



7 Most Endangered 2023

Programme run by **Europa Nostra**,
the Voice of Cultural Heritage in Europe,
in partnership with the **European Investment Bank Institute**

Watermills in Bistrica, Serbia

Technical Report



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Table of Contents

1. SUMMARY	2
2. PURPOSE, LOCATION	3
2.1 GENERAL SCOPE	3
2.2 LOCATION AND SOCIO-ECONOMIC CHARACTERISTICS	3
3. CONTEXT	4
4. SITE DESCRIPTION	5
4.1 OVERALL APPROACH	5
4.2 STATE OF CONSERVATION OF THE NOMINATED SITE	5
4.3 OWNERSHIP	7
4.4 ACCESSIBILITY TO THE WATERMILLS PATH AND BISTRICA	7
4.5 URGENT WORKS	8
5. THE PROPOSAL	8
6. IMPLEMENTATION	9
6.1 ORGANIZATION IN CHARGE OF THE PROJECT:	9
6.2 REHABILITATION	9
6.3 MANAGEMENT	10
6.4 TOURISM PROGRAM FOR BISTRICA	10
7. PROCUREMENT	10
8. ENVIRONMENT AND SOCIAL IMPACTS	10
8.1 GENERAL SERVICES	10
8.2 ENVIRONMENTAL IMPACTS	11
8.3 SOCIAL IMPACTS	12
9. USE, PRODUCTION	12
10. OPERATION AND MAINTENANCE	13
11. INVESTMENT COSTS	13
12. ECONOMIC REVIEW AND FINANCING POSSIBILITIES	14
12.1 THE ECONOMIC IMPACT	14
12.2 FINANCIAL VIABILITY	15
13 EIB GRANT	15
14. CONCLUSIONS AND RECOMMENDATIONS	16
ANNEX A MAPS AND PICTURES	18
ANNEX B STATUTE OF WATER-MILLERS OF BISTRICA (EXTRACT)	20
ANNEX C DEVELOPMENT OF SUSTAINABLE TOURISM IN THE AREA	21
ANNEX D STANDARD CONTENTS OF A BUSINESS CASE	22
ANNEX E DETAILS OF MISSION, PERSONS MET, MEETINGS, REFERENCES	23

1. Summary

Background

The Watermills of Bistrica are a unique complex of historic mills for grinding grain and rolling cloth created between the 19th century and the mid-20th century, located in the village of Bistrica, along the river Bistrica in South-eastern Serbia. The architecture of the watermills presents the folk characteristics of Balkan rural structures, namely small-scale and wooden constructions.

The Bistrica village was first mentioned in the 14th century carrying a traditional way of living, with the agricultural tools being used from antiquity until the industrial revolution, when they were replaced with mechanical tools. Understanding this agricultural way of life and its harmonisation with nature is an important tool for both the preservation of Europe's heritage and also for contemporary climate action. Today, the watermills are under the threat of destruction due to their long-term abandonment and exposure to harsh weather conditions.

The Watermills of Bistrica were nominated to the "7 Most Endangered Programme" 2023 by the local community, with the support of the local Native Museum and the Assembly of Millers of the Region, in collaboration with the Tourism Organisation of the Municipality of Petrovac na Mlavi, as well as with the endorsement of Europa Nostra Serbia. After analysing the nomination form, the Advisory Panel of the 7 Most Endangered Programme stated:

Together with other residential, spiritual, and commercial buildings of vernacular architecture, the Watermills of Bistrica form a unique rural landscape, bearing witness to the important process of food production once present throughout Europe. Even though some watermills are still in function, the whole complex of Watermills of Bistrica is degrading due to natural factors, such as floods, and also due to lack of maintenance. With proper restoration, interpretation and a sustainable cultural tourism plan, the Watermills of Bistrica could become a great example of successful heritage revitalisation bringing multiple benefits to the local community and economy.

Conclusion

This is a worthwhile and necessary rehabilitation of a distinguished architectural heritage ensemble which is long overdue. It would enhance this location in the rural area of Bistrica and provide a venue for cultural and social events to the benefit of all, including actual expectations on the creation of several new local jobs.

Numerous actions are needed on many issues and the key to success is that these processes are firmly managed and the mills properly maintained and operated in the future. An early decision on who should be in charge of the management of the entire process, including the rehabilitation of the watermills and the preparation of a sound business case, is essential to unlock any action.

2. Purpose, location

2.1 General scope

An application form concerning the “Watermills in Bistrica” project (“the project” from now on) was submitted for its inclusion in the “7 most endangered sites in Europe” (7ME) program¹ under the call for nominations of 2023. The project was mainly focusing on the rehabilitation and/or prevention of further degradation of a set of watermills and other small adjacent buildings/structures located nearby the village of Bistrica (“the ensemble” from now on). The watermills form part of the local tradition and old craftsmanship of the local people who live in the village of Bistrica, which is located in a rural area belonging to the Municipality of Petrovac na Mlavi in the South-eastern region of Serbia.

Upon the completion of an appraisal mission carried out by a team of experts from Europa Nostra (EN) and the Institute of the European Investment Bank (EIBI), it soon became evident that the project should encompass much more than just the restoration and continued use of the mills. As a result of that, the experts team believes that adopting a more widely spread integrated approach is the best way to make the project sustainable.

This sustainability could be achieved by implementing a comprehensive plan that incorporates the ensemble into a wider development set of actions. This set of actions must contemplate natural and cultural heritage as triggers to create economic opportunities in the area. Therefore, the initiative may be worthwhile if it deploys a cultural heritage approach to boost economic activity and raises Bistrica residents' standards of living, as well as aims to retain the population in the area. Moreover, it should be also consistent with the tourism development plans of the Petrovac na Mlavi Municipality.

The ensemble is a cultural-historical landmark. It includes one rolling mill used to soften and compact hardwood tissues used in traditional garments and eight watermills grind grains (all of them being operated by private producers/owners). Other interesting buildings in the surroundings are an orthodox church with its churchyard, a farm, five houses (one of which has some small edifices attached), a local community building, an old school and a tavern. Usually, the watermills are in operation from April to September, when the Bistrica stream carries enough volume of water.

2.2 Location and socio-economic characteristics²

The project is located within and around Bistrica, a village belonging to the Municipality of Petrovac na Mlavi, which forms part of the district of Braničevska in the Southeast of Serbia.

Petrovac na Mlavi and Bistrica have 25 900 and 586 inhabitants respectively. Compared to the rest of the region and all of Serbia, the district's and Municipality's populations have decreased more sharply. The population fell by 22% and 25% between 2000 and 2022 respectively, whereas it fell by 20% and 12% in the country and region. The population in the area is aging. The Municipality of Petrovac na Mlavi has an aging

¹ The 7ME program is a joint initiative between Europa Nostra and the Institute of the European Investment Bank (<https://7mostendangered.eu/>).

² This information comes from the Serbian Official Statistics Office and can be consulted in <https://www.stat.gov.rs/en-us/#>

index³ of 200, compared to 156 in the region and 137 nationwide. This is a sign of a very acute demographic decline.

The South-eastern region of Serbia has an employment rate of 45%, which is 5% less than the national average. About 18% of jobs in this region and 15% of jobs nationwide are in the agriculture sector. In terms of income distribution, Serbia has a GDP per capita of € 7 798, while Southern Serbia has a GDP per capita that is 25% below the national average.

In summary, Serbia has continuously lost population since the decade of 1990s, but the Southern region has experienced a higher decline. The Serbian development is mainly concentrated in the Belgrade area, whose population has slightly increased in recent years. The rest of the country and, especially, the rural areas are lagging behind. It is also a fact that the unemployment rate of South-eastern Serbia for young people (less than 30 years old) is 22% whereas is 16% at the national level (13% in the Belgrade area). This indicator displays a remarkable lack of opportunities in the region.

3. Context

Bistrica, a village forming part of the Municipality of Petrovac na Mlavi, occupies a position next to the stream of the same name (a tributary of the river Mlava and, afterwards the Danube). The first preserved mention of the village can be found in the Charter of Prince Lazar, issued during the foundation of the Gornjak monastery in 1387.

The specific location and natural conditions of this area have led to the creation of a unique rural entity composed of residential and commercial buildings of folk architecture. Part of the village of Bistrica was declared in 1986 as a “Spatial, cultural and historical unit” of great importance. The complex of mills for grinding grain and rolling cloth was created in the period from the 19th to the middle of the 20th centuries and represents a specificity not only of the Mlava region, but also of the entire country of Serbia.

The preservation of the cultural heritage of this part of Serbia and Europe, consisting of traditional buildings that are still in operation to grind grains (neither using electricity nor other fossil sources of energy) and to produce healthier and better-quality flour, contributes to the overall preservation of the natural environment and the style of life of the local community. The development of a sustainable tourism strategy in Bistrica, (situated in an economically underdeveloped area), provides the possibility of fostering economic growth, prevents depopulation and develops female entrepreneurship. It also improves the welfare of women and young people in rural areas and promotes active leisure, while offering a specific experience related to sustainability, nature and culture.

The Municipality of Petrovac na Mlavi has prepared a Tourism Plan that, basically, comprises the following elements/services:

- Rural tourism. This is mainly centred in the SPA centre Ždrelo. There are also several villages that attract a larger number of visitors during different events. The largest number of accommodation capacities in rural households is located on the territories of the settlements of Ždrelo and Malo Laole.

³ Aging index, the number of persons over 65 years for 100 under 16 years old.

- Health tourism. This is also centred in Ždrelo, but also on other potentials available to the Municipality, which include opportunities for psychophysical strengthening of the organism (air, recreation, stay in nature...).
- Cultural tourism. The Municipality holds a few monasteries in a small area (Vitovnica, Reskovica, Saint Trojica...). Some of the monasteries are located on the territory of neighbouring municipalities, but their location gravitates around the Municipality of Petrovac na Mlavi (Gornjak).
- Eco tourism. The geographical characteristics of the area have been attracting active tourists in the recent years, mainly mountaineers and fans of nature.
- Adventure tourism. The relief characteristics of the environment and the proximity of large cities (especially Belgrade) have conditioned the Municipality to become a popular destination for mountaineers and fans of adrenaline sports. There is also a well-maintained climbing trail "Via ferrata" in the Municipality, as well as good terrains for paragliding.
- Events, such as music festivals, bike and hiking organisations, and other shows attract tourists and provide income to residents and businesses (millers and rolling millers fairs, beekeepers, Flower Fair, sports and hunting events...).

The Tourist organisation of Petrovac na Mlavi considers that Bistrica and its water mills should form part of the tourism promotion in the area, reinforcing the sustainable production of flour and its derivatives, as well as promoting the commercialization of other local produced products (e.g., honey, nuts, bread).

4. Site description

4.1 Overall approach

The experts team considers that the enhancement of the nominated site goes beyond the simple rehabilitation of a set of grinding watermills and the rolling watermill. It must comprise the whole village of Bistrica, being the final objective of the initiative boosting the economic growth of the area using the water and the rolling mills still in operation as primary tourism attractors.

4.2 State of conservation of the nominated site

The area contains in total ten watermills recognised as national cultural monuments since 1986, and thus put under protection of The Regional Institute of Monument Preservation. With the exception of one rolling watermill, the rest are used for producing flour or similar products, one was recently restored, and the last one is completely abandoned and, because of its very bad conditions, will not be restored. The list of the watermills, following the river flow are:

- 1- Tomaška valjavica (rolling mill)
- 2- Milanova I Nedeljkova vodenica (recently restored)
- 3- Ružanska vodenica
- 4- Pavićevska vodenica
- 5- Velika vodenica (also known as "the Great Watermill")
- 6- Julanska vodenical

- 7- Tomaška vodenica
- 8- Milisavčiča vodenica
- 9- Zdravkovića vodenica (abandoned)
- 10- Ivkova vodenica

Except for the Great watermill, all of them are situated on the right margin of the river. The path along which the mills are located runs along 2 kms in parallel to the Bistrica stream from the waterfall (signalled at right-bottom end of the map) to the left end of the village of Bistrice, as it is shown in the following picture (which is used for touristic purposes).



All water mills operate in environmentally friendly manner, only using the power of water stream for moving a set of bottom propellers that, by means of a very simple transmission mechanism, drives a system of two stones (one static and the other rotating). In this way, grains (corn, wheat, oats, barley, buckwheat...) imprisoned between the two stones are ground to produce high quality virgin flour. The rolling mill operates on a similar water energy principle but, instead of the two rolling stones system, the moving mechanism manages two heavy mallets that compact traditionally made textiles.

In total, 8 watermills need to be restored (that is, 1 rolling mill and 7 grinding mills). The state of the watermills still in use varies from one to the other. In general, the mills located in the Bistrice village look in better condition than the others (located upstream). However, except for Milanova I Nedeljkova vodenica, the level of conservation of the mills can be deemed as under urgent need for rehabilitation. However, none of them appear to be in grave risk of collapsing, save from the Velika watermill.

After consultation with the Regional Institute for the Protection of Cultural Monuments of Smederevo, it was stated that, to precisely evaluate the restoration needs of each individual building (holding the mills), it is first necessary to carry out a detailed analysis to diagnose the existing conditions and, afterwards, to elaborate a conservation and

restoration project, basically including the identification of all necessary works and a preliminary estimation of investment costs.

Upon an on-site visual assessment, primary conclusions arise as follows:

- Most of the mills require cleaning and painting inside and outside, as well as, in several cases, repairing the floors, walls and ceilings.
- It seems that, in general, the grinding stones are in good enough shape to grind flour efficiently (to be verified).
- The water from the Bistrica stream is carried by muddy channels to most of the mills, some of which are overrun with wild vegetation. The gates to stop or let pass the water are manual and rather basic.
- When the rainy season begins again every year, the channels and the river basin need to be thoroughly cleaned to ensure a fair flow of water and to avoid further deterioration of the environment.
- The biggest current danger concerns the Velika watermill, as far as it is under an imminent risk of collapsing because the Bistrica stream's torrential flow is severely and continuously degrading the two riverbanks, on top of that on the right side the mill is located.
- The fences on the bridge at the entrance to the village are also in very bad conditions and the riverbanks down it do not seem very stable.

Overall, it is very urgent to act against further degradation of the mills, due to the permanent risks related to both natural hazards (like heavy rains/floods, extreme temperatures) and human factors due, among other reasons, to insufficient documentation about the historical significance of the mills. Nevertheless, a special department dedicated to emergency situations functions as part of the municipal government.

4.3 Ownership

The Bistrica watermills are in private hands. Families have inherited them over time. Currently, the mills are owned by 61 families, each one having a precise number of days per month assigned for grinding grain during the operational season (according to their inherited property rights). All owners are members of the Association of Millers of Bistrica (ref. Annex B).

4.4 Accessibility to the watermills path and Bistrica

The Municipality of Petrovac na Mlavi is situated Southeast of Belgrade and connected to the State route 161, running towards Eastern Serbia. Several local roads provide good connection between the village of Bistrica and the municipal centre. Bistrica is reachable by public bus every day from the municipal centre and taxi service is also available.

The watermills are geographically accessible, but to serve as tourism attractions, they require better basic infrastructure and services. There are eight mills that are still operational and have historical and touristic value, which give the local population the

chance to become more economically independent and involved in the tourism industry. They would become more significant as historical and tourism destinations if additional preservation, protection and visitor poles of attraction and services would be put in place (e.g., in the form of a dedicated outdoor museum or a baker school for preparing traditional bread with the mills' produced flour).

4.5 Urgent works

The most urgent intervention requires the stabilisation and consolidation of the riverbanks next to Velika watermill. This mill is on the left bank and the pedestrian wooden bridge that gives access from the main road to the village is about to collapse. There is a project already elaborated to intervene over 63 m along the Bistrica stream (consolidating the riverbanks on the two sides) and to build a new bridge. Along the Bistrica stream, there are other sections that require action, especially at the entrance of the village.

In general, the mills need to be cleaned and restored in order to be displayed as a tourist attraction. However, for the mills to be a tourist attraction guests should be permitted to witness how the mills operate. That is, to watch the grounding and to provide facilities for visitors to buy the product in situ. This requires a guaranteeing/operational agreement with the mills' owners.

5. The proposal

One strategy to address the region's demographic crisis and lack of economic opportunities is promoting tourism. This situation extends beyond the Branicevo district and affects all of Serbia, apart from the Belgrade area.

The political administration and civil society, including the Association of Women and the Association of Millers of Bistrica, agree that the village of Bistrica should be promoted to attract tourists to the Petrovac na Mlavi Municipality. In order to generate possibilities to increase economic activity, the Municipality sponsors events like festivals and exhibitions over the year, in particular during spring and summer seasons. The neighbours see this opportunity to sell crafts and other locally produced goods (like traditional cloths).

The Municipality of Petrovac na Mlavi has signalled the village of Bistrica as a tourism attractor due to the existence of the old water and rolling mills. The village itself maintains its image of a rural community. The 2021-2025 Tourism Development programme states that Bistrica, with its mills, embodies the uniqueness of the Branicevo district. Recently, the mills have come to life proving that the promotion of a mills brand could form an interesting product within the tourism offer of the Municipality. This is also a guarantee of sustainability of this domestic handicraft. The promotion of the watermills also involves the idea of a sustainable way of producing food (primarily flour, but also other natural products like honey or nuts).

Against this backdrop, the Municipality of Petrovac na Mlavi has presented the following proposal to the 7ME program:

- Activity 1: Rehabilitation of the riverbanks and construction of a wooden bridge for protection against torrential waters near the Great Watermill. The project plan includes the construction of a retaining terraced wall on the right bank of the river

and a coastal fortification on the left bank where the mill is located, with the aim of preventing the landslide of the banks and the collapse of the mill itself and the local road running in parallel to the stream. It is also planned to build a new wooden bridge to substitute the old one at the entrance to the village, which is also badly damaged.

- Activity 2: Development of a sustainable Tourism Development Programme that entails the protection the mills path as an open-air museum showing these facilities (and those attached) along the Bistrica mills path. The electrification and lighting of the path, which leans right next to the water mills, was recently completed, forming part of the Tourism Development Program of the Municipality of Petrovac na Mlavi 2021-2025.

In addition, the Tourist Organisation is willing to open a “Rural hub” for selling local products and making visible the watermills operational characteristics (including their historic values). This premise, which would be located in an existing unoccupied building in centre of the village, might be also used for organizing dedicated courses and other cultural events.

6. Implementation

6.1 Organization in charge of the project:

The Municipality will supervise the rehabilitation of the riverbanks and the bridge. The project documentation related to the rehabilitation of the banks of the Bistrica stream at the location near Velika vodenica was completed in January of 2022.

The “Department for local economic development” of the Municipality of Petrovac na Mlavi has issued the legal documentation stating that an EIA is not necessary, because of the size of the intervention and because the implementation of the project is not expected to have a negative impact on the environment.

The technical project follows the recommendations of the “Regional Institute for the Protection of Cultural Monuments” and the technical conditions from the “Srbijavode” (public water company). The Municipality of Petrovac na Mlavi has issued all necessary permits after the presentation of the technical project in January 2022.

6.2 Rehabilitation

The Municipality of Petrovac na Mlavi will also be responsible of the rehabilitation of the mills with the agreement of owners and the Association of Watermills. The two additional necessary partners to oversee that the rehabilitation project preserves the visual identity of traditional buildings are:

- Local Native Museum of the Municipality of Petrovac na Mlavi, since the Watermills path has been declared a spatial, cultural and historical entity of great importance (since 1987) by the Regional Institute for the Protection of Cultural Monuments Smederevo.

- The above-mentioned Regional Institute for the Protection of Cultural Monuments has to elaborate or supervise the rehabilitation project of the mills and the path.

6.3 Management

In spite of their different nature, the Municipality (public authority) and the Association of Bistrica Millers (private owners) have been collaborating since a long time under a very good ambiance and their intention is to continue this agreement in the future, in particular in relation to the purposes of rehabilitating the mills and carrying out their attached/complementary actions. Details about this collaboration are unknown for the time being, but both parties have demonstrated their good intentions.

6.4 Tourism program for Bistrica

The Tourist organisation of the Municipality of Petrovac na Mlavi will be in charge of elaborating the Tourism program of Bistrica, being its main objective the improvement of economic and social progress in the area which contemplates the following expected outcomes and potential benefits:

- Protection and prevention of further degradation of cultural and historical heritage.
- Increasing tourist flows
- Promotion and revitalisation of old crafts and local products

Attached at the entrance of the mills, the Tourist organization will stick a digital presentation through QR codes as follows:

- The content of the QR codes would be specific for each mill, with the introductory photo being standardized for each mill and representing a map of the mills (so that tourists in the area know where they are located)
- For each mill, the content would include its main characteristics and values, history, family tradition, 360 video, photos and shorter video materials.

Some further details on tourism issues can be found in Annex C

7. Procurement

The procurement for carrying out the necessary works will follow the Serbian legislation, which is aligned with the EU public procurement except in the case of linear infrastructure projects.

8. Environment and social impacts

8.1 General services

The implementation of a successful Tourism program would mean the increase of visitors to Bistrica. It would thus be necessary to carry out an impact study to consider the affection of services currently provided to the population. Among others:

- Solid waste. Currently, the village has an organised collection of solid waste in dedicated containers, which are taken out by the local utility company and transferred to a station with a recycling yard. It is likely that the amount of solid waste collected will increase with tourist activities, something that the Municipality will have to take into consideration.
- Water supply and sewerage. The Municipality has undertaken improvements in this area and the Bistrica council manages water supply. Sewerage works through a system of septic tanks, which are currently being transformed into ecological septic tanks. This may be suitable for the current rural environment of Bistrica, but it would need to be carefully controlled to avoid the pollution of the stream due to the increasing economic activity.
- Natural environment: An increased use could damage the natural environment. It will be necessary to carry out a management plan of the natural spaces and implement controls and supervision, as well as providing the necessary infrastructure.
- Energy supply. The electrical distribution network supplies electricity. The water mills path is illuminated along its entire length. In recent years, more and more households are using solar panels, including some of the mills.
- Internet connection. The village is equipped with cable internet and has good mobile phone signal coverage.
- Health services. The Municipality of Petrovac na Mlavi, has a health centre and a general hospital. Ambulances are always available and reach all points needed for the purpose of adequate health care services. There is also many veterinary clinics in the Municipality and, therefore, this situation can be deemed as very favourable for tourists who come with their pets. There is also many dental clinics.

8.2 Environmental impacts

The municipal administration of Petrovac na Mlavi has issued a corresponding document defined by law - a decision stating that the preparation of the aforementioned study is not necessary, because the implementation of the project is not expected to have a negative impact on the environment.

The most relevant natural hazard is due to the very location of Bistrica at the foot of the Homolje mountains and the torrential character of the Bistrica stream that flows through the settlement. Due to snowmelt and the greenhouse effect, in the spring months the river receives a significant amount of water, which has damaging effects on the bed. Nevertheless, the Municipality of Petrovac na Mlavi has an Emergency Protection and Rescue Plan for the territory of the entire Municipality.

Moreover, as everything in nature is connected, it can probably be said that dry periods, as well as periods followed by heavy rainfall that cause floods by torrents, are becoming more and more frequent. The Municipality of Petrovac na Mlavi is not an industrially developed Municipality, but it certainly suffers from the influence of the greenhouse effect. In accordance with this situation, special attention should be paid to such effects in the near future.

8.3. Social impacts

The social impact of the project is yet to be estimated. It is likely that the promotion of tourism in Bistrica and its surroundings would increase the economic activities of the area providing jobs and generating revenues from the sales of local products and handicrafts. Female entrepreneurship has been developed, and in Bistrica there is a women's association "Pomeljarke sa Bistrice".

The stress over social and environment services will depend on the number of visitors and the quality of current facilities. The Municipality should seriously consider this impact when elaborating the Tourism program for Bistrica.

9. Use, production

The project is focused on the use of the watermills to attract visitors. The Petrovac na Mlavi Municipality requires a development plan to deal with the demographic crisis and lack of economic opportunities. The existence of nine water and rolling mills still in operation that provide traditional textiles and high-quality flour in a sustainable way is seen as an opportunity for economic development.

The mills are used during the rainy season when the Bistrica stream carries enough water to move the stones that grinds grain for the owners and other users. Each mill can grind up to 400 kilograms (coarse grinding) or 250 - 280 kilograms (smaller grinding for human use) per day when in operation. Flour can be nowadays bought in every mill, as well as in the households of the owners. The marketing of the flour is still limited.

It is worth noting that after its production, flour needs to be sifted, which is a long and tedious process. Unfortunately, it is not possible to carry out this process by hand if producing a large quantity is required (as an example, in the island of Patmos – Greece, a process so-called *butterie* is successfully used). The flour is afterwards packed in a 1 kg paper bag container, which depicts a genuine and distinctive emblem of the watermills of Bistrica, as well as a text explaining the flour's provenance and a brief history of the mills. Nevertheless, this kind of flour cannot be stored for more than 3 months, due to the risk of fermentation.

Against this background, the sanitary conditions in which the flour is produced are unlikely following international standards. For instance: aluminium recipients for holding the primarily produced flour should be installed in the mills to prevent the appearance of various parasites and the packaging procedures should be accommodated to modern rules (meaning that it should be carried out using dedicated machines, rather than being done manually).

Notwithstanding, the demand for flour has increased significantly in recent times. The cold method of grinding attracts an increasing number of people from all over Serbia, but also tourists from the region (mostly Bosnia and Herzegovina and Slovenia).

The Municipality wants to transform the mills into a tourism attraction product. To this end, the Municipality is ready to invest in the rehabilitation of the mills with the agreement of their owners. Complementarily, it would be necessary to allow visitors to watch the grinding process with adequate explanations and provide flour ground from the mill in sufficient quantities. These services would require an agreement between the

Municipality, the individual owners, and the Association of Watermills to ensure that the provision of services to the visitors is of high quality.

10. Operation and maintenance

In the past, the production of the mills supported the economy of local families, while today it is mostly an additional income. This supplementary income is made by directly selling flour milled in mills or by charging for grain milling services (the production process itself). Unfortunately, this income seems not to be enough to invest in the rehabilitation of the mills and, although the mills are in operation, the risk of further deterioration is not negligible at all.

For the project to be sustainable in the long term the costs related to the proper operation and maintenance of the mills themselves, including those of the streambeds, should be taken into serious consideration. On top of that, the Municipality should also consider the external costs induced by using Bistrica as a new tourism destination.

11. Investment costs

The project has not yet been defined in enough detail yet. Therefore, any estimation of costs prepared at present may only be very broadly indicative. However, in order to help understanding the framework/dimension of the project, an estimation is provided, with the certainty that it will need to be continuously revised and refined as the project advances. This costs estimation includes, for the time being, three components:

1. The urgent rehabilitation of the riverbanks next to the Velika watermill. The Municipality has already approved a project to restore the riverbanks and the construction of a new access bridge with a budget of € 235 000 (to be reviewed and updated).
2. The rehabilitation of the mills. This would involve the complete rehabilitation of the facilities and the restoration of the water channels. The Regional Institute for the Protection of Cultural Monuments Smederevo may either estimate or supervise the assessment of the current situation and the preparation of the technical documentation. Unfortunately, no budget is available yet.
3. The elaboration of a Tourism program for the village of Bistrica that considers the creation/promotion of different tourism products, such as the mills path, the marketing of local goods and other attractors. The Tourist Organisation proposes to finance this component with the EIB grant.

The experts team considers that the investment necessary to launch the project needs to be better and carefully either reviewed or elaborated for the following reasons:

- The Bistrica stream riverbanks look very deteriorated at the entrance of the village downstream from the Velika watermill. However, the project approved for the rehabilitation of the riverbanks does not cover the entire area under risk. The cost necessary to protect this additional section of the river would be the result of a complementary project.

- In addition, the riverbank is invaded with vegetation. It would be essential to clean it to increase the water flow capacity. This means that the investment costs must include maintenance costs.
- The complete rehabilitation of each mill should include, at least: cleaning and recycling of waste; restoration of soils, walls, and ceilings; interior and exterior painting; proper lighting/ventilation and improvement of comfortable conditions for the users; adaptation of the entire flour production process to international sanitary standards; informative tools. Keeping in mind the associated uncertainties, it can be estimated that the rehabilitation of each single mill, would require an initial investment between € 5 000 and 15 000.
- The study for the rehabilitation of the mills should also include a sound estimation of the operation and maintenance costs incurred over time. The operation must consider the possibility of visitors to watch the process on site, including relevant descriptions, likely being performed by local guides.
- The Tourism program should include a cost/benefit analysis taking into account the impacts related to promoting visitors' activities in the village, as well as the pressure caused on cultural and natural heritage by the overuse of the different facilities (namely the mills).
- The social impact of the project should also be somehow evaluated, in particular in terms of generation of new employment and the identification of associated training requirements.

Moreover, due to the frequent changes in Serbian market prices, an in-depth reconciliation of the bill of quantities and the costs estimates are very likely to be carried out at this moment in time. Therefore, some further analysis, forming part of a sound business case should be prepared.

12. Economic review and financing possibilities

12.1 The economic impact

The village of Bistrica has received up to 7 000 visitors a day in recent several events organized during the visitors' season (ref. Annex C). Its cultural and natural heritage comprises not only the watermills, but also the memorial place of the first Serbian Marathon Olympic participant (Dragutin Tomašević) and several hiking and climbing facilities in the surrounding hills. The village can also provide local products and handicrafts.

The project will promote and expand different elements which are already going on but bringing them some additional value added. Its successful implementation would professionalise the tourism offer in Bistrica, generating new economic activities. It is expected that this would stimulate private activities generating businesses and job opportunities in the whole Petrovac na Mlavi area.

However, to be able to estimate the economic impact, it is required to carry out a cost-benefit analysis where the Municipality main objectives are clearly presented.

12.2 Financial viability

The operating mills have been functioning without any financial problem up to now. They are made of natural materials and the grinding mechanism consists of two stones (static and rotary) that works without the use of electricity but hydropower. In summary, they do not require a lot of financial support if they were expected to continue providing the same services as until today. However, if the mills are going to be transformed into tourism attractors, they would require updating actions, more and better maintenance, regular cleaning, painting and the upkeep of the water channels and gates. They also would need dedicated personnel to show the mills functioning and to sell the subsequent products.

Unfortunately, financing the project would be complicated, as funds for such investments in the Municipality are scarce. In view of the nature of the project, mobilising grant funds (or even crowdfunding) is highly desirable as the generated income needs would very unlikely be capable of fully repaying a standard investment loan. In the medium or long run, the Municipality could, probably collect enough funds to enhance the tourism product through other means (to be explored).

Serbia is an EU candidate country and, therefore, this project may perhaps be object of Rural Development funds. In such a case, to either receive a grant or a loan, the project documentation would likely need to include a simple but straightforward business case (ref. Annex D).

13 EIB Grant

The EIB has provided a grant of €10 000 to each project selected for the 7 most endangered program to act as a catalyst to advance the project or to carry out some essential priority investment. Three main activities have been identified as priorities:

- Preparation of a program document related to the development of a sustainable tourist product in Bistrica
- Visibilities and promotional activities
- Presentation and education equipment for the Rural Hub in Bistrica

The expert team considers that the best suited entity to coordinate these studies and later on supervising the works is the Municipality of Petrovac na Mlavi.

Ideally these studies should be undertaken by someone familiar with the local cultural scene with an economist/financier and an architect/engineer working together, perhaps from consultants based in Serbia, likely reinforced with some international experts. The output would be a report covering the four main themes cited above, probably issued in phases. This feasibility exercise needs to be complemented later by further work as all aspects have not been covered as the focus has been on the key rehabilitation points. Detailed Terms of Reference will need to be established following discussions and these need to be adapted to the available funds.

The objective is that the Grant should act as a catalyst and be as effective as possible in the interests of the project. The studies as outlined above should ideally be considered as a single set. In this case the cost would probably exceed the value of the Grant and

so other financing would be required to complete this phase. This should not be a problem for the Grant, but the complementary amount would need to be clearly available before proceeding.

Further discussions and inputs are required on defining the activities to be included and the means of undertaking the rehabilitation works of the watermills. If other funds are unavailable to complement the Grant, a reduced definition will be necessary. Timing is important as normally the EIB Grant should be committed before the end of 2024.

14. Conclusions and recommendations

The conclusions of this project are the following:

- Bistrica and the Municipality of Petrovac na Mlavi are suffering a demographic crisis, as in the rest of Southern Serbia. This crisis is partly derived from a lack of economic opportunities, in particular for young people.
- The Municipality of Petrovac na Mlavi has identified, among others, Bistrica and its watermills as a possibility to promote tourism and economic growth in area.
- The use of natural and cultural heritage can promote economic opportunities.
- The Municipality of Petrovac na Mlavi is the only institution capable to carry out the project. The other stakeholders, such as the Association of Millers and the Women Association of Bistrica, are willing collaborators but cannot act as promoters.
- The people of Bistrica appear to be supportive of the initiative.
- The area has the potential to grow as a tourism destination.
- The rehabilitation of the water and rolling mills is necessary to market the village of Bistrica.
- The continuous water overflows of the Bistrica stream oblige the Municipality of Petrovac na Mlavi to implement measures to avoid further deterioration of the Velika watermill, as well as of the watermills path and access road to village.
- A Tourism program of Bistrica is required to prioritise objectives and assign financing. In addition, a CBA is required to signal the costs and the benefits of the tourism development of the area to anticipate problems.
- To be deemed a financially feasible undertaking, the municipal effort requires additional research.

The following recommendations are made within this context:

- The Municipality of Petrovac na Mlavi has to play the main role and be the promoter of the project.
- For the project to be financeable, it needs a cost-benefit analysis, including a business case that helps to assign priorities.
- The Municipality must undertake an analysis of the public and private infrastructure to provide services to the visitors.
- The watermills and Association of millers have to sign a compromise with the Municipality with following points.
 - The Municipality will restore the mills.
 - The owners will collaborate to show the grinding process to visitors.
 - The owners will maintain the mills to an optimum state once they have been restored.

- The most urgent issue is the rehabilitation of the riverbanks to stop further deterioration of the watermills, channels and road infrastructure.
- The Municipality has to proceed to the adequate cleaning of the vegetation that invades the riverbed.

In summary:

This is a worthwhile and necessary rehabilitation of a distinguished architectural heritage ensemble which is long overdue. It would enhance this key location and provide a venue added for cultural and social events to the benefit of all.

Numerous actions are needed on many issues and the key to success is that these processes are firmly managed. An early decision on who should be responsible for implementing the entire project is essential to unlock any action.

In the meantime, profiting the EIBI grant, the Municipality of Petrovac na Mlavi should immediately carry out the preliminary works (priority activities) related to the project preparation, as mentioned in point 13 of this report.

ANNEX A Maps and pictures

An overview of the condition of the Bistrica stream's surroundings



Details of channels to watermills



Waterway leading to the Tomaska Rolling Mill and its surroundings.



ANNEX B Statute of Water-millers of Bistrica (extract)

The Association of Citizens - Association of Water-Millers of Bistrica, was founded as a non-partisan, non-governmental and non-profit association, to achieve goals in the field of architectural and cultural protection, environmental protection and sustainable development and improvement of rural tourism.

The goals and tasks of the Association of Water-Millers of Bistrica are: preservation of the ethnic style of construction, protection of goods and monumental value, preservation of the traditional production of healthy food and, in this sense, the preservation of old Serbian traditions and old crafts, with special attention to the restoration and reconstruction of old mills and rolling mills on to the territory of Serbia and nurturing and preserving the miller's craft, advocating for the development of rural tourism and the use of clean and renewable energy. In order to achieve its goals, the Association of Water-Millers of Bistrica, in particular: promotes architectural and cultural values of natural beauty, tourist events, production of healthy food, organizes round tables, seminars, educational workshops, manifestations, as well as other cultural and tourist events with the aim of affirming the values from the previous paragraph participates in the rehabilitation, adaptation and reconstruction of objects of cultural and ethnological heritage, with the aim of nurturing the ethnic style of construction, especially the mill realizes other programs and projects with the aim of nurturing and popularizing the old trades, especially miller, rolling mill and carpentry, practical presentation of the application of renewable energy sources with an indication of their importance, development and application in the world, organizing expert workers within the framework of research and development projects on the application of renewable energy sources as well as the use of clean and renewable energy, connecting and establishing cooperation with similar companies in the country and abroad , the publication of Bulletins and magazines, popular brochures and books as well as electronic editions of professional works, the Association of Water-Millers of Bistrica, carries out its activities on the territory of the Republic of Serbia.

ANNEX C Development of sustainable tourism in the area

The development of sustainable tourism could ensure the preservation of the mills and retention of population by offering job opportunities. However, this development has to be done with care to avoid unwanted effects provoked by mass tourists. It also needs other infrastructures as well as the training of local population.

In Bistrica there are three categorized rural households that provide accommodation services:

- Vladimir Jović's household, which has a categorized catering facility with one accommodation unit and 3 individual beds.
- The household of Gorica Marinković, which has a categorized rural tourist household with one accommodation unit and two individual beds.
- The household of Živadin Savić which is a categorized catering facility of the house type with one accommodation unit.

In the course of 2022. Bistrica was visited in average by 7 000 one-day visitors during the favourable season. The largest number of tourists are from Serbia (Belgrade and Vojvodina), followed by tourists from countries in the region (Bosnia and Herzegovina and Slovenia), and a smaller number of visitors from Austria and other European countries.

Bistrica is one of the favourite destinations for lovers of being active in nature. Mountaineers and trekking enthusiasts come here. During the spring/summer months, several hiking events are organized here, like:

- Dragutin Tomašević's Trails is a hiking event that starts in the centre of the village and involves a walk on terrains of different altitudes, all the way to the natural viewpoint - the top of Lukin Kamen (515 meters above sea level). The length of the track is: 15 km (longer course) and 10.7 km (shorter course).
- Dragutin Tomašević International Race is held in Bistrica every year. Race participants run a 10-kilometer stage - from the centre of the village of Bistrica to Petrovac na Mlavi (where the finish line is). Dragutin Tomašević was the first Serbian Olympic marathon runner who participated in the 1912. Olympic Games in Stockholm and was born and lived in Bistrica.

The Assembly of water-millers and rolling-millers of Bistrica organizes tourist tours starting at the first water mill (located at the entrance to the village) and then a visiting each of the nine mills in Bistrica (with a story with the millers about work and life in these traditional buildings). The event ends with a tour of the Valjavica (rolling-mill located at the end of the village) and a rich cultural and traditional artistic program.

Residents of Bistrica are interested in inclusion in the tourism economy and development of sustainable tourism. The Association of women "Pomeljarke" and the Association of millers from Bistrica actively participate in the development of Bistrica, together with the Tourist Organization of the Municipality of Petrovac na Mlavi.

ANNEX D Standard contents of a business case

In order to verify the viability of a project, it is necessary to prepare a sound Business case, which should cover the following elements:

Feasibility and Technical studies

A feasibility study should analyse the full design of the main works to be carried out ('the project'), including:

- Technical studies on the status of each component and identification of technical solutions to be adopted for their recovery/rehabilitation
- Final design of the adopted technical solution
- Preparation of an environmental impact analysis, including mitigation measures during construction and best practice actions during operation
- Strategy for carrying out the procurement of the works and the implementation of the project
- Assessment of the necessary investment costs for the construction of the project
- Assessment of the annual costs for the operation and maintenance of project
- Technical risks assessment, both during the preparation and construction phases
- Preparation of a marketing study, including:
 - Analysis of potential demand, including tourist and local visitors
 - Definition of tariffs and identification of potential subsidies
 - Characterisation of main types of potential events to be organised
 - Preparation of dissemination materials using different physical or digital/electronic support, and media
 - Inclusion of the resulting ensemble in national and international cultural databases and networks
 - Marketing campaign
- Identification of potential sources for financing the project (fundraising).

Economic and Financial analysis

The economic/financial viability of the project should result in the preparation of a cash-flow model covering at least 18 years (3 for preparation and implementation; 15 for operation). The main costs to be considered (per each year) in the economic cost/benefit analysis are:

- Preparation and supervision costs (project design, management and quality control)
- Investment costs related to urgent intervention
- Investment costs for the main works (the core of the project)
- Operation and maintenance costs
- Major repairs, renewals and/or improvements over the asset's life

The main economic benefits are basically related to: (i) the generation of employment (both during construction and during operation), (ii) environmental benefits (e.g. improvement of natural resources), (iii) tourism attraction to the region and creation of indirect new business, and (iv) visibility of the importance of the ensemble. In parallel, the costs to be considered for the financial analysis should include all those forming part of the economic analysis, plus the reimbursement of loans and/or other financial products. In terms of financial analysis, the tangible benefits the project would generate are: (i) revenues from tariffs paid by visitors, (ii) incomes generated by the organization of special events, (iii) revenues produced by other directly related activities (e.g. expositions, merchandising, selling of products), and (iv) subsidies and grants.

ANNEX E Details of mission, persons met, meetings, references

The appraisal team

Charles Pictet. Board member Europa Nostra
Mario Aymerich. Consultant to the EIB-Institute
Lourdes Llorens. Consultant to the EIB-Institute

The report has benefitted from the advice and experience of all three members of the appraisal team whose views are incorporated in the report.

Meetings and persons met

The meeting held in Bistrica on November 7, 2023 was attended by:

1. Stefan Jovanović, member of the Municipal Council of Petrovac na Mlavi
2. Dejan Radovanović, director of the Regional Institute for the Protection of Cultural Monuments in Smederevo
3. Vesna Marjanović, Europe Nostra Serbia
4. Gorica Marinković, president of the Bistrica Water Miller Association
5. Suzana Milošević, Tourist Organization of the Municipality of Petrovac na Mlavi
6. Vedrana Lazarević, Tourist Organization of the Municipality of Petrovac na Mlavi
7. Srdjan Vujatović, Tourist Organization of the Municipality of Petrovac na Mlavi
8. Dejan Bosković, Tourist Organization of the Municipality of Petrovac na Mlavi

The meeting held on November 8 in the Municipality of Petrovac na Mlavi was attended by:

1. Goran Ristić, Deputy Mayor of Petrovac na Mlavi
2. Hristina Đorđević, Head of cabinet of the mayor of Petrovac na Mlavi
3. Žaklina Perić, director of the Local Museum of the Municipality of Petrovac na Mlavi
4. Suzana Milošević, director of the Tourist Organization of the Municipality of Petrovac na Mlavi
5. Vedrana Lazarević, Tourist Organization of the Municipality of Petrovac na Mlavi
6. Srđan Vujatović, Tourist Organization of the Municipality of Petrovac na Mlavi

Mass media communication

With the occasion of the mission, the local television issued a report that can be visualized through this link: <https://www.youtube.com/watch?v=Zj0QPLJBSgM>

References (apart from the diverse information provided by the nominator)

- Tourism Development Program of the Municipality of Petrovac na Mlavi 2021-2025. year:
<https://topetrovacnamlavi.com/program-razvoja-turizma-opstine-petr/>
- Rulebook on the way to prepare documentation related to the development of tourism in Bistrica:
http://demo.paragraf.rs/demo/combined/Old/t/t2020_06/SG_086_2020_001.htm
- Law on Environmental Protection:
<https://www.pravno-informacioni-sistem.rs/SlGlasnikPortal/eli/rep/sgrs/skupstina/zakon/2004/135/8/reg>
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- Watermills within the eastern part of the Carpathian Basin. Dániel Gábor Ozsváth. The International Molinological Society. BM 24. 2022.