

Christian Hanus, Gerald Steiner  
(Editors)

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Cultural and Social Implications of  
Global Change on the Danube River Basin



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# Iron Gates – The Green Reopening

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## **Abstract**

Former industrial communities in the Iron Gates area are facing development challenges. At the same time, examples of successful redevelopment in such communities exist both internationally and in the Danube region. The project aims at using a transdisciplinary case study method in order to: identify and analyse existing redevelopment initiatives, select pilot communities in the project region and negotiate with them development scenarios for economic revitalization. The main scientific and practical outputs will include a system model of possible sustainable revival in former industrial communities and a practical Tool Kit for community-based local redevelopment.

**Keywords:** *Iron Gates, sustainability, communities, industrial sites, local entrepreneurs, revival*

## **State of the art**

Industrial activities, as part of the economic sector, may have different impacts on society, both by polarizing the territories and creating well-being, but also by producing long-term malfunctions in different areas (Ioja 2008), even many years after their closure. The impact of these industrial activities is very different from country to country, but it can be very similar in former communist ones. During the transition to capitalism, most of the state-owned industries did not manage to adapt to the new economic requirements and

most factories were shut down, especially in peripheral areas, where small and medium communities have been particularly impacted, especially where the majority of the population was employed by the former industries. Thus, the communities went through a lengthy process of deindustrialization and industrial restructuring which usually occurred along with two other processes – decentralization and industrial relocation (Cepoiu 2009).

Although comprising small communities from three neighbouring countries, the selected geographical area for this project has also faced this phenomenon. The Iron Gates region had a huge significance for many years. Scientists agree on the conclusion that well-developed communities are located along rivers for which the Danube settlements has been of paramount importance even from the Roman times. The historical evidence for this case is the existence of the Roman Limes, guarding the former military camps and busy trading areas. Nowadays the picturesque Danube region still attracts economic investments, which results in thriving communities, but it is not clear if this process embraces all the areas and settlements. Iron Gates is an example of a river area, with unique geographic, natural and cultural characteristics, with majestic mountain slopes, fertile valleys, man-made transportation and flood facilities. On the other hand, the communities there are small, mostly with aged population and suffering from economic deprivation after the “industrial boom” experienced during the communist era. These observations lead to the question: “What are the drivers of locally-driven revival through economic initiatives in the former small industrial communities in the Iron Gates area?” This research proposal is an attempt to examine if local entrepreneurs (within a 120 km radius of former Iron Gate communities) can become drivers of the sustainable revival of these communities. The 120 km radius is chosen due to the existence of natural protected areas along both banks of the Danube river (Djerdap National Park, SRB, and Porțile de Fier Natural Park, RO). While the location of former industrial sites in Romania and Serbia are not in immediate surroundings of the Danube River, we extended the radius to include Bulgaria with its former industrial communities. These three countries were socialist and had well-developed industry during the second half of 20th century.

The selected area encompasses the villages of Vinci (Golubac municipality) to the village Kostol (Kladovo municipality) on the Serbian side and from Moldova Veche to Drobeta Turnu-Severin on the Romanian

side (Codromaz et al. 2015). These communities are part of a natural boundary between these two countries which is a route that separates the Southern Carpathian Mountains from the North-Western foothills of the Balkan Mountains. It has a favourable geo-traffic position (E-80/Pan European Corridor VII) (Macura et al. 2012). For our project, we extended the radius of The Iron Gates area to 120 km, and we included the communities from three countries (Bulgaria, Romania, and Serbia. All these areas in the aforementioned countries include a bigger municipality (Vidin, Drobeta Turnu-Severin, Bor), having a leading role in the regional economy.<sup>1</sup>

Our main goal is to focus on the medium and small sized communities, that in the past had profiles such as: mining activities (copper mines in Bor and Majdanpek, Moldova Nouă), non-ferrous metallurgy (Moldova Nouă), chemical industry (Bor, Prahovo), machine building (Orșova Shipyard), electricity production (HPP Djerdap/Portiile de Fier I and II, Kladovo), food processing (Calafat) (Erdeli & Cucu 2007). In comparison to other communities, these areas are considered as having a less developed economy. For instance, after the change of the communist regime, the small workshops, based in the rural communities closed, while the big enterprises were firstly privatized but then, after a period of stagnation, they also closed (Dyker 1990). These economic downturns went together with large layoffs of working-age population generated a severe crisis in the area which led to a massive migration from the previously industrialized communities, which were left with deteriorating facilities and just a few available entrepreneurs. Despite the positive turnaround in the labour market in 2016, wages and living standards remain low. The unsatisfactory quality of infrastructure and undeveloped administrative services are not promoting new private investment into the local economy and sustainable development of the region still remains as a challenge. With an increase of illegal logging, fishing and hunting activities and the construction of tourist facilities, without respect for the traditional architecture, the entire area struggles in search of a sustainable solution.

A considerable number of soft and infrastructure development projects has been implemented successfully in the targeted area in all three countries, funded mostly by the EU and development agencies. A transnational project focused on the Iron Gates area and involving Bulgaria, Romania, and Serbia

has been implemented in 2002-2006. It aimed to facilitate transportation and industry development, and sustainable use of resources and resulted in a Letter of Intent to establish the Euroregion “Middle Danube – Iron Gate”, signed by the representatives from the three countries at the XIII Conference “DRC”.

There is a vast scientific literature of the effects that a declining industry has had over the local economy (Healey 1995; Witek 2011; Edelbutte 2009; Popescu 2000). There exist also several studies concerning demographics in the specified region (Sugareva et al. 2008; Yankov2016) and the regionalization policy (Dimov2012). Many approaches to revitalization of former industrial communities, including redevelopment of industrial heritage sites (e.g. for recreation or tourism) has already been suggested in literature (Loures 2015; Bartik 2008; Tufegdžić & Blagojevic 2015; Rátz, Smith, & Michalko 2008; Matei et al. 2011; Garay & Benko 2014; Cizler, Pizzra, & Fischer 2014). Moreover, researchers acknowledge the importance of community participation in industrial heritage redevelopment. Nevertheless, previous research focused more on the Austro-Hungarian section of the river, while the lower Danube including the Iron Gates area is under-researched, thus there is a research gap for the specific areas, such as the Iron Gate.

## **Clear overall aim**

The overall aim of the project is to facilitate locally driven revival through economic initiatives in the former small industrial communities in the Iron Gates area (SRB – RO – BG) using transdisciplinary research approach. The proposal achieves this main goal through successfully completing the following objectives:

1. Surveying and assessing former small industrial communities (under 50,000 inhabitants) in the region using an interdisciplinary approach. The analysis will include history, demographics, population dynamics, geography, socio-economic status, accessibility, environmental status, political aspects.
2. Developing a system model based on identified examples of existing revitalization initiatives in former industrial communities in the region.
3. Test transdisciplinary method as an approach to negotiating development scenarios for economic revitalization of former Iron Gates

industrial sites with the selected communities.

To achieve this aim, the proposal plans to implement a transdisciplinary approach to survey, assess and negotiate locally-driven development initiatives in the communities in the three aforementioned countries. This methodological approach is innovative both in terms of scientific research and scientific geo-graphical scope of 120 km around the Iron Gate, covering areas in BG, SRB, and RO. Based on the research of the four main components of the society (Scholz 2011), the project builds a comprehensive base for understanding how the development of the local systems in the three different countries went on through the years and what impact and consequences are brought by the industrialization of the area.

## **Scientific approach and methods**

01: Survey and assess former industrial communities (under 50,000 inhabitants) in the Iron Gates region (Based on preliminary analysis, there are about 20 communities in the selected region).

The purpose of this objective is to explore the role of industry in the performance of small and medium communities of the Iron Gates area (Bulgaria, Romania, Serbia). This first investigation focuses on the role of industry in the population development of the communities and their economic performance nowadays. This investigation will aim to answer two sub-research questions: What are the characteristics of the former industrial communities in the Iron Gates Area? How do they perform nowadays in comparison to 25 years ago?

All data should be retrieved from ESPON projects, EUROSTAT, National Statistics Institutes, data from local stakeholders. The data set will include variables presented in table 1. The survey will include also a qualitative approach concerning the historical background of the area, geographical characteristics, former industrial activities, current political issues that are interfering with the development of the communities. At this point, some general shortcomings of the data available should be mentioned:

-Most variables could not be available for all communities, and some could be only available for a select subset (e.g. a number of industrial firms). These variables will be excluded from the analysis if their high number of



missing values will be expected to unduly influence the results.

-The classification of the economic structure may vary in terms of ‘industry’ for example, with some distinguishing between manufacturing and construction, some grouping these two together, some including mining and manufacturing but not construction, and some might be unclear in their definition. In the text, it will be indicated which sectors are referred to, however drawing project conclusions across analyses using different variables could become more complicated.

**Table 1.** Indicators for assessing former industrial communities (1992-2016).

| <b>Category of indicator</b> | <b>Indicator</b>  | <b>Unit</b>                                      |
|------------------------------|---|--|
| <b>Social</b>                | Population number                                       | No. of inhabitants                               |
|                              | Population structure by age                             | No. of inhabitants                               |
|                              | Population structure by gender                          | No. of inhabitants                               |
|                              | Density of population                                   | No.inhabitants/km <sup>2</sup>                   |
|                              | Natural increase of pop. rate                           | Nat.increase/1000 inhabitants                    |
|                              | Ethnic structure of population                          | % of ethnic groups                               |
|                              | Internal migration                                      | Number of persons                                |
|                              | Commuting ratio   | %  |
|                              | Labour resources  | Number of persons                                |
|                              | Education - Number of schools, professional schools     | Number of schools                                |
|                              | Health - Number of hospitals, number of medical doctors | No. of hospitals, no. of med. doctors per person |
|                              | <b>Economic</b>   | Rate of people employed by economic sector       |

|   |  |                        |
|---|--|------------------------|
|   | Agriculture - Area cultivated with main crops            | Hectares               |
|   | Tourism - Arrivals of tourists accommodated              | Number of tourists     |
|   | Turnover value of market services rendered to population | %                      |
|   | Connection to railways                                   | Km of railways         |
|   | Length of public roads                                   | Km of road             |
| <b>Public utilities of local interest</b> | Total length of network of drinking water                | Km                     |
|   | Total simple length of sewage pipes                      | Km                     |
|   | Total length of distribution pipes of natural gas        | Km                     |
| <b>Environment</b>                        | CO <sub>2</sub> emissions                                | Thousands of tons      |
|   | Quantity of particulate matter                           | Yearly average concen. |

02. Develop a system-based model on identified examples of existing revitalization initiatives in former industrial communities in the region.

After reviewing existing examples of industrial sites, redevelopment initiatives are identified using background research in the first stage of the project (and a draft system model is conceptualized by the team), local stakeholders will be identified (through networks of the project partners and stakeholder analysis) and contacted. Focus groups and key informant interviews will be conducted with the identified actors, as well as walking interviews and participatory mapping (Edwards 2010; Von Bertalanffy 1968). These participatory methods will be used to come up with a joint vision of a system for each case, as well as to conceptualize a general system model for successful redevelopment initiatives in the former industrial communities.

03. Test transdisciplinary method as an approach to negotiating development scenarios for economic revitalization of former industrial sites

with the selected communities.

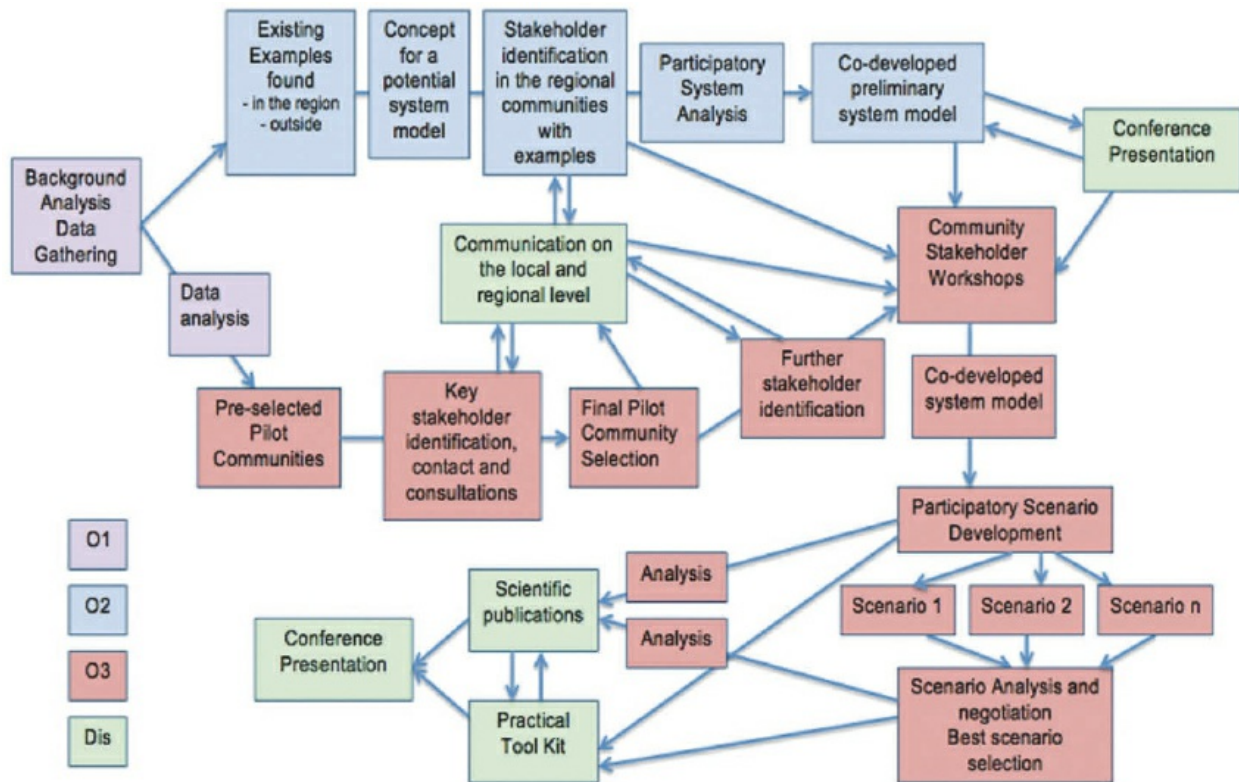
Pilot communities (maximum 2 in each country) will be selected based on the interest of local stakeholders through the following process: 1) Potential pilot communities will be pre-selected by the project team based on the background analysis; 2) Administrative personnel of the selected communities will be contacted, as well as key stakeholders (identified via expert opinion of the local partners and the stakeholder analysis and network analysis of the selected communities (Ackermann & Eden 2011; Haythornthwaite 1996; Edwards 2010); 3) The project idea will be discussed with the key stakeholders and their interest and motivation assessed.

Further stakeholders will be identified using various sampling techniques, which aim at receiving further relevant contacts for the research process from the involved stakeholders, including key informant (Heckathorn 1997), purposive (Tongco & Dolores 2007) and snowball sampling (Atkinson & Flint 2001; Heckathorn, 1997).

Stakeholder workshops will be conducted in all pilot communities with a participation of the project partners and associate partners (as well as external experts, as relevant). All workshops will be aimed at prioritizing redevelopment scenarios in each community, through: 1) informing the communities about the potentials for economic revitalization of former industrial sites, 2) exchanging ideas and knowledge, 3) assessing existing and missing resources, and 4) joint planning and prioritizing of scenarios for redevelopment in each community.

Co-generation of knowledge and joint planning among the stakeholders and the project partners will be facilitated via transdisciplinary case-study techniques: systems analysis, scenario development, assessment and prioritization and area development negotiations (Scholz & Tietje, 2002; Von Bertalanffy 1968; Glanzer et al. 2005). The application of the transdisciplinary research process in the region and the quality of both scientific and practice-oriented outputs will be evaluated and assessed using qualitative analysis.

**Figure 1.** Main project steps.



## Methodological concept

### a. Working with potential partners.

From the beginning, the project will involve strategic associate partners who will facilitate the project implementation and the participation of local stakeholders to support integration of the project results in the local and regional levels, including:

On the policy and international level: the International Commission for the Protection of the Danube River (ICPDR) and the UN Environment/Carpathian Convention secretariat, as well as the Environmental Partnership Association with its network offices in Bulgaria and Romania.

On the sub-national level: Protected areas (PA) authorities, NGOs, and University branches in the analysed region. NGOs from all three countries will be invited to participate and potentially provide external expertise, when relevant. Moreover, partners will seek synergies with their activities in the region.

On the local level: local authorities will be contacted and involved to help

the partners assess proposed activities, provide contacts to the local stakeholders, local data and policies, and permits for conducting activities in their municipalities, if necessary. The key stakeholders will include Fisheries Local Action Groups (FLAGs), Local Action Groups (LAGs), local tourism organizations, etc. In addition, local entrepreneurs and youth organizations, as well as other relevant interest groups will be informed and invited to participate. The project idea will be discussed with the key stakeholders and their interest and motivation assessed. Final pilot communities will be selected based on the interest of the local stakeholders. Other local stakeholders will be involved in various steps throughout the project process. Specific attention will be paid to involving younger residents and encouraging women to participate.

Stakeholder workshops will be conducted in all pilot communities, during which the stakeholders will be encouraged to exchange their visions and ideas for possible economic initiatives in the former industrial sites. Their suggestions together with experts' inputs and examples from the existing initiatives will be used to guide a joint scenario development and scenario assessment process. The project partners will facilitate selection of the preferred scenarios and provide guidance on the needed steps for scenario implementation. The aim of this process is not only a joint reflection but also generation of ideas for potential entrepreneurial initiatives among the local population in the communities.

At least one joint workshop will be organized with representatives of stakeholders from all participating communities, in order to encourage an exchange of experience and networking, as well as to facilitate a joint reflection on the project outcomes and lessons learned.

## **b. Integration into society.**

The project aims at addressing a societally relevant (real-life) problem: development challenges of former industrial communities. Several steps in the project methodology will contribute to ensuring the relevance of the project for the local communities as well as a potential for application of its results on a wider (national/regional) level:

- Pre-selection of the pilot communities based, among other indicators, on the interest and motivation of the local population will provide the needed

base for a transdisciplinary knowledge co-production process.

- The local actors will play a key role in the project by advising on how it can be most relevant for their communities and contributing experiential and case-specific knowledge.
- Co-production of the project outcomes among the project partners and the local stakeholders will facilitate interest and co-ownership within the local communities (Penker & Muhar 2015; Carlsson & Berkes 2005; Reed 2008).
- Involvement of regional and international partners with experts in the sustainable regional development field will also contribute to making the project outcomes transferable to similar communities in other countries and regions.
- Moreover, the project will introduce the use of transdisciplinary methods to the university partners in Bulgaria, Romania, and Serbia, and thus contribute to stronger cooperation among the universities and society and encourage building further research on socially-relevant challenges in these countries in the long-term.

## **Distribution of tasks**

The leading partner (BOKU, Austria) will coordinate the communication between all partners and overall project implementation and reporting, as well as the implementation of the transdisciplinary research process. Each partner will coordinate one WP of the project to share responsibility. All main decisions will be taken jointly by the core partners, and responsibilities for specific actions will be distributed accordingly.

University partners in Bulgaria, Romania, and Serbia will be responsible for collecting data at the national level, with support from REC (The Regional Environmental Center for Central and Eastern Europe), and will cooperate with each other for the data analysis. The REC will facilitate practical implementation, stakeholder involvement, and dissemination in all project countries.

- WP 1. Management (coordination, project partner meetings, quality control, reporting) (University of Natural Resources and Life Sciences,

Vienna (BOKU), AT).

- WP 2. Background research, data gathering, and analysis (Ovidius University of Constanta, RO).
- WP 3. Identification and system analysis of existing examples (Serbian Academy of Sciences and Arts, Geographical Institute “Jovan Cvijić”, SRB).
- WP 4. Stakeholder involvement and pilot testing (Ruse University, BG).
- WP 5. Dissemination (REC, HU).

## **Time schedule/Feasibility**

The time schedule is represented in the Gantt diagram. The team considers the time allocated to each task as appropriated.

Possible risks to successful implementation of the project include 1) unavailability of certain data, 2) administrative barriers, 3) lack of community interest and participation, 4) communication challenges and lack of agreement among the project participants, 5) unforeseen budgetary challenges. These risks have been assessed by the project team based on their experience and knowledge of the region, and workable solutions have been identified:

1) Qualitative research will be used to target data gaps; project outputs will be adjusted based on the data availability, if necessary

2, 3) Community selection will be based on the availability of interested stakeholders and support of the local administration. In case of challenges, more flexibility in the selection of communities will be assumed (i.e. different size)

4) Communication challenges will be targeted by transparent and none/exclusive discussion and identification of compromises where agreement among all participants is not possible.

5) In case of unforeseen budgetary constraints and project outcomes will be adjusted accordingly with a view to ensuring implementation of the main project results.

**Table 2.** Gantt Diagram of Iron Gate- GREEN REOPENING Project.





participation.

- Project presented at local community events in cooperation with local artists.
- Project publications, presenting project results, both in scientific and lay format, distributed through the partner universities and local organizations and interest groups.
- Project results presented during a local festival in each community, co-organized by the project partners and the local participants.
- One joint workshop and public event organized with stakeholders from all participating communities.
- The resulting prioritized scenarios for industrial site redevelopment presented to potential donors and funding organizations in a format agreed by the local participants.

### **Wider Public**

- Project website developed in English, Bulgarian, Romanian and Serbian. Information about the project available in all project partner websites, with the link to the project website.
- An annual newsletter produced in all project languages and disseminated through the partner networks.
- Project presented at relevant policy and practice-oriented events.
- The project presented at international scientific conferences (at least 2), and national scientific conferences and events (at least 1 each).

### **Project Publications**

- The project publications will be available in electronic and printed formats.
- A Tool Kit for community-based local redevelopment will be produced in cooperation with the local partners and stakeholders. The Tool Kit will present the experience and results of the project, as well as the lessons learned in lay (nonscientific) terms, in order to inspire community redevelopment initiatives and to facilitate transferability of the project

methods and results to similar communities in the Danube region and beyond. As such, the Tool Kit will outline: 1) the potential solutions for redevelopment of the former industrial sites, 2) the methods to assess the available and needed resources for redevelopment, and 3) best examples from the region and from outside the region, 4) experience in each pilot community of the project of best scenario prioritization, 5) tips, do's and don'ts based on the experience of the project partners, and 6) contacts of experts and potential partner organizations. The main target groups of the tool kit will be community administrations, local action groups, NGOs, and entrepreneurs.

- The Tool Kit will be translated to all the partner languages and distributed through the local communities.
- Scientific articles (at least 2) will be co-authored by the project partners and submitted to relevant journals. The articles aim at presenting the co-produced system models and analysis of the application of transdisciplinary methods to negotiate redevelopment scenarios in the region.

### **Added value for society/science**

The project applies a transdisciplinary approach to provide both societal and scientific value. The main aim of the project is based on real-life challenges: facilitating the revival of the economically depressed former industrial communities in the Iron Gates area by supporting local community-based discussion process, and facilitating generation of ideas and knowledge for local entrepreneurship, as well as via exchange of knowledge and networking between the communities in the area. On the community level, where relevant, specific attention will be paid to involving younger residents and encouraging women to participate. Thus, the project builds common identity and trust not only on the local but also on the regional and cross-border levels. By achieving that it adds value to cross-border cooperation and social integration of former industrial communities along the Danube.

While actual implementation of the solutions for redevelopment of

industrial sites is not feasible within the given project, it will prepare the ground for actual implementation by facilitating networking, cooperation, and identification of community-based solutions and joint prioritization. As such, the partners will aim at creating partnerships to support implementation in the follow-up phase of the Iron Gate- The Green Reopening project.

The scientific value of the project comprises: 1) pilot testing and application of the transdisciplinary case study methods in the Iron Gates area, 2) developing a system model for sustainable economic initiatives in the former industrial sites, both specific for the area, and 3) generalization of the model, so it is applicable to other communities. The project will showcase how transdisciplinarity could be employed for comprehensive research, understanding, mutual learning and joint problem-solving in cross-border communities and to facilitate community development.

### **Soundness of the long-term concept/ Long-term sustainability of the results/ Long-term cooperation with potential partners**

This project aims at initiating cooperation and exchange of knowledge for sustainable development in the Iron Gates region on several levels: among the project partners, between partner institutions and stakeholders on the regional, national and local level, and among the communities located in the three project countries (Bulgaria – Romania – Serbia).

The leading partner (AT) will support university partners in Bulgaria, Romania and Serbia by applying the transdisciplinary approach in addressing real-life challenges and co-production of knowledge with the non-academic stakeholders. This approach is directed at ensuring local ownership and thus sustainability of the results. Specifically, the project aim is to support idea generation and prioritization of potential sustainable economic development actions for the pilot communities. These communities can use the project results in the future to implement the negotiated ideas. They can apply this knowledge in the future once the project lifetime ends. The involvement of an international NGO partner well-integrated into the region will support dissemination of the project and transferability of its results, as well as follow-up developments based on the project results. The project also aims to provide generalized results, which can be transferred to other similar

communities in the Danube region. The strategic associate partners will be involved to support integration of the project results into the local and regional processes and follow-up.

During the field research, we could expect some problems, especially those related to data collection and communication with local authorities and communities. There are numerous reasons. First, there is a centralized administration without experience in similar international projects. We will need to get a permission from the state authorities (Ministries and Agencies). Second, different ethnic groups are present in the observed area. Additionally, there is also a demographic situation (aged households), with unfavourable educational structure. Because of that, we will hire local authorities as associate partners together with local NGOs and PA authorities to facilitate communication with the local community and to ensure future implementation of the negotiated work packages.

### **Competences of the team**

- Diana Nedelcheva Bebenova–Nikolova – Ruse University: cross–border intercultural communication, management of multicultural teams.
- Dejan Berić – The University of Novi Sad, Faculty of Sciences in Serbia: contemporary forms of tourism, global tendencies in tourism, cultural heritage, cross–border cooperation, the Danube region and sustainability.
- Stefan Denda – Geographical institute “Jovan Cvijić”, SASA: tourism geography, regional development, life quality research
- Irina Florea-Saghin – Ovidius University of Constanta, University of Bucharest: regional sciences, environmental impact assessment, European policies, governance, reconversion of former industrial sites.
- Tamara Mitrofanenko – BOKU University, Vienna: Transdisciplinary research, sustainable regional development, stakeholder participation.
- Marius Popescu – Transylvania University of Brasov: tourism management, economic geography, environmental sciences.
- Jasna Stojanović – Geographical Institute “Jovan Cvijić” SASA: geosciences, tourism development, protected areas, and conservation.

### **Other competencies needed**

Architecture, and collaborative/sharing economy (can be involved via Danube University Krems and WU Vienna, respectively on an external expert basis).

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