

## **FEASIBILITY STUDY**

### Construction of the bicycle and pedestrian path



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1	Annex 4.1: EIA screening decision from the Ministry of Environmental Protection; Environmental protection conditions issued by the Institute for Nature Protection of the Republic of Serbia
2	Annex 5.1: Methodology for collecting basic information for demand analysis

## ABBREVIATIONS

AP	Autonomous Province
BOT	Built-Operate-Transfer
CBA	Cost Benefit Analyses
CDM	Clean Development Mechanism
DI	Ductile iron pipe
DRP	Detailed Regulation Plan
DTD	Danube-Tisa-Danube Canal
EAR	European Agency for Reconstruction
EIA	Environmental Impact Assessment
EIB	European Investment Bank
EIRR	Economic Internal Rate of Return
ENPV	Economic Net Present Value
EPA	Environmental Protection Agency
EU	European Union (from 1992)
EUR	European Euro
FIDIC	International Federation of Consulting Engineers
FIRR	Financial Internal Rate of Return
FNPV	Financial Net Present Value
FOPIP	Financial and Operational Improvement Programme
HE	Hydroelectric Plant
HRM	Human Resource Management
HSE	Health, Safety and Environment
HWTL	High Water Table Level
IFRS	International Financial Reporting Standards
JP	Public Company
LEAP	Local Environmental Action Plan
LED	Local Economic Development
LWTL	Low Water Table Level
MBR	Membrane Bio-Reactor
MSPNE	Municipal Support Programme North-East Serbia
NEAP	National Environmental Action Plan
NES	National Environmental Strategy
NIP	National Investment Plan
O&M	Operation and Maintenance
PE	Public Enterprise
PIP	Project Implementation Plan
PPP	Polluter-pays principle
PRAG	Practical Guide to Contract Procedures financed from the general budget of the EC in the context of external actions
PUC	Public Utility Company
PVC	PolyVinyl Chloride
SME	Small and Medium Enterprises
TOR	Terms of reference
VNG	International Cooperation Agency of the Association of Netherlands Municipalities
WFD	Water Framework Directive

## EXECUTIVE SUMMARY

### Introduction

Acting upon the application submitted by the Golubac Municipality through the MSP NE Serbia, the EAR commissioned VNG International (International Cooperation Agency of the Association of Netherlands Municipalities) to conduct a Feasibility Study for the project "Construction of the bicycle and pedestrian path in the Municipality of Golubac".

This Feasibility Studies will enable the potential donors to consider the possibility to provide grant funds to the project.

The Golubac Municipality is situated in the North-East Serbia in the Branicevo district and it covers the area of 367 km<sup>2</sup>. It consists of 1 urban (the city of Golubac) and 23 rural areas with the average population density of 24 in/km<sup>2</sup>.

#### Purpose of the Feasibility Study

- A basis for financial project appraisal by the EAR;
- Compose a plan for the institutional, organisational and financial setting of the bicycle path construction in the Municipality of Golubac;
- Compose a plan for the implementation of the outlined technical proposal, in accordance with the national and EU legal, regulatory and environmental legislation.

The construction of the bicycle-pedestrian path (bicycle path in short) "Vinci-Golubacki grad" will increase the attractiveness of the tourism offer in the region and it is expected to have a synergic effect with other existing tourist attractions.

The planned bicycle path is part of the EuroVelo 6 route from the Atlantic Ocean to the Black Sea. It connects the most attractive areas within the Golubac Municipality (Vinci – Fortress) and it connects Golubac with its neighboring municipality Veliko Gradiste.

The construction work on the bicycle path along the Danube coast includes strengthening of the river embankments with the impermeable underwater clay layer. This will provide protection from the underground water flows which have been responsible in the past for the floods in the project area and severe economic costs. At the location of the City of Golubac, the River Danube is over 6 km wide, due to the accumulation created by the Djerdap Dam, creating excellent conditions for sailing and river tourism development.

The Municipality of Golubac finances the preparation of technical documentation and costs of permitting in the project preparation phase. The total costs of the preparation phase are estimated as € 90,000. The Municipality already spent € 40,000 for a topographic survey of the bicycle path route



The NIP is planning to provide € 250,000 of financial support to the project and for the remaining amount the grant support will be sought.

#### Scope of the Project

The project is consists of:

- Construction of the bicycle path

#### Overall Objective

- Contributing to the local economic development

#### Specific objectives

- Development of bicycling tourism potentials of the area
- Decreasing flood risks in the area

#### Conclusions and Recommendations

##### General

- The project is in line with the relevant EU directives and also compliant with the requirements set out in the national legislation and regulations.

The following analyses are performed altogether to assess the project feasibility:

- Socio-economic Background
- Technical Analysis
- Environmental Analysis
- Financial and Economic Analysis
  - Institutional and Legal Analysis
  - Organisational Efficiency
  - Project Implementation Plan
  - Risk Assessment

#### Socio-economic Considerations

1. The project area is represented with the Municipality of Golubac, located in the North-East part of Serbia. The Municipality of Golubac is mostly a rural area.



2. The project area has below average percentage of the agricultural land, with 41% of the total land used for this purpose. This is below the average of Serbia (66%), and below the average of the Central Serbia (59%) and Branicevo region (63%).
3. The population density in the project area is 26 persons per km<sup>2</sup>, well below the country average of 84 km<sup>2</sup>.
4. The total population of the project area according to official 2005 estimates is 9,523 corresponding to about 0.13% of Serbia's total population and 0.18% of the total population in Central Serbia. This is slightly less than the official census 2002 data, which amounts to the total of 9,913 inhabitants.
5. The project area's annual population growth trend between the census years 1991 and 2002 is negative at -0.84%, which is below the national average decline rate of -0.10%, and below the Central Serbia average of -0.23% negative average annual growth.
6. The 2005 data show that the number of employed people per 1,000 inhabitants at the project area is 128, which is below the national average of 278 and the Central Serbia average of 281.
7. Analyzing the human capital indicators by education structure, the most characteristic feature is the relative large number of people without formal education. In municipality of Golubac this indicator is 41% and it is above the national and the Central Serbia average.
8. The share of tourism of the Golubac Municipality is above the national and the Central Serbia average, although the tourist activities are not well developed.
9. The town and the whole municipality have few entrepreneurs. Except for a few small firms (up to ten employees) and the usual small private stores and service companies, Golubac has no medium-sized enterprises.
10. The corporate tax rate is set nation-wide by the central government (10%). There were no other rebates on taxation or cost permits mentioned.

#### Technical Aspects

11. All natural preconditions necessary for this project are present.
12. Current absence of main design, in this stage, is a limiting factor for the complete evaluation of needed works for the bicycle path construction, but in terms of general commercial and economic development in the area, the important conclusions can be made.
13. Due to the specific location project carries much wider significance from the technical point of view. It takes an important place in the protection and regulation of use of the river bank and hinterland.
14. The construction of the bicycle path will require ground stabilization (upon the results of the terrain surveys), which will have a positive effect on the other infrastructure in the vicinity.
15. The construction of the bicycle path, as a part of the European eastern bicycle route, will have a strong effect for the local tourism development and it will create

an incentive and need for the construction of bicycle paths in the neighbouring municipalities.

16. The bicycle path construction include different construction and hydro-management works. These works are regularly performed by the companies in Serbia. It is important to note that domestic companies, even at the local level, are trained, experienced and well equipped for this kind of works.
17. The recommended technical solution is appropriate, rational and effective. It has been fully harmonized with the existing urban planning documentation (Spatial Plan of Golubac).

#### Environmental Considerations

18. The proposed development is not expected to have the significant negative impacts on the environment and the local population, if all mitigation measures are taken (See 4.5).
19. The project will resolve the problem of the illegal waste dump sites which were noticed along the planned bicycle path and which present the potential treat to the public health and water quality.
20. The project is expected to have the positive effect on the local economic development and decrease of the number of people emigrating out of the region.
21. Environmental Monitoring plan in the construction and operation phase should be developed.
22. In all activities related to the Danube River, conditions and obligations that Serbia has accepted with international conventions on the Danube protection (ICPDR and DABLAS) must be taken into account.

#### Financial and Economic Assessment

##### Creditworthiness assessment of the Golubac Municipality

23. In case of the Golubac Municipality, the net surplus before financing was insufficient to fund the capital deficit over the observing period. The Municipality of Golubac succeeded in financing the growing investment program by borrowing funds from the commercial banks in 2007. The Municipality of Golubac is using at the moment a long-term loan from the "Banka Intesa" from Belgrade for investing in infrastructural projects like water supply and sewage network. The value of the loan is € 467,241.51 with the payment period from 2008 to 2017.
24. The municipality of Golubac had not used their entire legally prescribed borrowing limit in the 2008. Taking into the consideration the loan that was already taken in 2007; the Municipality of Golubac is creditworthy for additional € 201,000.

Table 0.1 Overview of the investment costs and financing plan (excluding VAT) (in €)

Project Investment Outlays		Project Financing	
1. Bicycle/pedestrian path	5,522,222	EAR Requested grant	4,417,777
		NIP	1,104,445
<b>TOTAL</b>	<b>5,522,222</b>	<b>TOTAL</b>	<b>5,522,222</b>

### Financial Analysis

25. Sustainability of the project is assured in the investments phase. In the operational phase revenues are not foreseen. Operational costs are not significant.
26. The contribution required from EAR will cover 87% and the rest will be covered by the NIP.
27. The economic performance of the project is sufficient (ENPV is € 19,555 and EIRR is 6%). This quantified benefit is due to the additional income derived from the supplementary overnight stays of the foreign bicyclists, and benefits quantified from the costs on fighting off the floods. The bicycle path will increase accessibility and usability of the Golubac area for tourists.
28. There are supplementary social benefits which were not possible to quantify: increase in the quality of life of the inhabitants, increase in the overall attractiveness of the area due to the integration of several different tourism types (hiking, cycling and sailing).
29. The project is very sensitive to the two key variables: investment costs and tourism flow (cyclists). Increase in the tourist flow is strictly related to the success of the ongoing marketing and promotion campaign promoted by GTZ.
30. Since the benefits come mainly from tourist increase, it is crucial that Golubac municipality, in short term, adopts a proper tourist strategy. In regard to this the support of GTZ will be essential.

### Institutional and Legal Aspects

31. The project and its institutional setting are in line with the relevant legislative framework in Serbia, in compliance with national strategies and policies and involve institutions that will continue to exercise their legal rights and duties in respective sectors such as the tourism development sector and the provision of services.

32. Project of Construction of the bicycle path “Vinci Tvrdjava – Golubacki Grad” involves relevant institutions with legal rights in water sector, environment protection, tourism and communal services.
33. Consultant has not identified possibility of inadequate supervision in project implementation.
34. The Municipality of Golubac has the necessary legal background and provisions in place to implement the project. Support of both municipal and national authorities is required to strengthen the institutional setting.
35. The municipality prepared local Tourism Development Strategy with support of an external party. The strategy covers the period 2007 – 2012 and was adopted by the Municipal Assembly in 2007. Development of such a Strategy is not a legal requirement as per Law, but was felt to be important for the future development.

#### Organisational Efficiency Aspects

36. Local economic and tourism sector development is currently responsibility of the Department of Economy and Infrastructure.
37. Education structure is relatively favorable and share of employees with university/college is almost 1/3, which is satisfying for small municipalities in Serbia.
38. Planning is responsibility of the people employed in Department of Economy and Infrastructure. The most challenging issue of the department is transforming of local economic development plans into practice using planning tools and instruments.
39. Current structure is not an obstacle for tourism development. Most of the activities relevant to tourism development are concentrated in the Department of Economy and Infrastructure. Local Tourist organization currently covers adequate set of activities. Less ad hoc solutions and better coordination with the municipality will be sufficient to build its capacity.
40. There is no department or (sub) unit for LED office or for tourism development.
41. New Law on Local Self-Government is favorable for goals of tourism development and its realization. LED office activities could be conducted in the Mayor office through Mayor Assistant as responsible person. Position of LED office could easily fit into the new organization structure.
42. New LED office organized in such way should cover: organization & management of the department; realization of tourism policy and proposals of the tourism infrastructure improvements; coordination of the activities; preparing the proposal of tourism policy and commenting the enacted municipal legislation and decisions for the point of view of attracting investments in tourism infrastructure of municipality; cooperation with all units of local administration, as well as cooperation with regional and provincial institutions as well as with Republic of Serbia; continual effort in attracting investors in supporting tourism development; close coordination with National Investment Plan office and Tourism Fund; potential of cross border cooperation in order of attracting EU funds.
43. Solving the problem of the project management and improvement of PR skills is essential for successful fund raising. Extensive trainings of municipal staff in

project cycle management and fund raising are recommended. Further Technical assistance in urban design is necessary for making Golubac more attractive for investors and tourists.

44. Support of marketing and information activities; development of marketing plan for the region; and selected marketing measures such as regional marketing brochure, information flyer for selected offers is advantage. Training and working plan for the tourism information center Golubac (not effective at the moment) are in the line with supporting marketing activities.
45. It is recommended to support the cooperation among the owners of the tourism enterprises, the municipalities and organizations; i.e. organization of workshops to elaborate development directions and initialize joined marketing activities.
46. Regional networking and cooperation could create effect of economy of scale in promotion and fund raising. The Master plan for lower Danube is prepared and the cross border cooperation is active.

#### Project Implementation Plan

47. The Municipality of Golubac will finance the required land acquisition along the bicycle path route. It is a matter of few parcels owned by private persons and the Municipality is in the process of negotiating the price with their owners. The value of this acquisition is already calculated in the project cost for the bicycle path. As an alternative it is possible to by-pass these parcels.
48. It is expected that the remaining documentation and permits will be obtained by the summer 2010, and that the project will be ready for tendering in the winter of 2010. The spring of 2011 is an indicative earliest time for the start of the project implementation.

#### Risks identification

49. Urban design issues could become bottle neck in project development. It is necessary to solve the issues of urban planning and prepare relevant plans.
50. Underdeveloped capacity of the municipality in project cycle management, urban planning, IT skills, and promotion is an obstacle for the implementation of any project.
51. Technical documentation has not been completed.
52. There is a very limited number of designers with experience in the area.
53. The banks of the Danube river are known to be geo-mechanically very unstable area
54. Environmental pollution due to the construction works (e.g. oil leakage, noise, air pollution)
55. Low risk of flooding of the project area
56. Co-financing is not provided from the national side

- 57.** Increase of the cost. An increase of the cost of the project will undermine the financial sustainability and will harm the good economic impact of the project
- 58.** The area is not sufficiently promoted for tourism
- 59.** Supplementary tourist facilities and new urban layout are not put in place. The bicycle path can not be by itself sufficient in order to spin the local tourism development



# 1 INTRODUCTION

## 1.1 Preliminary and background assessment

Acting upon the application submitted by the Bela Crkva Municipality through the MSP NE Serbia, the EAR commissioned VNG International (International Cooperation Agency of the Association of Netherlands Municipalities) to conduct a Feasibility Study for the project "Construction of the bicycle-pedestrian path in the Municipality of Golubac".

This Feasibility Studies will enable the potential donors to consider the possibility to provide grant funds to the project.

The pre-feasibility study for this project was prepared in the December 2007 under the scope of the project "Municipal Support Programme North-East Serbia" (MSP Northeast Serbia).

The conclusion that was reached in the pre-feasibility study is quoted here:

"The assessment of the effects of the project to support the Municipality of Golubac to improve the attractiveness of the region by constructing of walk & bicycle path "Vinici-tvrđjava – Golubac – Golubacki Grad (Fortress)" and reconstruction of the marina is good."

The Golubac Municipality is situated in the North-East Serbia in Branicevo region and covers the area of 367 km<sup>2</sup>. It consists of 23 rural and 1 urban areas (city of Golubac) with the average population density of 24 in/km<sup>2</sup>. The geographic borders of the Municipality are the valley of the river Pek in the east, the hills in the south-east and the River Danube in the north.

The River Danube is the important international corridor and because of the accumulation created by the Djerdap Dam it is over 6 km wide at the location of the City of Golubac creating exceptional conditions for sailing and river tourism development.

The City of Golubac is on the road from Belgrade to the National Park Djerdap and the Djerdap dams. The road carries on to Kladovo and Negotin in the east and represents the major connection to this part of the country. The City of Golubac is 130 km from Belgrade. However, only 60 km of the road from Belgrade is a motorway while the rest is a narrow regional road. This part of the road is in poor condition and it passes through the villages on the way.

The City of Golubac has a direct bus connection with the other parts of Serbian and with Germany, Austria, Switzerland and Italy. There is no railway connection.

The German Technical Cooperation (GTZ) is currently providing support to the development of tourism sector along the Danube in Serbia (Danube Bicycle Route from Budapest to the Black Sea). The support is mainly focused to the Golubac and Veliko Gradiste communities. This support will continue to 2009.



## 1.2 Project objectives

### Overall Objective

- Contributing to the local economic development

### Specific objectives

- Development of bicycling tourism potentials of the area;
- Decreasing flood risks in the area.

The construction of the bicycle path “Vinci-Golubacki grad” will increase the attractiveness of the tourism offer in the region and it is expected to have a synergic effect with other existing tourist attractions. The tourism development will increase the number of new jobs in the region and decrease the number of people leaving; thus, contributing to the overall local development.

The bicycle path connects the most attractive areas of the Golubac Municipality (Vinci – Fortress) and connects Golubac with its neighboring municipalities Veliko Gradiste (Tourism Center Silver Lake).

The construction work on the bicycle path along the Danube coast includes strengthening of the river embankments with the impermeable underwater clay layer. This will provide protection from the underground water flows which have been responsible in the past for the floods in the project area and severe economic costs.

## 1.3 Scope of work of the Feasibility Study

The scope of this study includes analysis of the activities and results of:

- Construction of the pedestrian and bicycle path;

The following analysis will be performed:

- Socio-economic analysis;
- Technical analysis;
- Environmental analysis;
- Financial and Economic analysis;
- Legal and Institutional analysis;
- Project Implementation Plan;
- Risk Analysis.

The feasibility studies for the projects are undertaken with the purpose to

- Demonstrate in detail the feasibility of the proposed project to achieve its objectives;
- Prepare the documentation necessary for appraisal by an (Inter)national Financing Institution;
- Obtain the commitment of the parties involved (Municipality, Local or International Banks, EAR) to provide the necessary financial means to implement the project;
- Verify that the project is prepared in compliance with the EU and national regulations.



## 2 GENERAL SOCIO-ECONOMIC BACKGROUND

### 2.1 Introduction

This chapter describes the general, social, economic and financial background information of the municipality Golubac. Therefore, this chapter concentrates on Golubac municipality and also provides background information on the Branicevo region.

### 2.2 Socio-economic structure (general statistics and local economy)

The project area is represented with the municipality of Golubac, located in the North-Eastern part of Serbia. Municipality of Golubac is mostly a rural area.

The project area has a below the average percentage of agricultural land with 41% of the total land used for this purpose. This is below the average of Serbia (66%), and below the average of the Central Serbia (59%) and Branicevo region (63%).

**Table 2-1 Geography**

Indicator	Serbia	Vojvodina	Central Serbia	Branicevo region	Golubac
Total area in km2	88.361	21.506	55.968	3.865	368
Do, as % of total	100,0%	24,3%	63,3%	4,4%	0,4%
Agricultural area as % of total	66%	83%	59%	63%	41%

Source: Municipalities of Serbia 2006, Statistical Office of Republic of Serbia March 2007

#### 2.2.1 Demography

The total population of the project area according to official 2005 estimates is 9,523 corresponding to about 0.13% of Serbia's total population and 0.18% of the total population in Central Serbia. This is slightly less than the official census 2002 data, which arrived at a total of 9,913 inhabitants.

The project area's annual population growth trend between the census years 1991 and 2002 is negative at -0.84%, which is below the national average decline rate of -0.10%, and below the Central Serbia average of -0.23% negative average annual growth.

**Table 2-2 Demography**

Indicator	Serbia	Vojvodina	Central Serbia	Branicevo region	Golubac
Population 1991 census	7.576.837	1.970.195	5.606.642	220.225	10.882
Urban	4.126.728	471.315	3.025.802	68.481	-
Other	3.450.109	1.498.880	2.580.840	151.744	10.882
Population 2002 census	7.498.001	2.031.992	5.466.009	200.503	9.913
Urban	4.225.896	531.146	3.073.601	69.064	-
Other	3.272.105	1.500.846	2.392.408	131.439	9.913
Annual growth 1991-2002	-0,10%	0,28%	-0,23%	-0,85%	-0,84%
Urban	0,22%	1,09%	0,14%	0,08%	#DIV/0!
Other	-0,48%	0,01%	-0,69%	-1,30%	-0,84%
Population estimate 30-6-2000	7.516.346	2.031.426	5.484.920	201.914	9.995
Population estimate 30-6-2005	7.440.769	2.012.918	5.427.851	197.194	9.523
Annual growth 2000-2005	-0,20%	-0,18%	-0,21%	-0,47%	-0,96%
Population density (2005, in persons/km2)	84	94	97	51	26

Source: Municipalities of Serbia 2006, Population Census 2002, Statistical Office of Republic of Serbia

When analyzing the trend during the period 2000 to 2005, however, both Serbia and Central Serbia show negative growth rates. The Golubac municipality average growth rate was even lower than both those for Serbia and Central Serbia. Some parts of Central Serbia have traditionally low or negative population growth, which can be attributed to the rural population to the major cities. This trend is strongly present in Serbia in general. Reasons for this are usually a reflection of high unemployment rate, and young population of the reproductive age not being ready to form families when future prospects are uncertain.

Comparing with Serbia, a clear urbanization trend can not be noted for the municipality of Golubac. The rural settlements in the project district record a negative trend with an annual average of -0.84%, during the period 1991-2002. (see Table 1.2).

The population density in the project area is 26 persons per km2, well below the country average of 84 km2.

## 2.2.2 Employment

Table 2-3 Employment and unemployment

Indicator	Serbia	Vojvodina	Central Serbia	Branicevo region	Golubac
Active Population age (15-64) - 2005	4.991.743	1.371.297	3.620.446	122.102	5.754
% of active population in total population	66,6%	67,5%	66,2%	60,9%	58,0%
Unemployed persons 2005 average	895.697	273.392	622.305	9.652	436
(Un) Employed as % in Active population	17,9%	19,9%	17,2%	7,9%	7,6%
Total employed persons (2005 average)	2.068.964	544.766	1.524.198	39.129	1.218
Do, as % of total population	27,8%	27,1%	28,1%	19,8%	12,8%
Do, as % of labour force	69,8%	66,6%	71,0%	80,2%	73,6%
Total unemployed persons (2005 average)	895.697	273.392	622.305	9.652	436
Do, as % of total population	12,0%	13,6%	11,5%	4,9%	4,6%
Do, as % of labour force	30,2%	33,4%	29,0%	19,8%	26,4%
(Un) Employed as % of total population	39,8%	40,6%	39,5%	24,7%	17,4%
Unemployment Female (2005 average)	486.378	143.930	342.448	5.412	249
% unemployment female in total unemployed persons	54%	53%	55%	56%	57%
# of adult persons receiving social welfare	220.262	69.353	150.909	4.442	365
Do, as % of total population	3,0%	3,4%	2,8%	2,3%	3,8%

Source: Municipalities of Serbia 2006, Statistical Office of Republic of Serbia March 2007

Unemployment in the project area is below the national and Central Serbia average, both measured as the share of unemployed persons in active population (aged 15-64) and labour force (employed + unemployed persons). These data should be interpreted with some caution. It is well known that a significant share of officially registered unemployed have unofficial employment in especially the agricultural sector or informal economy.

57 % of unemployment is of Female in Golubac municipality and it's above the national and Central Serbia average level.

Another way to assess the socio-economic situation is to analyze data on social welfare recipients. Here, we can conclude that municipality of Golubac have a higher

than average percentage of social welfare recipients with 3.8% of the total population. This is an indication that the socio-economic situation in the project area is worse than in other parts of Serbia.

When analyzing the employment number by economic sector, the most striking feature is the relative large employment created by the agriculture, fisheries and forestry; 9.4%, comparing with 3.1% in Serbia and 1.7% in Central Serbia. Employment in Manufacturing/processing industry; 28.5% and it's above national and Central Serbia average. Employment in Public administration & social sector is above the national average 20.2% and Central Serbia average. Employment in Trade is 16% and is also above the national average of 9.9% and Central Serbia average of 10.3%. Employment in entrepreneurs & sole proprietors sectors is 13.5% and it's below national average and Central Serbia averages. This can be explained by the large manufacture related and agriculture processing activities in the municipality.

Table 2-4 Employment by sector

Indicator	Serbia	Vojvodina	Central Serbia	Branicevo region	Golubac
Agriculture. Fisheries & forestry	65.058	39.236	25.822	1.363	115
Do, as % of total	3,1%	7,2%	1,7%	3,5%	9,4%
Manufacturing/processing industry	490.502	129.277	361.224	9.253	347
Do, as % of total	23,7%	23,7%	23,7%	23,6%	28,5%
Energy & other utilities	45.554	9.022	36.533	2.261	56
Do, as % of total	2,2%	1,7%	2,4%	5,8%	4,6%
Construction	88.063	20.955	67.108	1.071	2
Do, as % of total	4,3%	3,8%	4,4%	2,7%	0,2%
Trade	204.730	47.667	157.063	3.518	195
Do, as % of total	9,9%	8,7%	10,3%	9,0%	16,0%
Tourism	26.964	3.617	23.347	712	36
Do, as % of total	1,3%	0,7%	1,5%	1,8%	3,0%
Logistics	115.961	26.201	89.760	1.283	30
Do, as % of total	5,6%	4,8%	5,9%	3,3%	2,5%
Commercial services	92.206	19.570	72.636	509	5
Do, as % of total	4,5%	3,6%	4,8%	1,3%	0,4%
Public administration & social sector	417.433	105.203	312.230	8.402	268
Do, as % of total	20,2%	19,3%	20,5%	21,5%	22,0%
Entrepreneurs & sole proprietors	522.493	144.018	378.475	10.757	164
Do, as % of total	25,3%	26,4%	24,8%	27,5%	13,5%
Total	2.068.964	544.766	1.524.198	39.129	1.218
Do, as % of total	100%	100%	100%	100%	100%

Source: Municipalities of Serbia 2006, Statistical Office of Republic of Serbia March 2007

Also the share of tourism of the Golubac municipality is above the national and Central Serbia average, although the tourist activities are not well developed.

Tourism, on a national level is the industry that employs only 1.3% of the total population. This sector has opportunities to develop and improving communal infrastructure on a national level. It would also mean attracting tourists and increasing need for the employment in this sector. The municipality of Golubac has attractive locations for river tourism, bicycle tourism, hunting and fishing, and the total employment is 3%; higher than the national and Central Serbia average of 1.5%

### 2.2.3 National income

The 2005 national income in the Golubac municipality is 0.1% of Serbia's total national income, whereas Vojvodina accounted for some 32% of the total Serbian national income and Central Serbia accounted for some 68% of the total Serbian national income. On a per capita basis, it can be concluded that Golubac is well below Central Serbia and national averages. (see Table 1.5).

**Table 2-5 National income (2005)**

Indicator	Serbia	Vojvodina	Central Serbia	Branicevo region	Golubac
National income (in '000 RSD, nominal)	918.732.972	291.063.478	627.669.494	18.694.649	684.119
Do, as % of total	100,0%	31,7%	68,3%	2,0%	0,1%
Do, as % of total project area					100,0%
National income per capita	123.473	144.598	115.639	94.803	71.839

Source: Municipalities of Serbia 2006, Statistical Office of Republic of Serbia March 2007

The national income by sector data confirm the employment patterns: the manufacturing /processing industry sector and agriculture, fishery and forestry sector contributes the largest share to the total income of the project area with 36.7% manufacturing and processing industry share and 35.6%, agriculture/fishery and forestry share, as compared to the national share of 32% and 17% or Central Serbia share of 29.8% and 14.5%. (see Table 2.6).

**Table 2-6 National income by sector**

Indicator	Serbia	Vojvodina	Central Serbia	Branicevo region	Golubac
Agriculture. Fisheries & forestry	156.437.867	65.573.667	90.864.200	6.840.852	243.631
Do, as % of total	17,0%	22,5%	14,5%	36,6%	35,6%
Manufacturing/ processing industry	294.890.188	108.148.656	186.741.532	4.604.152	251.204
Do, as % of total	32,1%	37,2%	29,8%	24,6%	36,7%
Energy & other utilities	17.710.789	8.478.334	9.232.455	657.136	33.821
Do, as % of total	1,9%	2,9%	1,5%	3,5%	4,9%
Construction	67.323.353	13.046.122	54.277.231	1.804.037	39.009
Do, as % of total	7,3%	4,5%	8,6%	9,7%	5,7%
Trade	226.919.194	64.287.755	162.631.439	2.801.954	60.668
Do, as % of total	24,7%	22,1%	25,9%	15,0%	8,9%
Tourism	16.602.919	3.085.440	13.517.479	404.814	24.056
Do, as % of total	1,8%	1,1%	2,2%	2,2%	3,5%
Logistics	95.716.030	20.371.707	75.344.323	1.271.265	23.819
Do, as % of total	10,4%	7,0%	12,0%	6,8%	3,5%
Commercial services	38.916.575	7.083.135	31.833.440	140.561	3.338
Do, as % of total	4,2%	2,4%	5,1%	0,8%	0,5%
Public administration & social sector	4.216.057	988.662	3.227.395	169.878	4.573
Do, as % of total	0,5%	0,3%	0,5%	0,9%	0,7%
Total	918.732.972	291.063.478	627.669.494	18.694.649	684.119
	100,0%	100,0%	100,0%	100,0%	100,0%

Source: Municipalities of Serbia 2006, Statistical Office of Republic of Serbia March 2007

For the local Economy of municipality Golubac the most important branch of economy is agriculture and processing industry which is traditional in this region.

The town and the whole municipality have an insignificant number of entrepreneurs, except for several small companies (up to ten employees) and the usual small private stores and service offering companies. Golubac has no medium-sized enterprises. The municipality has no specific programs for supporting entrepreneurs or stimulating entrepreneurship.

The corporate tax rate is set nation-wide by the central government (10%). There were no other rebates on taxation or cost permits mentioned.



The most important firms are:

- Working unit BAMBI 3 Branicevo – Food Processing Industry – approximately 200 workers;
- PIM-KAMENOLOM ltd – Construction material – sand, stone;
- SIK KUCEVO – working unit Malesevo – Timber and Wood processing industry.

Agriculture and processing industry have main role in Golubac economy

It can be concluded that the Golubac economy is dominated by the agriculture, and processing industry.

#### 2.2.4 Accessibility

Golubac is located directly at the Danube. Road distances to cities or points of interest are:

- Veliko Gradiste = 19 km
- Silver lake = 21 km
- Pozarevac = 50 km
- Belgrade = 130 km
- Donji Milanovac = 61 km
- Projected Marina Stara Palanga via ferry = 38 km

The road conditions are mainly good.

#### 2.2.5 Education

**Table 2-7 Human Resources**

Human Capital Indicator	Serbia	Vojvodina	Central Serbia	Branicevo region	Golubac
Population age 15 and over - total	6.321.231	1.709.778	4.613.453	168.648	8.374
Without formal education	1.380.526	355.766	1.024.760	60.085	3.439
% without formal education	22%	21%	22%	36%	41%
With primary school	1.509.462	425.564	1.083.898	49.665	2.452
% with primary school	24%	25%	23%	29%	29%
With secondary school	2.596.348	751.182	1.845.166	46.725	2.034
% secondary school	41%	44%	40%	28%	24%

With Faculty or college	697.000	162.081	534.919	9.220	281
% Faculty or college	11%	9%	12%	5%	3%
Unknown	137.895	15.185	122.710	2.953	168
%unknown	2%	1%	3%	2%	2%

Source: Municipalities of Serbia 2006, Statistical Office of Republic of Serbia March 2007

Analyzing the human capital indicators by education structure, the most characteristic feature is the relative large number of people without formal education. In municipality of Golubac this percentage is 41% and it's extremely above the national and Central Serbia average. The number of people with primary school is 29% and this indicator is above the national and Central Serbia average (see Table 1-7).

## 2.3 Tourism sector specific context

The total number of tourists in Serbia and the average number of overnight stays, according to the official data from the Statistics Bureau of the Republic of Serbia, was in 2005, as follows:

**Table 2-8 Tourism data**

	TOURISTS			OVERNIGHT STAY			AVERAGE NUMBER OF OVERNIGHT STAYS	
	Total	Domestic	Foreign	Total	Domestic	Foreign	Domestic	Foreign
Republic of Serbia	1988469	1536790	452679	6499352	5507604	991748	3.6	2.2
Central Serbia	1727966	1345272	382694	5764474	4926898	838576	3.7	2.2
City of Belgrade	645633	374689	270944	1183306	610119	573187	1.6	2.1
Branicevski district	27125	24964	2151	78553	72722	5831	2.9	2.7
Veliko Gradiste Municipality	9919	9683	236	33302	32926	376	3.4	1.6
Golubac Municipality	5385	5145	241	7551	6836	715	1.3	3.0
Pozarevac Municipality	9748	8199	1549	31706	27343	4363	3.3	2.8

The available data reflects the total number of tourists visiting all the destinations in Serbia (business and pleasure, and destinations like spas, mountain resorts, historical sites and other places of interest). The total number for the Branicevski district includes the three main municipal tourist destinations; Veliko Gradiste, Golubac and Pozarevac.

## 2.4 Present situation and potential development

### 2.4.1 *Tourism potential and offers of the region*

When observing the *tourism potential of the region*, the favorable position of this region at the Danube is important as the "entrance to the Iron Gates dam". Tourism and recreational potential of the surrounded region is very important for the development of nautical tourism. The project to build the walk & bicycle path in Golubac improves tourism infrastructure in the region. The success of this measure depends strongly on the overall tourism potential and attractive leisure offers and possibilities.

The surrounding of Golubac offers various tourism potentials:

- At Golubac the Danube becomes a very wide and looks like a lake. At the location of the Golubac Fortress the River becomes very narrow when it enters the gorges of the Iron Gate;
- The wide part of the Danube offers lots of possibilities for water sport. With local winds the area is one of the few good sailing spots in Serbia;
- The Golubac Fortress is one of the most photographed attractions along the whole Danube. The medieval Fortress is already very attractive and has a great potential to become more interesting in the future;
- Next to the Fortress is the entrance to the National Park Djerdap;
- Golubac is located at the only road through the Iron Gate gorge, the biggest river gorge in Europe;
- Golubac is also located directly at the international Danube bicycle path from Germany to the Danube delta and the EuroVelo 6 route from the Atlantic Ocean to the Black Sea. The number of international bike tourist was increasing strongly in the last two years;
- The neighboring municipality to the North West is Veliko Gradiste. The Silver Lake had developed in the last years to one of the mayor tourism destination in Serbia with a lot of accommodation and catering facilities. At the moment a very big investment is in the construction phase including a 5 star hotel, golf course and a high class marina;
- Possibilities for nautical tourism development. The marina of Golubac is located at the point where the Danube entered the Iron Gate Gorges, the most attractive landscape along the whole Danube; and it is also at the point where the Danube enters the Iron Gate Gorges, the most attractive landscape along the whole Danube;
- Directly before the entrance the Danube is very wide and offers very good possibilities for sailing (including local winds),
- The preconditions for sport fishing are excellent.

### 2.4.2 *Short description of the project:*

The municipality Golubac wants to support the development of the tourism sector in the municipality and the region.

To improve the attractiveness of the region the project proposal includes construction of bicycle and pedestrian path “Vinci – Golubac – Golubacki Grad (Fortress)”;

The Danube and their shores are the dominant tourism potential of Golubac. All attractive contents on Danube will be connected in an integral system with the planned construction of the bicycle and pedestrian path “Vinci-Golubacki grad”.

The path will run directly along the Danube and connect the weekend house settlements Vinci and Usije, the city beach, the marina, the hotel “Golubacki grad”, the city centre of Golubac, the city park, and the mediaeval fortress “Golubacki grad” with the entrance of the National park “Djerdap”.

The path will be part of the international Danube bicycle route from Germany to the Danube delta and part of the EuroVelo 6 route from the Atlantic Ocean to the Black Sea. The project will increase the attractiveness and safety for bicycle tourists.

The bicycle path connects the most attractive areas of the municipality (Vinci – Fortress) and connects Golubac with its neighboring municipalities like Veliko Gradiste (Tourism Center Silver Lake).

#### Municipal position and development potentials

Golubac is located in the northeast of the country, at the meeting point of the southeast part of Panonian basin and Carpathian mountains on the right side of the Danube, 130km away from Belgrade. The Municipality belongs to the Branicevski district with Pozarevac as the administrative center. It occupies the area of 36.800 ha, with 24 settlements and the population of 12.512 inhabitants. The location is important because it is located on the Djerdap main route, which is of great importance for the traffic. Golubac has approximately 2.500 inhabitants. It is at the altitudes ranging between 71 m and 624 m. The length of the Danube river flowing through Golubac is 12 km., The biggest artificial lake in the country, the Djerdap lake is located here.

The realisation of this project will contribute to the protection of Danube watercourse and coastline from degradation, pollution, erosion and floods. A functional connection with settlements and access to the river will be possible. The level of environment protection will be increased based on sustainable use of natural resources such as ecologically acceptable management of natural values, control and prevention of pollution. The general businesses climate would improve with the development of green oasis, walking paths, cultural and sport centres, and similar tourism facilities.

Since the Danube is a natural border with Romania, the realization of this project opens possibilities for cross border cooperation, in the development of river traffic, linkage of cultural-historical sights, i.e. at the Romanian side across the Golubac Fortress are remains of the fortress Laslovar.

In the settlement Usije there is harbour, and on the opposite, the Romanian side is the town Moldova Veke with harbour and a number of capacities. This provides for

the opportunity of cross border cooperation. The municipality of Golubac has signed an initiative on forming the Euroregion together with Bulgaria and Romania.

The main characteristics of today's tourist turnover in Golubac municipality are:

- Low level of tourist turnover;
- Domestic tourists are prevailing in the number of visits;
- Low usage rates of the existing capacities;
- Short tourist season;
- Short number of days of stay.

When observing the *present situation of tourism in the Golubac municipality*, one has to bear in mind that tourism as well as the the economy of the country were in general stagnating up to being deteriorated due to political and economic instability of the last decade of the 20th century. At the beginning of the 21st century signs of revival are present, but the development is unstructured. The quality and the structure of tourist capacities and infrastructure do not satisfy the contemporary tourist demands.

#### Coherence with the national, regional policy

The main planning document on the central level is the Spatial Plan of the Republic of Serbia, based on which the plans are further developed down to the municipal level.

Within the Spatial Plan of the Republic of Serbia, in section 1.4 "Long term plan for tourist zones, tourist regions, transit tourist routes", Golubac is categorised as II C, within C4, the Djerdap tourist region, ranked as national, under the group summer recreational activities, and sub group other touristic activities: trips, nautical and historical.

#### Golubac municipal tourism development strategic plan (2007 – 2011)

The strategic goals of the Golubac municipality tourism development are classified as long-term and short-term:

Long term strategic goals:

- The revival of the medieval Golubac fortress, environment protection and quality of life (up to 7 years);
- Relocation of the regional road not to pass through the Golubac fortress;
- The formation of a larger number of zones of improved business conditions;
- The creation of conditions for investment capital and new job opportunities.

Short term strategic goals:

- The restitution of municipal property from the Republic;
- The formation of a larger number of zones with improved business conditions and with complete infrastructure (up to 3 years);
- A larger number of tourist visits through a variety of traditional and innovative touristic manifestations with a special focus on the sport – nautical programmes (up to 3 years);
- The improvement of the communal services;
- The education and improvement of tourist related work force;
- The development of marketing strategies for the creation of the town image - developing regional cooperation (1 – 4 years).



## 3 TECHNICAL ANALYSIS

### 3.1 Current level of service delivery, demand

#### 3.1.1 Introduction

Golubac – Settlement on the river Danube bank, which was left outside of main developing directions in Serbia, due to its geographical limitations: location on the country border and weak communications. Today, Golubac is settlement of about 1.800 inhabitants, located at the section of Danube where its width is approximately 6 km. In this area, Danube has a huge water surface, suitable for various activities on the water and its bank. Downstream of the Golubac Castle, there is the Golubac valley, 13,5 km long, with sharp rock



sides, which prance up to 300 m above the water surface. Danube water is exuberant with various kinds of fauna, so with the beginning of spring and angler season hundreds of anglers visit Golubac and its vicinity. Nevertheless, river bank in Golubac has not been used appropriately, in spite of huge natural potentials. That means that there is 12 km of indisposed hinterland, with rugged marina, without adequate infrastructure.

Golubac Castle – represents the most important tourist resource in the municipality. The Tower was built on the rocky hill, on the entry to Djerdap canyon. It was raised during the XIV century, under Stefan Lazarevic as sovereign. Later on, Tower was under the Turkish and Hungarian ascendancy. It is regarded as one of the best preserved Middle aged fortresses. There are nine towers, with biggest risen on the top of the hill. The Golubac Castle is protected as cultural property of highest significance.



Vinci and Usje – two weekend colonies, located upstream of Golubac, on the river coast. These colonies have been developed as almost one settlement, with 250 - 300 illegally risen houses and without adequate urban and technical documentation. In the settlements of Vinci and Usje, land is under official property (Republic of Serbia), with licence to use transmitted to Municipality of Golubac. Water supplement system

has been constructed in these colonies, but there is not sewerage network. Therefore, individual consumers, or groups of closely located consumers has built number of septic caves in Vinci and Usje. Processes of legalisation and preparation of needed documentation is under procedure.

Bicycle path – Project GTZ “Eurovelo 6”, anticipated trace of bicycle path along with main road (Belgrade – Kladovo), passing through the municipality of Golubac. One section of bicycle path has optional trace – with secession on the border of rigid natural reservation area Bosman – Sokolac and with direction towards mountain Somrdi.

**Figure 3-1 Map of European River Cruises**



The Strategical plan of tourism development for the period 2007 – 2011 was prepared by the Municipality of Golubac. The Danube region in Eastern Serbia is significant for the economic development. The comparative analysis of four most important European rivers (Volga, Danube, Elbe, Raine), identify the Danube as the most profitable river traffic direction, with a huge potential for further development. The Danube is a part of highly developed corridor (corridor VII: North sea – Raine – Main – Danube – Black sea), with 2,415 km of total lenght. The most attractive location on Danube section of corridor VII is the Djerdap canyon (Iron gate), which was formed after the river had penetrated through the Karpatian mountain massive.

The construction of the bicycle-pedestrian path “Vinci – Golubac Castle” is in the accordance with the key ideas of the Strategical plan of

touristic development of Golubac.

All needed natural preconditions are present for the realization of this project and the Municipality took over responsibility to arrange all institutional and organisational aspects. The technical part of this Project reffers to the works that have to be done in



order to enable commercial and economic development. However, the project location makes the significance of these works more important than it seems at the first sight since they have a positive effect to the system of river bank and hinterland regulation and protection.

To prepare the area of the project, the Municipality received funds from Ministry for Economy (labor department) for project "Cleaning the Danube riverside in Municipality of Golubac". The area will be cleaned up and "wild" dumps will be removed from the riverbank. The work can start immediately.

According to the architect from the Public Utility Company Djerdap, the construction of bicycle-pedestrian path is relatively easy in most of the areas. Only some narrow areas northwest of Golubac (between street and Danube) are more difficult for construction.

The Public Utility Company Djerdap is responsible for all hydro technical constructions concerning the high water protection at the Danube in Serbia. The company is directly involved in the project and will be project partner together with the municipality Golubac for both project components.

The municipality has already started a study to analyze the ground and construction conditions for the bicycle-pedestrian path. The study is carried out by a Slovenian firm and is already available. The municipality spent 40.000 € for this study.

A concept design for the bicycle-pedestrian should be worked out in the middle of the May. A detailed technical planning for the necessary stronghold of the riverbank and the bicycle-pedestrian path has not been done yet.

The process of preparation of complete technical documentation and securing the required funds has already started. The beneficiary of this project is the Municipality of Golubac which requests donor support for the works envisaged.

### 3.1.2 Project description

The proposed project of the bicycle-pedestrian path development consists of three components:

- a. construction of the bicycle-pedestrian path
- b. construction of public lightning along the path
- c. river bank protection along the path

#### The bicycle-pedestrian path

The 11,830.45 m path will run directly along the Danube connecting the settlements Vinci and Usije; the city beach; the marina, the hotel "Golubacki grad"; the city centre of Golubac; the city park and the sport center; the mediaeval fortress "Golubacki grad" with the entrance of the National park "Djerdap".

About 1.360 m of the path (the city quay in Golubac) is already constructed and needs only small improvements. The rest of the path (over 11 km) needs to be constructed. At the moment the area is shelved.

The path will be a part of the of the international Danube bicycle route from Germany to the Danube delta and a part of EuroVelo 6 route from Atlantic Ocean to the Black Sea. The project will increase the attractiveness and safety for bicycle users.

It is needed to obtain all the requirements from the municipal and national institutions regarding:

- Public utility water-supply infrastructure;
- Water management facilities maintenance on the municipal territory;
- Water management facilities maintenance on entire republic territory;
- Special requirements related to the defense of the country;
- Fire protection of the area;
- Road planning, construction and maintenance in the Republic;
- Monitoring of hydro-meteorological, climate and hydro parameters;
- Water management affairs for this territory;
- Construction Permitting (upon assembling all urbanistic requirements and requirement set by institutions);
- Monitoring and setting requirements related to protection of facilities against expected seismological activities;
- Planning and construction of mobile telephony;
- Planning and construction of main oil pipe lines;

- Planning and construction of the main gas lines.

The pedestrian - bicycle path is included in all the existing urban planning and strategical documents in the municipality of Golubac.

Observing the main principle of water protection, according to the Space Plan of Golubac Municipality, following facilities may be built on the water-land:

- Facilities serving to water management, maintenance and reconstruction of watercourses, waterways, river traffic;
- Infrastructure facilities in accordance with the space and urban plans;
- Facilities serving to exploitation of river materials;
- Marina facilities;
- River or canal pier - RTC;
- Facilities serving to tourism, recreation, fishing - in accordance with the requirements set by the relevant water management company

As for bicycle-pedestrian path, withdrawal of piece of land will be done after preparation of needed technical documentation.

The Master Plan of the Municipality of Golubac anticipates the bicycle path construction as the priority actives. Furthermore, the Ministry of Tourism supports development of the Djerdap region, by providing the tourist signalization (according to international requirements) along the bicycle path in all the municipalities where it passes through. This support is yet planned to be realised.

There are certain requirements for pedestrian path, defined by existing Law.

The most important elements of Rule Book:

1. Rule Book elaborates urban and technical requirements for space planning of municipal traffic and pedestrian surfaces, accesses to structures and structural design (residential structures, structures for public use etc.);
2. Pavements, pedestrian paths, parking places and other surfaces in the area of streets, squares, parks, playgrounds and walkaways are connected and adapted for orientation and constructed with slope that must not overrange the value of 5 % (1:20), at the most 8,3 % (1:12). The maximum value of transversal slope, perpendicular to direction of motion, is 2 %. Walkaways in the areas of public green and recreative surfaces must be well lightened, properly sign posted and equipped with places for rest, along with the direction of motion. Benches have to have seats approximately 45 cm and handholds 70 cm above the level of walkaway;
3. In order to enable the safe movement on pedestrian path, its width has to be 180 cm minimum, maximum 120 cm, while width of corridor between immobile restraints is minimum 90 cm. Surface of pedestrian path must be clean, even and

scroll persistent. On squares and other big pedestrian surfaces, colours of used materials have to make them noticable;

4. Within main pedestrian movement corridors, shafts, advertisement panels and other restraints must not be placed, while existing restraints must be noticeably signed. Parts of structures as terraces, pending panels etc., as well as tree crowns, that are placed by the pedestrian corridors, have to be erected at least 250 cm above the path surface.

#### Public lightning

The public lightning design is done in accordance to the preliminary bicycle-pedestrian path design, general spatial plan of the municipality of Golubac, regulations and recommendations of pertinent institutions. The design follows the existing regulations and standards for this type of projects. The total installed electrical power of c+public lightning is 33968 W.

The 8 power switch boxes will be connected to the existing substations or the potential new substations with the shortest route. The exact way of connection will be given by the pertinent electro-distribution company.

At the certain places along the path will be kept existing lightning poles. The lightning poles at the position 0 m to 1086 m of the path will have to be removed and replaced. The existing lightning poles at the position 7600 m to 8600 m will be kept, except the pole located at the position 7765 m that has to be removed. At other positions new lightning poles will be installed.

#### River bank protection

The project site can be divided into three characteristic parts:

- Vinci site – 2150m length
- Usje site – 2750 m length
- Golubac – 2600 m length

Each of these parts has its grade level elevation. From the marina in the Vinci settlement, the bicycle-pedestrian path is on the crown of the Danube bank along which there is stone covered slope protection of the embankment. At that position there is no need for additional protection of the bicycle path since the embankment is design on 100 year water cycle. In the continuation of the path at some locations there are building located on the embankment. At these locations there is no need for slope protection. At the other locations there is a need to construct adequate river embankements to protect the path from water levels and waves. Such embankements will serve an additional function of protecting the settlements along the path from flooding and resulting damages. The technical description of embankements is currently developed at the level of preliminary desing and it is included with the preliminary design of the bicycle-pedestrian path.

#### *3.1.3 Project impacts*

The project will have positive effect on:

- Infrastructure development on the wider area of Golubac;
- Commercial development;
- Tourist promotion.

Infrastructure development in the wider area of Golubac: Construction of the missing part of infrastructure and improvement of existing utility infrastructure to be used for the bicycle-pedestrian path. Primary infrastructure is always developed as general infrastructure (relevant institutions take this into consideration in the process of issuing technical terms). Infrastructure development directly generates possibility (improvement of supply infrastructure line) of indirect connection of other clients to the newly built / reconstructed primary infrastructure.

Commercial effects: The construction of bicycle path will enable organisation of International races, as well as transit of large number of tourists, which will have positive commercial effects.

Advertising effect: The bicycle path construction will have a positive effect for the promotion and branding of the region.

All mentioned concomitant effects, derived from this project, would originate postulates for further development.

#### *3.1.4 Current level of service delivery*

Pedestrian – bicycle paths belong to touristic and recreative structures. If they are designed in the streets with highly developed bicycle contents, there is always request for their physical separation from pedestrian path. Normally, separated bicycle paths are traced between pavement / pedestrian path and roadway. Their level is normally responsive to roadway level. If there is enough space, between pavement and bicycle path avenue is placed. The width of bicycle path is determined by number of bicyclists in the same row:

- 1 row  $\Rightarrow$  1.5 m;
- 2 rows  $\Rightarrow$  2.25 m;
- 3 rows  $\Rightarrow$  3.0 m

Most often width for two rows of bicyclists is predicted. Between bicyclists in the same row the width of 0.1 m is anticipated (0.2 m for passing over). As for pedestrian paths, there is no need for free space between walkers. Transversal slope on pedestrian and bicycle paths is to be between 1.5 and 2.0 %, while maximum value for longitudinal slope depends on length of treated section. For short distances (up to 50 m) it is allowed to be up to 8 %, while for sections of over 1,000 m it is to be 2.0 % maximum.

### 3.1.5 Project area

The trace of bicycle-pedestrian path is situated on the river bank, in its whole length (11.8 km), between settlement of Vinci and Golubac Castle. The Golubac Municipality is situated in the North – East Serbia and covers the area 367 km<sup>2</sup>. It consists of 23 rural and 1 urban areas (city of Golubac). Geo – morphologic border is the valley of the river Pek on the west, slightly waved hills on the south and east (coasts of Northern Kucaj – Kornavski vis 632 m altitude and Somrda 735 m altitude) with average population density 24 in/ km<sup>2</sup>.

The connection with Djerdap Gorge provides for specific natural, cultural and archeological potentials. The position on an international river traffic route is especially important. The bordering Municipalities are Majdanpek, Kucevo and Veliko Gradiste. The Danube runs through the municipality for 52 km and forms the natural border line with Romania. It covers the parts of Panonian basin with its western border, while the eastern parts of the Municipality are presented with Northern Kucaj coasts.

The route of future pedestrian – bicycle path in the municipality of Golubac is included in all the planning documents for tourism development in the municipality. The Spatial Plan of Golubac municipality reads: "Conception of tourism and recreation development in the area of municipality aspires to realisation of all basic targets of development of tourism and recreation, as well as requirements, defined in the Spatial plan of Republic of Serbia and Spatial plan of National park Djerdap. These refers to approach to planning, reliance and arrangement of space designed for recreation and tourism. These documents define space and structures within the civil area, which has to be protected, affirmed, constructed, organized and included into the touristic offer. Space concept of recreation and tourism defines space and contents as follows:

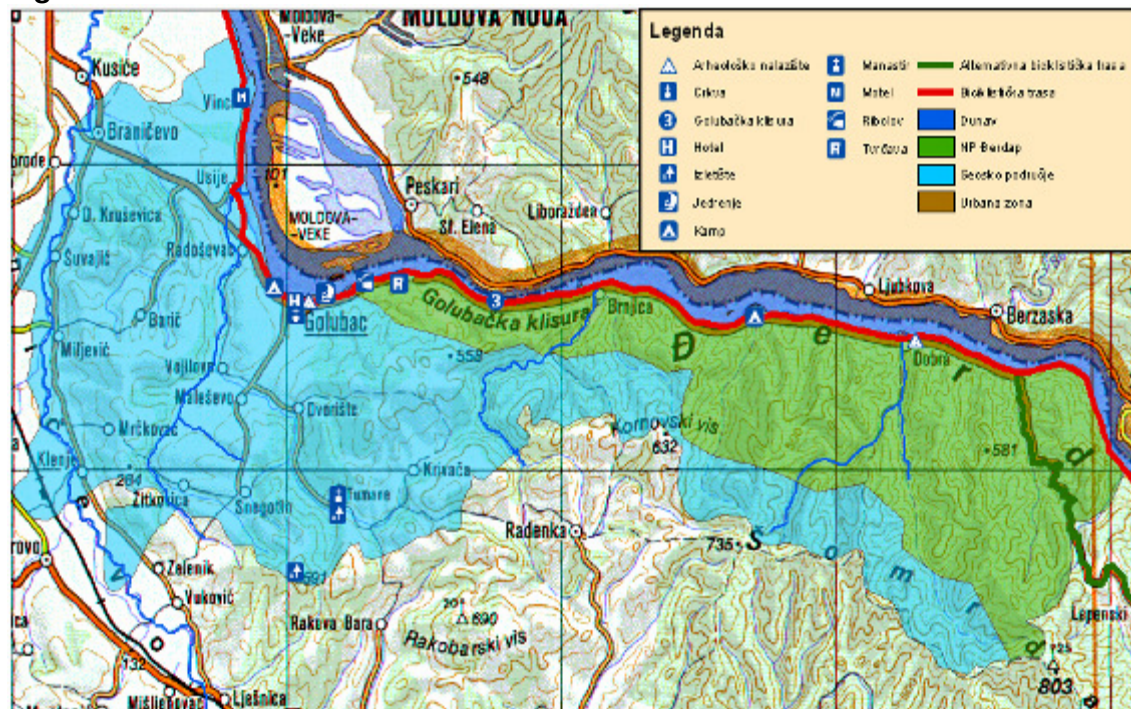
- Natural areas and spaces for recreation and tourism;
- Existing areas for recreation and tourism;
- Touristic/recreative routes;
- General requirements for contents of the sport and recreation.

The pedestrian – bicycle path in Golubac figure in Space plan not only as structures of key importance for tourism and recreation development in the area, but also as capacity for functional concatenation with other settlements.

The macrolocations of tourist resources in the municipality of Golubac are shown on the picture below.



Figure 3-2 Tourist resources



The macrolocations of pedestrian – bicycle path are also suitable from the aspect of communication with other touristic contents in region.

**Accessibility:**

Golubac is located directly at the Danube. Road distances to cities or points of interest are:

Veliko Gradiste	= 12 km
Silver Lake	= 21 km
Pozarevac	= 50 km
Belgrade	= 130 km
Donji Milanovac	= 61 km
Project Marina Stara Palanga via ferri	= 38 km.

The road conditions are mainly good.

The surrounding of Golobac offers various tourism potentials:

- At Golubac, the Danube becomes very wide and looks like a lake. At the Golubac Castle, the River becomes very narrow when it enters the gorges of the Iron Gate;
- The wide part of the Danube offers lots of possibilities for water sports. With local winds the area is one of the few good sailing spots in Serbia;

- The Golubac Fortress is one of the most photographed attractions along the whole Danube. The medieval Fortress is already very attractive tourist destination and has potentials to become even more interesting in the future;
- Next to the Fortress is the entrance of the National Park Đerdap;
- Golubac is located at the only road to the Iron Gate gorge, the biggest river gorge in Europe;
- Golubac is also located directly at the international Danube bicycle route from Germany to the Danube delta and the EuroVelo 6 route from the Atlantic Ocean to the Black Sea. The number of international bicycle tourist was increasing sharply in the last two years;
- The neighboring municipality to the North West is Veliko Gradiste. The Silver Lake has developed in the last years to one of the mayor tourism destination in Serbia with plenty of accommodation and catering facilities. At the moment big investments are made in the construction phase include a 5 star hotel, golf course and a high class marina;
- Possibilities to use the boat - The marina of Golubac is located at the point where the Danube enters the Iron Gate Gorges, the most attractive landscape along the whole Danube,
- Directly before the entrance the Danube is very wide and offers very good possibilities for sailing (including local winds),
- The distance on water to Belgrade is about 110 km, to the tourism center Silver Lake 22 km, to Veliko Gradiste 18 km and to Donji Milanovac 60 km,
- The conditions for sport fishing are excellent.

## 3.2 Project description and review of the site

The detailed descriptions, capacities and main characteristics of the bicycle path construction are presented in the Preliminary design.

Hydro structures, formed into basic units, are: breakwaters, levees, vertical stage, beach and aquatorial part with stair and inaugural dock. Transverzal profile of pedestrian – bicycle path includes: earthen caot (compacted domain), gravel caot, thin concrete (7 – 10 cm) and asphalt – concrete (3 – 4 cm).

### 3.2.1 Condition of facilities

Municipality of Golubac is located in the north-eastern part of Serbia, on the right bank of the river Danube, on the section of river width the maximum width of app. 6 km.



**Figure 3-3 View on Danube from Golubac**



In this area, Danube creates a huge water surface, suitable for various activities on water and river banks. Downstream of Golubac Castle, there is the Golubac valley, 13,5 km long, with sharp rock sides, which raise up to 300 m above the water surface. Danube water is exuberant with various kinds of fauna, so with the beginning of spring and angler season hundreds of anglers visit Golubac and its vicinity.

This area is of huge importance for water management, energetics, traffic, civil engineering, tourism etc. Municipality of Golubac belongs to middle part of Djerdap I accumulation that was created after the Dam Djerdap had been constructed. This area contains debouchments of the rivers Pek, Tuman, Brnjica, Cezava, Dobranjska and Kozicka into Danube. One of the most important implications of utilization of Dam Djerdap is aggregation of river drift on its upstream side and lamination of river deposit forming alongside of accumulation. According to quantities of drift that are resounded by water stream (15 mil. tones / year), problem of drift aggregation is very serious. This affects as increment of water level, which is critical in the high water season. Increment of water level may cause overflow on enbankments, built as protection from floods.

On the picture below, enbankment for flood protection in Golubac is shown.

**Figure 3-4 Flood embankment**



In accordance with above mentioned, hydro infrastructure presents a basic infrastructure for this project. Even more, peculiarity of its location makes the importance of this structure much higher, than it seems. That means that important advantage of this project is consisted in the fact that it solves the problem of bank protection.

### *3.2.2 Condition of supporting infrastructure and facilities*

#### *3.2.2.1 Transportation infrastructure*

##### Transportation infrastructure on the territory of Golubac Municipality

The Municipality of Golubac, 130 km away from Belgrade, is connected to the Capital with the main road M 25 Belgrade – Kladovo, which is the most important road corridor for the municipality.

Total length of modern road network on the territory of the Golubac municipality is 139 km. The length of main, regional and local roads is 44 km, 27 km and 68 km, successively. Apart from the main road, the municipal regional roads R 108

Branicevo – Ljesnica (along with river Pek), R 256 Golubac – Turija and R 108a Golubac – Malesevo – Zelenik are of great importance. Although the main road M 25 is identified as the most important road direction, it passes through the Golubac Castle, a cultural memorial of the I category (two tunnels were burrowed through the Castle), demolishing the Castle and contributing to the process of its devastation. Therefore, it is necessary to construct an adequate by-pass road around the Castle, and take activities on reducing the traffic on the main road M 25.

River traffic in the municipality of Golubac has huge potential, but precondition for its intensive development is implied in the urbanization of the river bank area as well as in reactivation of domestic river fleet. Construction of the new marina, which will meet European requirements, with the wharf for bigger boats is planned. The comparative analysis of the four most important European rivers (Volga, Danube, Elbe, Rhine), identifies the river Danube as the most profitable river traffic route, with a huge potential to increase the traffic intensity.

There is no railroad traffic in the municipality of Golubac and the nearest airport is “Nikola Tesla” in Belgrade.

Traffic infrastructure on the location of pedestrian – bicycle path, as well as adequate requirements and methods of its realization will be defined in Preliminary design, which is being developed.

#### *3.2.2.2 Water supply and wastewater infrastructure*

##### Water supply and wastewater infrastructure on the territory of Golubac Municipality

On the territory of Golubac and the surrounding settlements, there is a water supply system, with the tank “Vinogradi” as basic structure and with wells as water sources. Construction of three new wells and the new tank are planned, which is going to be followed with the network improvement activities.

Golubac is the only settlement in the municipality that is covered with sewerage system. Within the sewerage system in Golubac there is no waste water treatment plant, so waste water flows into Danube or some other local stream, which degrades quality of natural water. According to the Master plan, upgrade of sewerage network with the existing collectors is planned. The collected waste water will be evacuated towards the waste water pump station, from where it will be transported to the existing treatment plant for biological treatment, which is located nearby the road to Kladovo.

Water supply infrastructure, as well as evacuation of rain and waste water on the location of the bicycle-pedestrian path is defined in the Preliminary design, along with appropriate requirements.

### *3.2.2.3 Power supply infrastructure*

#### Power supply infrastructure on the territory of Golubac Municipality

Settlement of Golubac is equipped with the convertor station TS 35/10 kV "Golubac", of 1 x 4 MVA + 1 x 2,5 MV, which supplies settlement through appropriate network. However, existing network is insufficient for existing and designed level of consumption, so its upgrade is planned.

Electrical power infrastructure on the location of the bicycle-pedestrian path, as well as adequate requirements, is defined in Preliminary design.

### *3.2.3 Thermo-energy infrastructure*

#### Thermo-energy infrastructure on the territory of Golubac Municipality

There is no gas pipeline system in the municipality of Golubac.

Thermal power infrastructure on the project location, as well as adequate requirements, is defined in Preliminary design.

### *3.2.3.1 Telecommunication infrastructure*

#### Telecommunication infrastructure on the territory of Golubac Municipality

There is an automatic telephone call counting centre, which belongs to the network group 012 (the city and the municipality of Pozarevac – Centre of the Region). The existing telephone call centre is insufficient in comparison with the needs in the municipality, so expansion of network and full digitalization is planned.

The telecommunication infrastructure on the project location, as well as adequate requirements, is to be defined in Preliminary design.

## **3.3 Technical solutions proposed by Consultants**

The construction of pedestrian – bicycle path will promote this area into an attractive destination for foreign bicyclists, not only as a transit toward other destinations, but also as an interesting region, due to natural and cultural values present in the municipality.

### *3.3.1 Technical options*



The pedestrian – bicycle path, anticipated trace of bicycle path along with main road (Belgrade – Kladovo), passing through the municipality of Golubac. One section of bicycle path has optional trace – with secession on the border of rigid natural reservation area Bosman – Sokolac and with direction towards mountain Somrđi.

Final trace of pedestrian – bicycle path will be defined in main design and will depend on technical condition of location (level of ground water, possibility of ground stabilization....), withdrawal of piece of land and permeance.

### 3.3.2 Additional designs

In order to continue the works on the pedestrian – bicycle path construction, further activities on technical documentation development need to be carried out to achieve the following objectives:

- Obtaining construction permits;
- Preparation of tender documentation;
- Construction;
- Maintenance.

For mentioned purpose, it is needed to prepare documentation as follows:

- Detailed Regulation Plan:
  - Reason: Obtaining construction approvals;
  - Objective achieved: Obtaining construction permits;
  - Special requirement: Include requirements of the line power company, telecomm land lines;
  - Note: Process prescribed adoption by the Commission for Plans and verification in the Assembly.
- Infrastructure basic design:
  - Reason: Obtaining construction approval, developing tender documentation, contracting works;
  - Objective achieved: Obtaining construction permits, Preparation of tender documentation;
  - Special requirement: Technical documentation should clearly distinguish between the primary and secondary infrastructure;
  - Note: Provide professional audit for the project.
- Main project of hydro – construction facilities:
  - Reason: Tendering the works;



- Objective achieved: Preparation for tender documentation, Construction, Maintenance;
  - Special requirement: Documentation should include the Facilities Maintenance Guide.
- Main project of the infrastructure:
    - Reason: Infrastructure construction;
    - Objective achieved: Construction, Maintenance;
    - Special requirement: Documentation should include the Facilities Maintenance Guide;
  - Exploitation of pedestrian – bicycle path Project analysis:
    - Reason: Precondition of successful project use and technical – organization al assignments;
    - Objective achieved: Maintenance;
    - Special requirement: Clearly define the role of the municipality and its water management enterprise in regard to maintenance and management of the facilities and relations with the republic and provincial public enterprises;
    - Note: This obligation has not been prescribed by law – recommendation.

The Municipal team in charge of technical implementation of the project should be established after the financial structure has been completed. In addition to the municipal body in charge of city construction affairs (Directorate) and Urbanism Department, the team should include the representatives of the local water management enterprise. Project management should be delegated to the professional body, either municipal or independent engineering firm. Supervision should be provided as stipulated by the Law on Construction and Planning. Municipality should also organize its own independent supervision. Project of finished facilities should be designed after the completion of works. Attention is to be paid to special requirements of the line institutions during the establishment of the technical inspection commission. Commission must be introduced to the project (from the moment the works started) and invited to take part in Commission's work. It will save time need by eliminating eventual objections.

### **3.4 Overview of the investment costs**

Investments costs (excluding VAT) have been estimated based on the costs from the available preliminary design produced by the Faculty of Architecture from Belgrade.

**Table 3-1 Overview of estimated investment costs**

		<b>RSD</b>	<b>EUR</b>
<b>A</b>	<b>Pedestrian-bicycle path</b>	<b>294,923,945.85</b>	<b>3,171,225.22</b>
	Preliminary works	6,037,342.40	64,917.66
	Earth works	144,582,199.65	1,554,647.31
	Pavement	130,486,514.60	1,403,080.80
	Other works	5,315,250.00	57,153.23
	Unforeseen works	8,502,639.20	91,426.23
<b>B</b>	<b>Hydro-engineering works</b>	<b>181,286,901.40</b>	<b>1,949,321.52</b>
<b>C</b>	<b>Public lightning</b>	<b>37,355,850.00</b>	<b>401,675.81</b>
	<b>TOTAL</b>	<b>513,566,697.25</b>	<b>5,522,222.55</b>

Project duration will be 20 years. All infrastructures will be maintained by the line municipal, provincial and republic institutions. This includes investment (replacement of equipment), major repairs and regular maintenance.

### 3.5 Justification of the proposed preferred option for the investments

Technical solution of the concept and works of the I phase of the project on the Danube River represents the best option in terms of:

- Urban planning requirements;
- Water management;
- Because it is the part of riverbank protection facilities, in other words, construction will create conditions for significant improvement of riverbank protection situation (eliminating illegal wharfing on the riverbank protective facilities);
- Technical – technological solution;
- Maintenance and exploitation;
- Because Golubac Municipality has capacities to use and maintain the envisaged structure;
- Facility perspective;
- Because the technical solution is designed in a manner that creates new local economic development opportunities;
- Exclusivity;
- Because its position, as well as effective technical solution, singles out this project among other similar projects.



### 3.5.1 Conclusions

All natural preconditions necessary for this project are present. Due to the specific location, from the technical point of view, works carry much wider significance and take an important place in the overall system of river bank protection and regulation of use of river banks and hinterlands. On the other hand, proper construction of bicycle path will require ground stabilization (as well as adequate ground research), which will have a positive effect for the other infrastructure.

In terms of general commercial and economic development in the Municipality and Serbia in general, importance of the project is high. Firstly, construction of bicycle path, as a part of European eastern bicycle route, will provide network linkages to European citizens. This will effect strongly to local tourist development (more capacities will be needed), but, also, to touristic map of Serbia, according to the fact that part of Danube bank (Golubac – Donji Milanovac – Kladovo) is one of the most important touristic points in the country. Construction of bicycle path will provide a strong incentive to the construction of bicycle path in neighbourhood municipalities, which will further contribute to tourism development in the area.

Recommended technical solution is appropriate, rational and effective. It has been fully harmonized with the existing urban planning documentation (Master plan of Golubac).

## 4 ENVIRONMENTAL ANALYSIS

### Introduction

The analysis undertaken in this chapter is based on these main documents:

- Environmental Integration Handbook for EC Development Co-operation, Europe Aid, December 2006;
- Local legislation, Law on Environmental Impact Assessment (2004)

The project envisages the construction of the bicycle-pedestrian path along the River Danube coast.

The proposed development is in the category of projects which according to the Serbian and EU regulation needs an EIA only if there are significant impacts on the environment.

The Golubac Municipality submitted the EIA screening request to the Ministry of Environmental Protection.

The Ministry of Environmental Protection issued a decision on the 11<sup>th</sup> of March 2008 that there is no need for an EIA for the described project.

### 4.1 EIA Procedure

EIA is an *ex-ante* environmental assessment of projects. The EIA of a proposed project is a systematic assessment of the potential environmental impacts of this project and its alternatives, in order to propose appropriate measures to mitigate negative environmental impacts and optimise positive effects, and assist the decision-making process.

#### 4.1.1 Serbian requirements

The EIA Study is an integral part of the documentation necessary to obtain a building permit or approval for commencement of the project realisation.

The Article 3 of the Serbian EIA law defines the projects which are subject of EIA, while the regulation on the need for EIA (OGRS 84/2005) lists in detail projects for which an EIA is mandatory or may be required. For the later projects, an EIA Screening process is conducted to determine the need of an EIA.

The impact assessment procedure according to the Article 6 of the Serbian EIA law is composed of the following phases:

- Decision on the need for an EIA (Screening phase);
- Definition of the content and scope of an impact assessment Study; (Scoping phase);
- Decision on the approval for an EIA Study.

The EIA Study, according to the Article 12 of the EIA law shall contain the following mandatory data, information and documents:

- Data on project developer;
- Description of the planned project site;
- Description of the project;
- Outline of the main alternatives studied by the project developer;
- Outline of the environmental status at the site and its close vicinity
- (micro-location and macro-location);
- Description of likely significant effects of the project on the environment;
- Environmental impact assessment in cases of accidents;
- Description of measures envisaged to prevent, reduce and, if possible, eliminate any significant adverse effects on the environment;
- Programme of monitoring of impact on the environment;
- Short non-technical summary of data listed in points 2) to 9);
- Data on technical shortcomings, absence of the appropriate expertise and skills or, impossibility of obtaining the appropriate data.

The detailed content of Environmental Impact Assessment Study is prescribed according to the Regulation on the content of the environmental impact assessment study (OGRS No. 69/05).

#### Public participation

The procedure of public participation is regulated in the Law on EIA and more precisely defined in the regulation on Public consultation, presentation and debate on the EIA Study (OGRS 69/2005).

According to the Article 10 of the Law on EIA, request for a need of an EIA (Screening Phase) has to be publicly announced in order to allow for public to submit their opinion.

Article 14 of the Law on EIA requires public announcement of the decision by the Competent Authority on the scope of an EIA. Articles 20 and 21 describe the public consultation procedures to be followed on the results of the EIA, while Article 25 requires informing the public on the approval of the EIA study. The by-law regarding



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