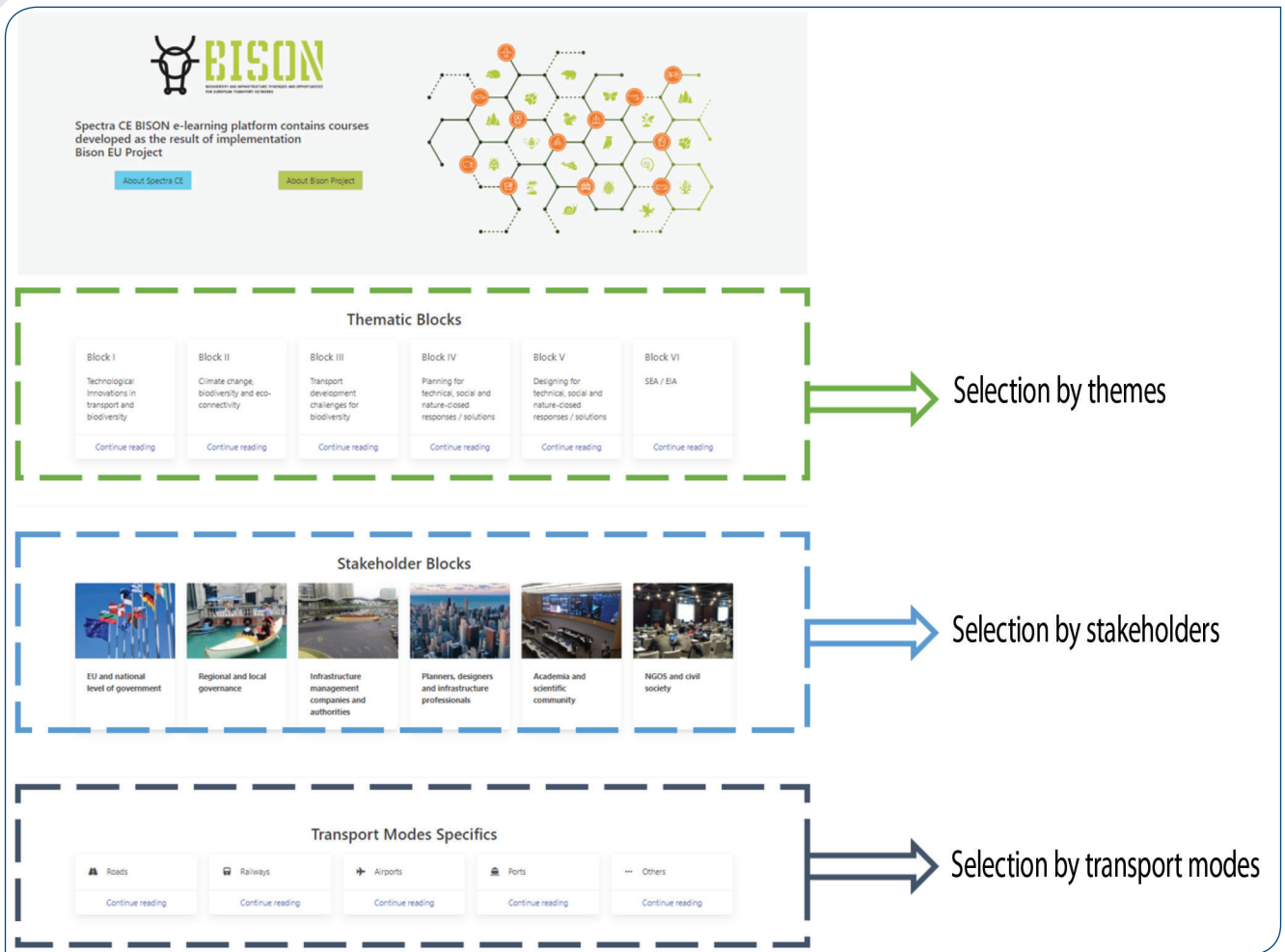
Illustration 2 - Various ways of selecting the content within the E-learning platform

most popular transport infrastructure offers still valuable input for less considered infrastructures. The E-learning platform is addressing different stakeholders/interest groups with clear targeting information set in two dimensions – division of stakeholders based on their role in transport infrastructure development and based on their interest on specific issues in the transport infrastructure development and biodiversity protection and enhancement. Based on this, the e-learning platform provides information in selective way in the blocks addressing the pre-defined stakeholders' groups *(illustration 1)*.

The content of the E-learning and proper methods to mediate selected information to specific stakeholders' groups and themes follows the logic shown below *(illustration 2)*.

The BISON E-learning platform to guide relevant stakeholders through huge amounts of information

As shown in the *illustration 3*, the matrix involves both blocks of knowledge. For example, the module for Strategic Environmental Assessment (SEA) includes comprehensive knowledge on SEA related to transport and biodiversity protection. On the other hand, modules for NGOs include selected knowledge across all thematic blocks related

to transport development and biodiversity protection addressing specifics of each theme relevant for NGOs. The goal is to have the content ready for a specific stakeholder block and provide them with enough information to increase their capacities and knowledge in the field of biodiversity protection and transport infrastructure to help them in their work and interests. Additionally, besides the information related to the topics of biodiversity protection and transport infrastructure, the aim of the platform is to inform the users about other ongoing projects that are dealing with similar topics (see below e.g., the INTERREG SaveGREEN Project and other). This matrix is supposed to explain the basic working principle of the e-learning platform. For road specialists looking for more in-depth knowledge, it will also be possible to refer to the handbook website which will contain a specific category on transport infrastructure including case studies like road infrastructure.

The ambition of the BISON E-learning Platform is not to educate experts in dealing with the transport development of biodiversity protection, nor with their harmonization. The goal is to guide relevant stakeholders through huge amounts of information via sorting, interlinking, structuralizing, comprising, and prioritizing them in a user-friendly online environment. Each stakeholder will be guided through the line of most important information for one's position or

interest allowing one to use additional links to original knowledge resources for detailed research.

The BISON E-learning platform offers online courses and best practices from other EU funded projects

This platform will facilitate the connection and collaboration between road experts and biodiversity experts in several ways. Firstly, the platform offer support for courses and programs launched by universities and other educational establishments that cover topics relevant to both fields, providing opportunities for experts to exchange knowledge, and learn from each other's perspectives. Secondly, it has ambition to be further developed and launch online communities where experts can meet with each other, ask questions, and share resources. Thirdly, experts will have the possibility to participate in webinars or online events, which can serve as a platform for learning and exchanging insights. Lastly, experts can participate on creating and sharing the relevant and complementary content on the platform under the supervision and control of STUBA/SPECTRA, such as video lectures, blog posts, or podcasts, to connect with other learners and promote interdisciplinary learning. Overall, the e-learning platform can play a vital role in fostering collaboration and knowledge exchange between experts in different fields, including road and biodiversity experts.

The E-learning platform, in addition to the mediation of selected need-oriented information for stakeholders' groups, creates the integrative environment for access to the knowledge and best practices derived in the BISON project in the interaction
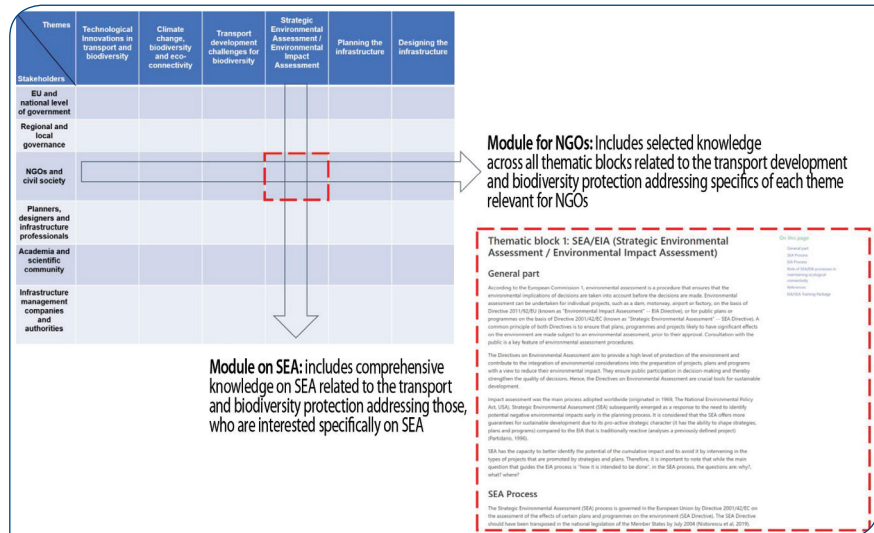

Illustration 3 - Thematic block SEA/EIA as an example

with the knowledge available as the outputs from other EU funded Interreg and HORIZON projects such as TRANSGREEN[2], ConnectGREEN[3], SaveGREEN[4] and INSPIRATION[5]. The objective of this feature is raising awareness about public-funded activities on international and national levels and what are they dealing with to make the users familiar with the state of knowledge and project activities ongoing in the field of biodiversity protection and transport infrastructure. Many seemingly parallel activities are taking place and improving knowledge about them can foster synergies between them, becoming familiar with the state-of-the-art research and outputs of these projects that have similar objectives. TRANSGREEN *[4, 7]*, ConnectGREEN *[4, 6, 8]* and SaveGREEN *[1, 2, 3, 5]* is a set of three consecutive projects aimed at improving transportation infrastructure, land-use and landscape management in the mountainous regions of the Danube Basin, with a special focus on the Carpathian Mountains. This knowledge is transferable and should be actively used by other stakeholders, including users of the E-learning platform. In addition to the knowledge produced (deliverables, scientific papers, books, datasets etc.), these projects also produce and collect precious data that are stored online and can be further used by E-learning platform users. The goal of these projects is to develop safer and environmentally friendly road and rail networks by incorporating elements of Green Infrastructure and ecological connectivity elements. ConnectGREEN specifically aims to increase the capacity for ecological corridors identification and management to ensure ecological connectivity in the Carpathians by focusing on spatial planning as they key set of activities that can affect the projects and decision-making in the planning process. All projects provide valuable knowledge and experience to spatial planners and stakeholders to find the best ways to develop infrastructure while preserving wildlife conservation. These projects will also be linked to the INSPIRATION Horizon project, which aims to establish and promote the adoption of knowledge creation, transfer, and implementation for land use, land-use changes, and soil management to address current and future societal challenges. The methodology of INSPIRATION is based on a multi-stakeholder, interdisciplinary approach that involves public bodies, businesses, science, citizens, and society. INSPIRATION project was implemented in 2015 – 2018 and strongly contributed to the formation of the research agenda for the EU funding where the topic of biodiversity protection and transport infrastructure belong. By linking these projects and their achievements to the E-learning platform, we can contribute to proper utilization previously and parallelly implemented activities, avoid duplication of the same work and, most importantly, take the results of these research activities further and produce knowledge of higher quality and better utility to the users.

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2 https://www.interreg-danube.eu/approved-projects/transgreen
3 https://www.interreg-danube.eu/approved-projects/connectgreen
4 https://www.interreg-danube.eu/approved-projects/savegreen
5 http://www.inspiration-agenda.eu/at-a-glance.html; https://cordis.europa.eu/project/id/642372

NEXT STEPS AND PERSPECTIVES

The STUBA team are currently working intensely on developing the platform and making sure it meets the high standards for quality and user experience and is adding materials and information available from the BISON project and similar projects funded by the EU. The platform will be fully launched in fall 2023 once all the BISON project outputs are finalized and available. Until then, the platform will continue to expand and update. The platform is aimed to be a sustainable and lively learning space and is supposed to be constantly complemented by latest knowledge and serve as a place where users can find all information related to biodiversity protection and transport infrastructure they need for their professional and personal interests. Pursuit of scientific knowledge is not a single procedure but is growing over time and so does the field of biodiversity protection and transport infrastructure. More and more road and railway connections are being built in Europe every day and the need for protecting biodiversity along the way, reinforced by climate change implications that are being more visible every year, is ever higher and increasing. With this platform, we hope to add another small piece of puzzle to the mosaic of solutions and ways to improve the status to improve the quality of life of us and of future generations.#

ACKNOWLEDGEMENT

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