Republic of Macedonia
Municipality Radovis

PROJECT APPRAISAL DOCUMENT

"Construction of new road connecting local communities Kalugjerica and Podares in Municipality Radovis"

World Bank
Municipal Services Improvement Project

Skopje, July 2015

The Project's Appraisal Document was prepared by the Center for Promotion of Sustainable Agricultural Practices and Rural Development – CeProSARD, with the exception of Environmental Impact section prepared by the MSIP consultant Slavjanka Pejcinovska-Andonova.

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1.

INTRODUCTION

The project assumes construction of one new local road that connects two local communities Kalugjerica and Podares in municipality Radovis.. The total length of the road subject of this evaluation is 3,646.03m. The project cost is lower than the credit capacity of the municipality, which provides the loan repayment. The relevance of the project comes from the fact that the biggest part of the municipality residents is directly influenced by negative implications of the inadequate surface of roads because the existing local road does not satisfy the legal requirements as a precondition for smoothly and quality providing of its function. The bad condition of the road causes many environmental harmful influences for the population health and traffic problems for the residents and as a result they constantly complain to the Mayor and local administration of the municipality for the existing situation. Therefore, the main purpose of the proposed technical solution is to provide improvement in the long run for smoothly use of the local road that will satisfy the needs of the residents in municipality Radovis.

The importance of construction of the road is due to the benefits that the municipality will have after the implementation of the project. Very important is to emphases that according to its functionality, the road subject to this appraisal represent an extension of the traffic connections of the municipality and connects with the regional road Radovis-Strumica and with the center of the municipality. Presently, the existing unpaved road is used for transport which is very significant for economic development of the municipality especially because the agricultural producers transport their agricultural products to the green market in Strumica where trade of agricultural products is made between all regions. Considering that most of the municipality residents works in agriculture, the implementation of the project will ensure easier access to the agricultural plots and to the green market, easier transport of the agricultural products, easier crossing of the agricultural machinery and increased number of traders. All of this would additionally lead towards development of the economy in municipality Radovis. At the same time, improvement of the traffic conditions will provide economic development of the municipality due to the opportunity for development of small and medium enterprises from the manufacturing and service sector in this area.

The main purpose of the proposed technical solution is to provide a long range improvement of the road by maximizing the technical life of the surface, thus meeting the needs of the community in municipality Radovis. Moreover, the purpose of the technical design is to provide convenience and safety for pedestrians and traffic by controlling storm water flows. Also, the technical design will satisfy the needs of the residents who live on the road that is subject to this appraisal avoiding the mud and providing easier transport for all social groups especially for the school children, elderly people and people with special needs. The proposed technical solution is in-line with the existing standards and positive regulation for this kind of projects, which implies that the implementation of the project is technically feasible.

The project is in accordance with the strategic documentation of the municipality, such as Green Agenda of municipality Radovis, local action plan for environment 2011-2015 prepared in December 2010, financed by the Ministry for environment and physical planning, prepared by the Center for local development – CELOR, office in Radovis and Milieu contact Macedonia.

The Mayor and the municipal administration strive to achieve full coverage of a transport, storm water, water supply and sewerage system and other communal (utility) infrastructure throughout the municipal territory. It can be inferred that the implementation of this project will undoubtedly contribute towards improvement of the quality of life and well-being of the residents of municipality Radovis. Municipality has implemented various similar projects in the past, some of which in collaboration with international institutions, which implies that, is able to implement large construction projects such as this one.

The project is relevant to the development objective of the MSIP because it is considered both cost-efficient and cost-effective, over a long run and also useful for the health of the residents and the environmental protection. No adverse social or environmental impacts were identified.

The financial and cost-benefit analysis showed the project is acceptable and desirable for implementation according to the methods used. In addition, the project will cause significant unquantifiable benefits such as increasing the traffic safety and comfort, increasing the traffic capacity and communications, ensuring a feeling of security by pedestrians, enhancing the commercial activities, as well as extending the outdoor social and recreational activities for the residents living on the roads. The present condition of the road causes frequent

interruption of traffic and forces the residents and traders on the agricultural markets to search for alternative routes, which ultimately results in fall of productivity. The implementation of the project is also expected to increase the property value for houses and other residential or commercial objects on the road, thus increasing the growth of revenues.

Furthermore, it is very difficult to relate the benefits of projects of this kind with the economic development and poverty levels in a certain municipality in a short-term. However, taking into account that increasing the quality of the transport infrastructure and increasing the productivity are linked with decreasing poverty, the project will definitely have a wide positive impact on the economic growth and the poverty level, not only in a short term but also in the longer term perspective.

2.

PROJECT DESCRIPTION

2.1 General information on municipality Radovis

Radovis is a small urban municipality and it is located in the southeast part of the Republic of Macedonia. The municipality covers northwest part of the spacious Radovisko-Strumicka valley, i.e. upper region of River Radoviska. The north part belongs to the mountain Plackovica, south part of the mountain Smrdeshnik, on northwest there is located the hilly part of the area Jurukluk or Damjansko valley, and on the southeast spreads the alluvial plain of Radoviska River.

According to its absolute altitude, it is included in the municipalities with lower height than the average one in the country. In the local communities Ali Koc, Kodzalija, Supurgje and Prnalija live population which directly originates from the old Turkish tribe Juruci. Viewing this ethnologically, and even from tourist aspect, there are very interesting to be researched and visited. This municipality's parallel viewing as well as meridians direction has almost equal length.

Municipality Radovis has good geographical position and traffic connection, because through its south-western part passes the highway Stip-Radovis-Strumica-Novo Selo. It is connected with the Middle Povardarie through the regional highway Negotino-Krivolak-Leskovica-Radovis, which leads through Konecka Planina, and it is long about 50km. The most attractive road from the local road network, long 21km, is the one which connects the central settlement of Radovis with wonderful mountain regions in Plaskovica, and leads up to the southern slopes of the mountain Lisec.

Municipality Radovis has good gravitational-contact and functional links in the direction Nortwest-southeast, i.e. the cities of Stip and Strumica, from which the city of Radovis is away only 36km and 29km.

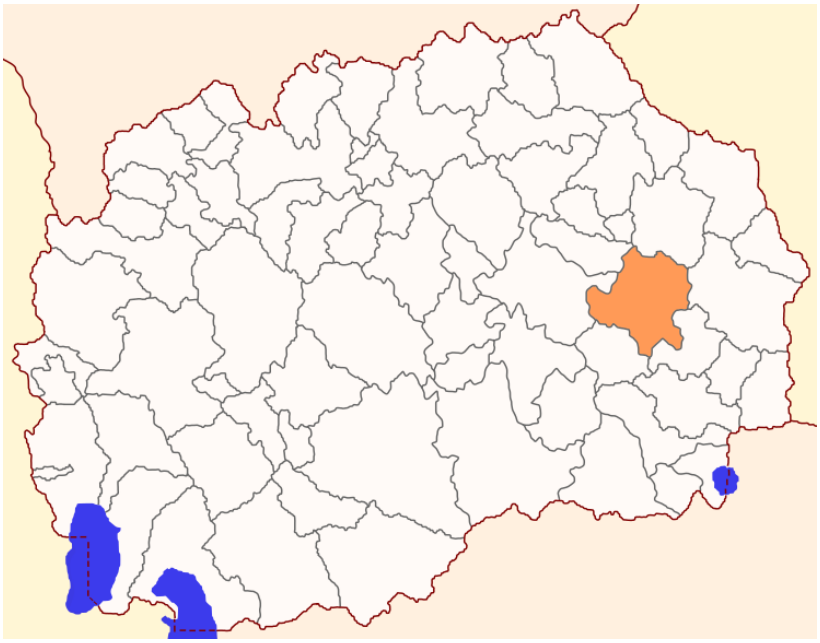

Figure 1Location of municipality Radovis
Source: State Statistical Office

Municipality Radovis is under the influence of moderate Mediterranean-continental climate. Due to the expressed height difference (310-1,110m altitude) some climate elements differ between the moderate Mediterranean climate in the valley and the mountain climate in the mountains. The average annual temperature in the low land part is 12.5-13.0^{0}C, and on the highest parts on the mountains is 7.5^{0}C. The hottest months are July and August, with an average temperature of 23^{0}C, and the coldest month is January with 1.2^{0}C. The average annual rainfalls are 563mm, with big differences from year to year, but there is a difference between mountain and lowland areas. Considering the annual sum of sunny hours, the region has 2,326 sunny hours' yearly, i.e. 6.4 sunny hours daily.

The municipality borders with: municipality Berovo on the east, municipality Vasilevo on the south, municipality Konce on the southeast, municipality Stip on the west and municipalities Karbinci and Vinica on the north.

Figure 2Local communities within municipality Radovis
Source: State Statistical Office

The territory of municipality Radovis with its 487km^2 counts in medium-sized municipalities. There is 36 local communities in the municipality, from which populated are one city and 23 local communities with the total number of 28,244 residents. The number of residents has been increased for 1,073 (6.8%) since 1994. According to the newest territorial division, the former municipality Podares has been merged with municipality Radovis. There are only 3 local communities with more than 1,000 residents: Injevo, Oraovica and Podares, while in the other local communities live less than 1,000 residents. In 5 local communities live less than 60 residents, while 13 local communities are completely uninhabited.

The most prevalent in the agrarian structure are the forests with 20,164ha, cultivated agrarian soil with 11,034ha and pastures with 6,167ha. Radovis Field is one of the richest in the country and here are grown different cultures, such as: tobacco, vine, various sorts of fruit, gardening cultures and there used to be grown poppy and cotton. Fertile land and pastures, in significance are the second branch in the local economy. The main resource in the agriculture is the agricultural land that takes 37.5% from the total agricultural area in the region. From this, arable land takes 61.2% and pastures 38.6%.In the structure of the arable land the most significant part take plough plots and gardens with 89%. The second place takes the vineyards with 4.5% and the orchards take 3.6%. The main problem in the agricultural sector is shredding of plots that does not allow intensive agricultural production, and therefore the use of agricultural land is insufficient. The average size of a plot is 0.22ha. The arable land in the municipality from the total municipality area is 30%. The local production of the livestock feed satisfy 70% of the needs of the domestic livestock. This emphasis the need for increased production of forage crops in the rural areas in the municipality.

Table 1 Local communities in municipality Radovis

#	Local communities	Absolute attitude	Area (km²)	Residents (in 000)		Agrarian structure (ha)			
				1994	2002	Agricultural land	Pastures	Forests	Total
Municipality Radovis		708	487.1	26,332	28,244	11,034	6,167	20,164	37,365
1	Ali Koc	780	7.3	354	328	211	110	403	724
2	Ali Lobasi	930	4.8	-	-	-	-	-	-
3	Bucim	670	18.3	335	320	24	1,147	363	1,534
4	Cesme Maale	997	4.0	-	-	-	-	-	-
5	Damjan	560	16.3	346	311	847	347	319	1,513
6	Drzani	700	12.9	-	-	-	-	-	-
7	Durtulija	1,000	2.8	-	-	-	-	-	-
8	Hudaverlija	980	7.9	-	-	-	-	-	-
9	Injevo	430	21.9	1,537	1,624	1,329	366	206	1,901
10	Jargulica	340	17.9	815	818	531	142	1,018	1,691
11	Kalugjerica	380	15.5	807	838	551	55	882	1,488
12	Kalauzlija	610	8.8	234	279	130	127	596	853
13	Karadzalar	1,000	2.5	-	-	-	-	-	-
14	Karalobosi	1,000	1.7	-	-	-	-	-	-
15	Kodzalija	870	16.8	396	478	286	138	1,248	1,672
16	Koselija	791	9.3	-	-	158	195	-	353
17	Kozbunar	1,050	21.3	23	17	201	125	1,539	1,865
18	Novo Selo	1,060	24.3	-	-	-	-	-	-
19	Oraovica	360	17.4	1,294	1,720	894	70	675	1,639
20	Papavnica	740	10.3	3	-	119	70	823	1,012
21	Prnalija	660	10.2	136	122	146	504	367	1,017
22	Podares	370	34.6	1,404	1,527	748	362	2,241	3,351
23	Pogulevo	560	5.3	18	15	143	148	194	485
24	Pokrajcevo	310	6.6	413	434	302	236	97	635
25	Radovis	380	24.4	15,001	16,223	1,129	342	572	2,043
26	Raklish	380	6.6	476	570	576	64	27	667
27	Sarigjol	1,000	6.0	-	-	-	-	-	-
28	Shaintash	1,070	15.8	-	-	-	-	874	874
29	Shipkovica	1,110	19.1	-	-	-	-	1,500	1,500
30	Shturovo	1,000	7.1	54	11	-	-	-	-
31	Smilanci	800	51.3	70	39	454	901	3,632	4,987
32	Suldurci	380	9.8	260	228	360	50	536	946
33	Supurgje	975	4.4	81	56	119	118	201	438
34	Topolnica	520	16.2	529	562	565	472	489	1,526
35	Voislavci	400	10.3	793	796	529	45	424	998
36	Zleovo	315	17.4	953	928	682	33	938	1,653

Source: Popovski, V., Selmani, A. and Panov, N. (2006). Municipalities in the Republic of Macedonia, Local Government of the Republic of Macedonia and its Territorial Division

The rich slopes with forests on Plackovica and Smrdesh provide intensive exploitation. The most prevalent is the oak, beech and coniferous forests. Besides that, Radovis is a famous mining area and today works only the mine “Buchim” for copper production. In the local community Damjan, used to be exploited the lead mining of best quality. Today, it reserves are almost completely exploited. From the mineral metal raw materials in the municipality there are Iron and Zinc Ore, Copper, Gold, Silver, Chrome and other, while from the mineral nonmetal raw materials there are decorative stones for construction, quartz, clay and other.

2.2 Demographic and economic profile

2.2.1 Demographic profile

According to the last revised Census of population and households (2005) in 2002 the number of residents in municipality Radovis was 28,244. The number of residents has increased by 6.8% since 1994. The total number of households is 8,270, i.e. 3.4 residents per household. The total number of dwellings is 9,823, i.e. 2.9 residents per dwelling. In both cases they are in the frames of the average in the country. In the central settlement of Radovis live 16,223 residents, i.e. 57.4% of the total number of residents in the municipality. A statistical data on the population and migration in municipality Radovis, Southeast Region and the Republic of Macedonia are shown in the table below.

Table 2 Main demographic indicators

Demography indicators	Municipality Radovis	Southeast Region	Republic of Macedonia
Demography - according to the last revised census data for 2002			
Total population	28,244	171,416	2,022,547
Natural increase per 1000 residents	6.1	3.1	3.1
Livebirths per 1000 residents	13.1	11.8	11.9
Total households	8,270	49,705	564,296
Average households members	3.4	3.5	3.6
Total dwellings	9,833	59,499	698,143
Total immigrated residents	70	835	11,861
Total emigrated residents	101	853	11,219
Demography - State Statistical Office estimates for 2013			
Total population	28,915	173,472	2,065,769
Natural increase per 1000 residents	3.8	1.3	1.9
Live births per 1000 residents	12.3	11.1	11.2
Total immigrated residents	98	765	8,405
Total emigrated residents	120	812	8,860

Source: State Statistical Office, MAKStat database, 2013; revised Census of population and households, 2005

The rates of population movement considering natural growth, births and migrations per year (from 2001 to 2013) of municipality Radovis are shown in the table below. Hence, the analysis shows negative average rates for natural growth -0.2 and birth -0.1, but positive average movement of population 0.1 through the years. The average values of population movement in the municipality are quite similar with the overall trend of natural movement of population in the rural areas in the country.

Table 3 Decreasing of population in municipality Radovis

Year	Natural growth rate	Birth rate	Migration rate
2001	-0.6	-1.8	0.7
2002	0.7	0.6	-0.3
2003	-1.6	0.2	0.1
2004	-1.2	-1.7	-0.9
2005	-0.1	0.2	2.2
2006	-0.7	-0.9	-0.9
2007	-0.9	0.1	0.0
2008	0.8	0.7	-0.2
2009	1.5	1.4	-0.3
2010	-0.6	-0.2	1.0
2011	-2.0	-1.9	-0.2
2012	3.5	2.0	-0.4
2013	-1.0	-0.6	0.2
Average	-0.2	-0.1	0.1

Source: State Statistical Office, MAKStat database

Table 4 Live births according to gender

Year	Municipality Radovis			Southeast Region			Republic of Macedonia		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
2009	187	187	374	1,035	983	2,018	12,340	11,344	23,684
2010	186	185	369	1,036	1,019	2,055	12,631	11,665	24,296
2011	161	154	315	937	868	1,805	11,752	11,018	22,770
2012	195	179	374	1,026	966	1,992	12,243	11,325	23,568
2013	179	178	357	1,006	915	1,921	12,093	11,045	23,138
Average	182	177	358	1,008	950	1,958	12,212	11,279	23,491

Source: State Statistical Office, MAKStat database

Live births data for municipality Radovis, Southeast Region and the country are shown in table 4. The analysis through years shows bigger number of male babies than females in municipality Radovis, which is similar to the live births in the southeast region and the overall country. In addition, according to the State Statistical data, there is fall of live births through years, which is also the same as in southeast region and Macedonia. This indicates aging of the population in the country, especially in the smaller local communities.

The next table gives an overview of a gender structure. The data shows bigger number of male population in municipality Radovis, while southeast region and the country have the same share of gender, representing an increased share of male population over the female population.

Table 5 Population according to the gender in 2013

Gender	Municipality Radovis		Southeast Region		Republic of Macedonia	
	Number	Share	Number	Share	Number	Share
Male	14,722	50.9	87,727	50.6	1,034,841	50.1
Female	14,193	49.1	85,745	49.4	1,030,928	49.9
Total	28,915	100	173,472	100	2,065,769	100

Source: State Statistical Office, MAKStat database 2013

Table 6 Population according to the age structure in 2013

Repartition	Municipality Radovis		Southeast Region		Republic of Macedonia	
	Number	Share	Number	Share	Number	Share
0	365	1.3	1,911	1.1	22,913	1.1
1-4	1,399	4.8	7,803	4.5	93,301	4.5
5-9	1,631	5.6	9,260	5.3	112,351	5.4
10-14	1,733	6.0	9,678	5.6	119,851	5.8
15-19	2,094	7.2	10,762	6.2	137,385	6.7
20-24	2,333	8.1	12,262	7.1	155,698	7.5
25-29	2,340	8.1	13,614	7.8	164,394	8.0
30-34	2,075	7.2	13,356	7.7	162,384	7.9
35-39	2,052	7.1	12,669	7.3	153,564	7.4
40-44	1,955	6.8	12,057	7.0	146,353	7.1
45-49	2,164	7.5	12,775	7.4	147,433	7.1
50-54	2,071	7.2	12,608	7.3	141,756	6.9
55-59	1,894	6.6	12,306	7.1	134,995	6.5
60-64	1,561	5.4	10,245	5.9	117,663	5.7
65-69	1,217	4.2	7,619	4.4	87,896	4.3
70-74	867	3.0	6,153	3.5	70,067	3.4
75-79	645	2.2	4,480	2.6	53,549	2.6
80 and more	516	1.8	3,877	2.2	43,857	2.1
unknown	3	0.0	37	0.0	359	0.0
Total	28,915	100	173,472	100	2,065,769	100

Source: State Statistical Office, MAKStat database 2013

The age distribution and its share in the total population in municipality Radovis, southeast Region and the Republic of Macedonian in 2013 are given in table 6.

Majority of population in the municipality are Macedonians (84.1%). From the other minorities there are: Turks (14.4%), Roma (1%) and other with less than 1%. The minority repartition is shown in table 7. Macedonians prevails in the southeast region as well, while Turks takes the second and Serbs the third place. In the Republic of Macedonia Albanians take the second place.

Table 7 Population according to ethnic affiliation in 2002

Repartition	Municipality Radovis		Southeast Region		Republic of Macedonia	
	Number	Share	Number	Share	Number	Share
Macedonians	23,752	84.1	154,957	90.4	1,297,981	64.2
Albanians	8	0.0	38	0.0	509,083	25.2
Turks	4,061	14.4	12,746	7.4	77,959	3.9
Roma	271	1.0	555	0.3	53,879	2.7
Vlachos	26	0.1	253	0.1	9,695	0.5
Serb	71	0.3	2,104	1.2	35,939	1.8
Bosnians	1	0.0	18	0.0	17,018	0.8
Others	54	0.2	745	0.4	20,993	1.0
Total	28,244	100	171,416	100	2,022,547	100

Source: State Statistical Office, revised Census of population and households, 2005

2.2.2 Economic profile

Considering the State Statistical Office data for 2013, the following table presents infrastructure, education and economic data for municipality Radovis, southeast Region and the Republic of Macedonia. In municipality Radovis there are 37 health and social institutions, 111 transport and storage institutions and 3 water supply and sewage management institution. The transport in the municipality is organized through 110km local roads. There are 12 schools for elementary education. In 2013/2014 school year there were 2,556 children attending the elementary schools. From the total population of 28,244 residents, 23,016 are literate. In the municipality operate 907 business subjects, while the GDP per capita is calculated on a regional level, since there are no available data on the municipality contribution.

Table 8 Main macroeconomic indicators

Macroeconomic indicators	Unit	Year	Municipality Radovis	Southeast Region	Republic of Macedonia
Infrastructure					
Local roads	km	2014	110	893	9,513
Health and social institutions	Number	2013	37	268	3,315
Transport and storage institutions	Number	2013	111	587	6,095
Water supply, sewage disposal and waste management institutions	Number	2013	3	18	306
Education					
Educational institutions	Number	2013	12	77	1,025
Children that attend primary school	Number	2013/2014	2,556	14,899	191,051
Children that attend secondary school	Number	2013/2014	864	6,415	86,418
Population literacy at age 10 and more	Number	2002	23,016	144,372	1,693,044
Women literacy at age 10 and more	Number	2002	10,995	69,902	829,755
Economy					
Active business subjects	Number	2013	907	6,083	71,290
GDP per capita	MKD	2012	-	252,278	226,440

Source: State Statistical Office, MAKStat database, 2013; revised Census of population and households, 2005

According to the last revised Census data for 2002 the total number of population in age of 15 and over is working age population. In municipality Radovis their number is 21,767; economically active people are 11,795, of whom 71.9% are employed, while 28.1% are still looking for a job. The municipality has 45.8% economically inactive persons. Considering gender, there are 29.7% women less employed than men.

Table 9 Activity of the population between 15 years and more in 2002

Population activity		Municipality Radovis		Southeast Region		Republic of Macedonia	
		Number	Share	Number	Share	Number	Share
Economically active	All	11,795	54.2	77,056	56.5	743,676	47.2
	Employed	8,475	71.9	50,559	65.6	460,544	61.9
	Employed women	2,977	35.1	18,795	37.2	174,974	38.0
	Unemployed	3,320	28.1	26,497	34.4	283,132	38.1
Economically inactive		9,972	45.8	59,368	43.5	833,325	52.8
Activity rate		54.2		56.5		47.2	
Employment rate		38.9		37.1		29.2	
Unemployment rate		28.1		34.4		38.1	

Source: State Statistical Office, revised Census of population and households, 2005

According to the last revised data from the Census of population and households in 2002, the activity rate in municipality Radovisis below this rate in the southeast region and above than the activity rate in the country. The employment rate above both southeast region and the country employment rate, while the unemployment is below these rates compared to southeast region and the Republic of Macedonia. In the following table is given a distribution of the economic activities in the municipality considering the number of active business subjects by sectors in 2013.

Table 10 Active business subjects by sectors in 2013

Sector	Municipality Radovis		Southeast Region		Republic of Macedonia	
	Number	Share	Number	Share	Number	Share
Agriculture, forestry and fishing	36	4.0	330	5.4	2,866	4.0
Mining and quarrying	4	0.4	11	0.2	164	0.2
Manufacturing	119	13.1	721	11.9	7,918	11.1
Electricity, gas, steam and air conditioning supply	-	-	6	0.1	132	0.2
Water supply, sewerage, waste management and remediation activities	3	0.3	18	0.3	306	0.4
Construction	49	5.4	276	4.5	4,322	6.1
Wholesale and retail trade; repair of motor vehicles and motorcycles	354	39.0	2,493	41.0	25,429	35.7
Transportation and storage	111	12.2	587	9.6	6,095	8.5
Accommodation and food service activities	43	4.7	341	5.6	4,482	6.3
Information and communication	10	1.1	66	1.1	1,446	2.0
Financial and insurance activities	1	0.1	30	0.5	390	0.5
Real estate activities	3	0.3	23	0.4	485	0.7
Professional, scientific and technical activities	55	6.1	363	6.0	5,817	8.2
Administrative and support service activities	4	0.4	51	0.8	1,514	2.1
Public administration and defense; compulsory social security	3	0.3	20	0.3	258	0.4
Education	12	1.3	77	1.3	1,025	1.4
Human health and social work activities	37	4.1	268	4.4	3,315	4.7
Arts, entertainment and recreation	13	1.4	84	1.4	1,179	1.7
Other service activities	50	5.5	318	5.2	4,147	5.8
Total	907	100	6,083	100	71,290	100

Source: State Statistical Office, MAKStat database 2013

According to State Statistical Office there were 907 active business subjects in municipality Radovis in 2013. The most important and dominant sectors were the wholesale and retail trade; repair of motor vehicles and motorcycles with 39%. From the other sectors the most dominant are manufacturing industry with 13.1% and transportation and storage with 12.2%.

The industrial-economic capacities that work in the municipality are the following: "JakaTabak" for tobacco fermentation, "Goldmak" for jewelry production, "Trgoinzenering" – factory for preserved products, copper mine "Buchim", "Jaka 80" for medical and cosmetic products, factory for wood processing "SIK Plackovica", "Balkan Promet" for production of dairy and baking products, "WO Mantovo", "Metal Promet", and fashion confections: "Mardi", "Marteks", "Koneli", "SuperHit" and others.

2.3 General description of the Project

2.3.1. Current situation

The project assumes construction of one new local road between the local communities Kalugjerica and Podares in municipality Radovis.

The existing local road does not satisfy the legal requirements as a precondition for smoothly and quality providing of its function. Presently, the existing road infrastructure is used for transportation, which is adapted unpaved road, as shown in the following figure.

Figure 3 Unpaved local road from the local community Kalugjerica to the local community Podares
Source: CeProSARD archive[1]

According to the data received by the municipality, approximately 50% of the residents use the road subject to this appraisal.

The local road subject to this project that connects the two local communities, in accordance with the legislation of the country, is classified as "municipal public road" and is significant for municipal traffic.

Moreover, the road is used not only for connecting residents of two local communities Kalugjerica and Podares, but also for connecting with the regional road Radovis-Strumica and with the center of the municipality. This is very significant for economic development of the municipality especially because the agricultural producers

[1] CeProSARD team made an insight of the existing situation on the location subject to planned activities on June 05, 2015.

transport the agricultural products to the green market in Strumica where whole region provides trades with agricultural products. At the same time, improvement of the traffic conditions will provide economic development of the municipality due to the opportunity for development of small and medium enterprises from the manufacturing and service sector in this area.

The present condition of the existing unpaved road is very bad and difficult for passing through especially when there are rainfalls, so a overall construction of the road is needed to allow its use in the future. The bad condition of the road causes many environmental harmful effects for the population health and traffic problems for the residents of the two local communities and as a result the residents constantly complain to the Mayor and local administration of the municipality about the existing situation. Therefore, the main purpose of the proposed technical solution is to provide improvement on a long run for smoothly use of the local road that will satisfy the needs of the residents in municipality Radovis.

2.3.2. Future situation

The implementation of the proposed project will allow use of road in total length of 3,646.03m, i.e. construction of the local road that starts from the local community Kalugjerica, immediately after the not leveled road node intended for connection of this road with the region road Radovis-Strumica. The end of the road connects with the paved road that leads to the local community Podares. The project design assumes construction of the road of 4m wide. This approach is necessary for ensuring minimal needed conditions for using the local road and normal communication between the residents in all weather conditions.

One of the most significant benefits of this project is the opportunity to establish new traffic connections, not only inside the municipality, but it will significantly improve the traffic in the municipality and wider in the region. Road layout will be made in accordance with the infrastructural project for local road Kalugjerica-Podares in municipality Radovis after received Conditions for physical planning for preparation of infrastructural project for construction of local road with technical number 04714, since March 2014, prepared by the Agency for physical planning, as part of the Decision for the conditions for physical planning, number 15-1520/4, since March 25, 2014. It follows the terrain configuration and spatial limitations in this field, as well as the available data for existing and planned infrastructural facilities. In the following picture is shown the road layout planned for construction in municipality Radovis.

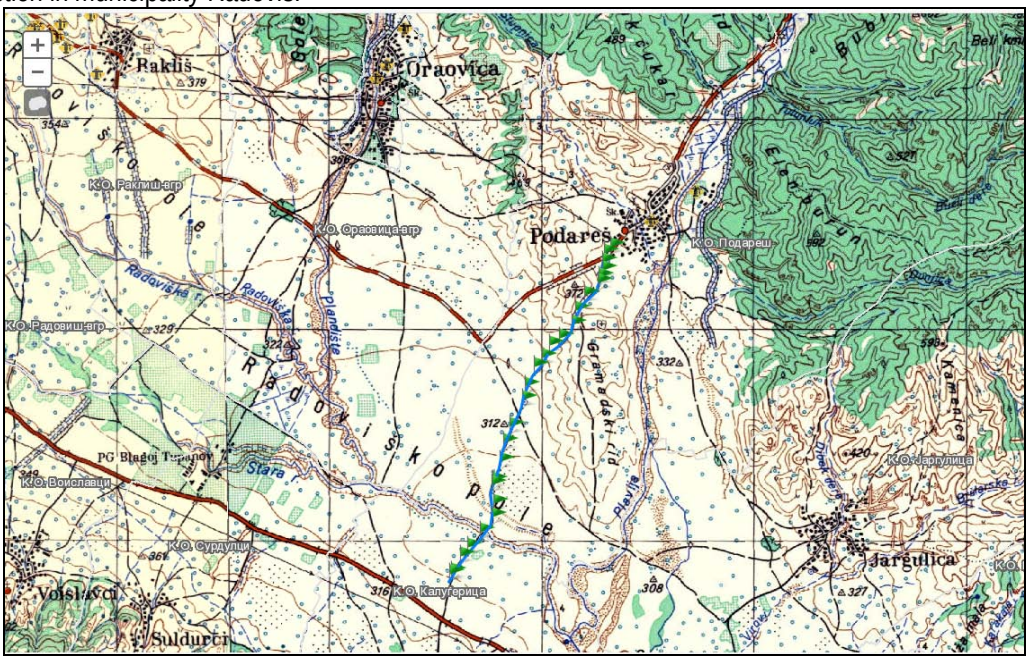

Figure 4 Road layout planned for construction

*Note: The local road subject to construction is shown with blue color and green flats.

Source: http://gis.katastar.gov.mk/arec/

Traffic-transportation system in municipality Radovis, with realization of the proposed project for construction of the local road, will unite as a whole and will allow communication of the residents of the existing facilities,

including the newly constructed facilities, fulfilling the requirements for providing functional transport system. Construction of the road will allow residents from the local communities Oraovica, Zleovo, Jarulica and Pokrajcevo to have faster communication and access the regional road Radovis – Strumica. At the same time, the project will allow farmers and traffic participants to access the only one local oil station located in Kalugjerica, without use of alternative roads. In general, the construction of the road will improve traffic safety and comfort, faster transport to the cities Radovis and Strumica, hence use of markets, health institutions, secondary schools and other facilities located in these cities.

At the same time, with the implementation of the project is expected to increase the property value of the houses and other residential and commercial facilities in the local communities that will increase the revenues of the property tax in the municipality. From here, it is very important detail and fast realization of this infrastructural project.

2.3.3. Strategic goals

The project assumes construction of the local road in municipality Radovis. In order to allow access to the local communities in the municipality, a construction of the road infrastructure is needed. The realization of the proposed infrastructural project for construction of the local road from the local community Kalugjerica to the local community Podares in municipality Radovis, will be in function for ensuring better traffic conditions or development and location of small and medium enterprises from the manufacturing sector in this area. Development factors, such as infrastructure, trade connections, market and other available resources, allow realization of commitments predicted in the Physical plan of the Republic of Macedonia for industry dispersion in the period until 2020 and for location of the industrial capacities in the area around the cities and in the wider rural area. It should be taken into account that determination in physical planning development of the industry for implementation of the principles and standards for environmental protection and sustainable economic development.

The project is in accordance with the strategic documentation of the municipality, such as Green Agenda of municipality Radovis, local action plan for environment 2011-2015 prepared in December 2010, financed by the Ministry for environment and physical planning, prepared by the Center for local development – CELOR, office in Radovis and Milieu contact Macedonia.

In accordance to the local environmental action plan for 2011-2015, in point 9.5 – action plan – physical planning, in the measure for construction, reconstruction and regular maintenance of the traffic network, a measure for planned financial investments for construction and reconstruction of the local roads, i.e. – Initiative for collecting investments for construction, reconstruction and regular maintenance of the traffic network is referred (pg.101).

In the program for arranging construction land, construction, reconstruction and regular maintenance of the communal facilities and local roads in municipality Radovis for 2015, accepted by the municipality in part X local roads/construction, reconstruction and revitalization of the local traffic network in municipality Radovis, planned activity for 2015 as a priority project number 1, is construction of the local road between the local communities Kalugjerica – Podares.

It is very important to emphasis that the local road in relation to its functionality is continuation of traffic flows in the municipality and connection with the regional road Radovis-Strumica. The present condition of the road results in discontinuous of traffic flows and distorted communication with the bigger cities Radovis and Strumica.

The implementation of the project for construction of the local road in the municipality will contribute to development of the area, local economic development and implementation of the planned documentation in the municipality Radovis. The activities that will be provided in both local communities will ensure development and opening of new small and medium businesses, as well as access to the local markets, schools, regional road, and center of the municipality and mutual connection of the local communities. Moreover, the construction of the road will lower the transport distance for approximately 20-30km. This is especially important for the local population that need interventions in the Strumica hospital (especially cases of critical births of women), mostly from the local community Podares, Pokrajcevo, Jarulica and Zeleovo. Construction of the road will ensure

realization of economic, cultural, educational, health and other types of municipality functions with other and indirect effects.

This will contribute to improvement of the quality of life and welfare of all residents in municipality Radovis. As it was explained previously, project implementation will contribute to ensuring safety traffic and comfort, increase in the traffic and communication, safety of the pedestrians, improvement in commercial activities and expansion of the open social and recreate activities for the residents that live on the road.

2.3.4. Knowledge and experience of municipality Radovis

The following table illustrates the municipal experience in implementation of different types of projects mostly related to the municipal development including infrastructural activities, creation and implementation of programs for local development and purchase of equipment.

Table 11 Implemented infrastructure projects in the period of 2010-2015

#	Project name	Financing source	Year	Budget (Denar)
1	Reconstruction and adaptation of the building for social works in health house Dom Radovis considering measures for energy efficiency	Municipality of Radovis	2014-2015	7,200,000
2	Realized project "Multifunctional sport terrains in each local community" in the local communities Jargulica, Kalugjerica, Zleovo and Voislavci	Municipality Radovis	2014-2015	13,000,000
3	Reconstruction of local road Pokrajcevo - M6	Public enterprise for state roads	2014	10,600,000
4	Construction of new ring road on the boulevard "Aleksandar Makedonski"	Municipality Radovis	2014	3,000,000
5	Reservation and arrangement of the school yard in the municipality primary school "Kosta Susinov"	Municipality of Radovis	2014	800,000
6	Construction of 2 tennis terrain as part of the project "100 tennis terrains"	Agency for youth and sport and Government of the Republic of Macedonia	2014	500,000
7	Purchase of children equipment for the municipality kindergarten "Aco Karamanov"	Municipality of Radovis	2014	1,500,000
8	Construction of multifunctional sport terrain in the yard of the municipality primary school "Nikola Karev" in Radovis	Agency for youth and sport	2014	7,000,000
9	Reconstruction and extension of the city football stadium	Municipality Radovis	2014	4,500,000
10	Construction of multifunctional sport terrain in the yard of the municipality primary school "Kosta Susinov"	Municipality Radovis	2014	10,700,000
11	Marking of the Plackovica mountain with informational boards and signposts	Municipality Radovis	2014	500,000
12	Reconstruction and extension of existingroads through municipality Radovis	Municipality Radovis	2013-2014	10,500,000
13	Construction of 2 children recreative playgrounds in Radovis	Municipality Radovis	2013-2014	4,000,000
14	Construction of local road Plackovica-P528 (Kodza Bair)	Public enterprise for state roads	2013	14,000,000
15	Reconstruction of the local road Jargulica - M6	Public enterprise for state roads	2013	10,400,000
16	Reconstruction of local road Shturovo	Public enterprise for state roads	2013	2,000,000
17	Construction of the road Pokrajcevo-Zleovo	Public enterprise for state roads	2013	6,000,000
18	Construction of sewerage networks in UB9, UB9B, Voislavci, Podares and Kalugjerica	Government of the Republic of Macedonia	2012-2015	56,272,500
19	Horticultural and urban arrangement of the local	Bureau for regional	2012-2013	1,400,000

	monastery "Oraovicko"	development		
20	Construction of sewerage networks in Injevo and Jergulica	Municipality Radovis	2012	3,000,000
21	Construction of 3 bridges on the rivers Injevska, Oraovicka and Radoviska	Government of the Republic of Macedonia	2011	22,000,000
22	Construction of new park in local community Oraovica	Municipality Radovis and local NGO	2011	800,000
23	Lowering CO2 and energy efficiency of the kindergartens in municipality Radovis	UNDP, GEF program, Ministry of labor and Main Bucim	2010-2011	3,500,000
24	Construction of waste water treatment plant in Mine Bucim	UNDP, Embassy of Holland, Mine Bucim	2010-2011	82,874,250
			Total	276,046,750

Source: Municipality Radovis

The knowledge and experience needed for successful implementation of the project are related to project management, technical knowledge and execution of procurement practices. Municipality Radovis has participated in a wide variety of large constructions or other type of municipal development projects with different investors, where the municipality allocated the land and provided the investors with technical services, and gained in return new businesses on its territory or improved municipal facilities, schooling facilities, water supply system, etc. The municipality has implemented several projects on improving municipal services supported by national and international donors. It can be inferred that the municipality is able to contribute with the necessary experience to large construction projects such as construction of new and reconstruction of the existing roads.

2.4 Conclusions

The project is in line with the strategic priorities of municipality Radovis and will contribute to achieving the vision of the municipal administration to ensure access to all local communities by full coverage of transportation network in the municipality.

The relevance of the project results from the fact that most of the population is affected by the negative implications of inadequate surface of local roads. The proposed technical solution is in accordance with existing standards and regulations for this kind of projects. For successful implementation of projects, knowledge and experiences required, especially on project management and technical knowledge. Municipality Radovis has implemented a variety of similar projects in the past, some in cooperation with international institutions what means that the municipality is able to carry out large construction projects such as construction and reconstruction of local roads.

3.

SOCIAL IMPACT

3.1 Sociological study

3.1.1 Social analysis

This study is based upon the methodological concept of World Bank summarized as Five Entry Points, One Result. This concept requires exploration of five components: social diversity and gender, institutions, rules and behavior, stakeholders, participation and social risk. The assessment anticipated field research to get available information on interest and attitudes of stakeholders.

The research was based on meeting with a focus group and face to face interviews with the municipality representatives including the mayor, municipal advisors and representative from the financial sector. Meetings were performed in order to give a social assessment of the project on construction of a municipal road.

The interviews were organized with 7 municipal officials: mayor, representative from the financial sector and 5 advisors from different political sides (3 from the ruling political party and 2 from the political parties in opposition). All advisors were from different local communities in the municipality including Podares where the road subject to this appraisal is located. Between the interviewers there were 2 women. They all presented their opinions about the role and influence of various stakeholders in the process of decision making relevant to the project, as well as the level of information, capacities and readiness of the residents to support the project.

Taking their delegation and duties into account, the above mentioned officials proved to be useful interpreters of the opinions of the residents since being their representatives and having frequent meetings with them, they are very familiar with the needs, attitudes and opinions of the local population and the project. The answers from the interviews are very indicative a very good insight in the local processes to the project.

The focus group consisted of municipal residents both direct and indirect users of the project. All participants were from different local communities within the municipality, but mostly from local communities Radovis, Podares and Oraovica. There were 9 participants in the focus group from whom 4 agricultural producers, one retired and 2 construction engineers. Considering the gender issue, in the focus group participated 3 women.

3.1.2 Social diversity and gender

In municipality Radovis, at the road subject to this appraisal, there are residents from different social groups (minorities, gender, language, young couples, etc.) By age there are different groups both including children, youths and elderly people, some of them are people with special needs.

The prevailing nationality in municipality Radovis is Macedonians (84.1%). From the other nationalities that live on the roads there are Roma population 2% and Turks with approximately 16%. Some of the young people are leaving the municipality, moving into the bigger cities or other countries, but most of them stay in the municipality creating their own families. Mostly male population is leaving the municipality to the big cities or other countries for a work, while the female population mostly stays at home. The reasons for these circumstances are the tradition knowledge of the local population. There are a lot of young people who settle in the area at the road which is subject to this appraisal. Approximately, 8,000 residents or 28.3% live on the road and makes them direct users of the project. On the other side, almost all population uses this road due to its importance and connections with the regional road, the municipality Strumica and other secondary roads that leads to the other local communities. More than 10,000 residents or 35.4% are indirect users of the project. If we consider the population that goes to Strumica every day for a work, then the number of indirect users of the road subject to this appraisal is much bigger. Residents who live at the road are nearly equal considering male and female population. There is also young population that lives on the road, especially school children, elderly and people with special needs.

The main municipal priority is to improve the quality of life through economic development and employment of the local population, but also to improve the infrastructure, through construction of roads, sewerage network, storm water system and improving the efficiency of communal services. According to the female population, the most important issues are construction of paved roads with sidewalks contributing to the safety of pedestrians. At the same time, the advisors of the community added the construction of the road subject to this appraisal as a

priority which was already emphasized by the overall population that lives nearby the road. In last five years this was a priority according to the municipality development programs, but there were no financial resources available.

Asked about the number of beneficiaries of the project, the interviewees expressed their opinion that all residents in the municipality will be beneficiaries of the project because these are main roads that connect the local communities within the municipality. At the same time, the road subject to this appraisal leads to the regional road that connects the municipality with other municipalities in the country and the municipality Strumica. The connection with the municipality Strumica is very important because a lot of population from municipality Radovis, especially from the smaller local communities, work in the city and every day goes to work through other roads which are more far away. The new connection with the city will shorter the way from 14km to 30km depending on the local community. Especially, important is the fact that a lot of female population goes to Strumica for their childbirth because there is no enough staff and there is no operation room in municipality Radovis. Moreover, the road is connected to the industrial zone in Podares and the employees and visitors to all businesses located here will use this road. A lot of people are crossing the road every day to their work. This is because the road subject to this project is one of the most important communication local roads by which local population that works in the agriculture commutes to the plots. This is very significant because one of the most important businesses in the municipality is the primary agricultural production and trade. At the same time, the road leads to the local petrol station where the farmers fill up their machinery.

Therefore, through the road crosses mechanization for agricultural production, trucks and vehicles for transport of crop and other agricultural products, as well as vehicles to local businesses. This additionally makes difficult walking on the unpaved road. According to the population who lives and use the location which is subject to this appraisal, the road is in very bad condition with many holes and mud, there are no sidewalks and no storm water system. At this phase of the activities planned in this project, there are no plans for construction of sidewalks and electrification. Only storm water channels are predicted to be constructed on both sides of the road.

The construction of the road is expected additionally to increase the interest for opening new businesses at its location, as well as opening a new factory for manufacturing agricultural products or purchase center for agricultural products which are necessary according to the population that participated in the focus group.

The reconstruction of the road will be beneficial for the safety of women with children, school children, elderly people and residents with special needs, but also in making favorable conditions for the foreign investors to come and work in the municipality which additionally will improve the economic situation.

3.1.3 Institutions, rules and behavior

According to the interviewees' opinions the selected contractor must provide guarantees for the realization of the project. The municipal Council might request information from the mayor in reference to the project's realization at any time. In addition, based on experience with other similar projects and the overall existing roads in municipality Radovis, the municipal administration has the capacity to maintain the road after the implementation of the project. In addition, the municipality has an administration which has experience to monitor the progress of the project.

The municipality will be responsible for maintenance of the road. The local communities are not directly involved in the maintenance, but they can contribute by request of the residents and municipality. For filling holes that appear on the roads municipality provide public bidding procedures for selection of contractors.

According to the interviews the private companies will have great benefits from the construction of the road. The construction will provide easy access to all consumers, which will increase the earnings and trade. This information was confirmed by the focus group and interviewed participants, especially in the interest for opening new businesses from foreign investments.

3.1.4 Stakeholders

There are several important stakeholders of the project. The interviewees fully agree that the most influent participant in the process of decisions making at the municipal level are the mayor and the municipal council.

Residents, as an organized group of stakeholders, articulate their opinions directly to the council and the mayor, trough the local communities present in the municipality, direct contact with the municipal advisors and forums organized by the mayor. The residents can influence the decisions making process, as their opinions are always taken into consideration by the mayor and the council.

The interviewees stated that the project is supported by all councilors representing different political parties in the municipal council, which means that a political consensus is achieved on this issue and that the councilors are considering the project as one of the top priorities of municipality Radovis. In respect to residents, all councilors confirm that all of them support or will support the project, because it is in the general interest at the municipal level. The project was already discussed at the council meetings and the construction of the road was voted as priority. The focus group participants confirm the need of construction of the roads.

One very important question that was discussed is related to the potential *"feeling of inequality among the residents and possibility they could endanger the realization of the project in order to get some personal or group benefits"* The interviewees and focus group participants stated that there is not risk or problems that can appear during the implementation of this project because, like they stated it is for everyone's benefit and good and the project will contribute to live improvement of all the residents in the municipality.

3.1.5 Participation

The residents have submitted their complaints about the current situation in the road that is subject to this appraisal, which again implies that the residents are fully in favor of the project. The residents are well informed about this project by direct interview and discussions with the councilors in each local community. Also, public information for all infrastructural activities undertaken by the municipality are given to the regional television "Kobra", the local television "Eni" and on the web and Facebook page of the municipality. They can influence the necessary changes if there is a need. Residents, through their local communities raise issues considering communal infrastructure, maintenance of public facilities (water supply network, roads, cultural houses, sport facilities, etc.) environmental protection, maintenance and regulation of cemeteries, they provide initiatives on landscaping of the area, public transport, education, health protection, social protection, cultural and sport manifestations, development of good inter-settlement relations, purchase of stocks and services, as well as protection of customers and other issues significant for everyday live and work of residents.

3.1.6 Social risks

High social risk for carrying out the project cannot be perceived. In municipality Radovis, the municipal council organizes meetings to discuss the priorities of municipality development and their realization. In spite of their political orientation, the councilors cannot endanger the realization of the project. As elaborated earlier, the councilors have already expressed their support for the project.

Interviewees presented a wide range of priorities in many plots that are within the local government competencies. They identified the infrastructure and increasing the employment rate as crucial for local economic development. Without exceptions, all of the interviewees said that the one of the highest priority is full coverage of transportation network, since there is often lack of paved roads and communication between different local communities.

Additionally, it was discussed in detail whether the residents are fully informed about the intended construction of the road that are subject to this appraisal. In that way, there is no risk for resident not to be informed about the project activities.

It is very important to state that the municipality has the intention to improve the transportation network in all local communities and in the future to invest in storm water, sewerage and water supply system wherever deemed necessary. It solves the problems that were persistent for many years. With the implementation of this strategically important project, the municipality is sending a strong signal that plans to solve this issue on the whole municipal area. Since the roads subject to this appraisal, it is set on municipal (state) land; no expropriation is expected.

With the construction of the road and storm water channels the risk of flooding will be minimized, while presently there is a constant flooding of the agricultural plots and the unpaved road. The storm water collected in the channels will be led to the nearest river.

3.2 Other issues of considerations

The construction of the road is expected to improve the overall living conditions in the municipality. The implementation of the project is expected to create savings in the municipal budget for the road maintenances and flooding preventions on the long term basis. The implementation of the project is also expected to improve local public finances and reallocate them to other municipal services. Moreover, increased property value as a result of the improved infrastructure will result in growth of revenues from property taxes.

At the same time, the realization of the project will safe finances of the farmers who need to repair and maintain their machinery more frequently due to the bad present conditions of the unpaved road.

3.3 Resettlement issues

The project is not a subject to resettlement issues because it involves construction of new road in the municipal territory where already unpaved road exist. The construction of the road will improve the transport and will allow development of new small businesses, as well as agricultural factory or purchase center. Constructed infrastructure network will bring investments, especially from the migrated population in the foreign countries. The increased number of businesses will open new jobs for the local population and contribute to the employment of young people. In that way, decreasing emigration is expected.

3.4 Conclusion on the project potential success and recommendation

The project is expected to be socially successful for the following reason:

- The project is relevant because it is considered both cost-efficient and cost-effective over a long run and also useful for the improvement of the community living in municipality Radovis;
- The project is of a highest municipal priority for the public administration and for residents;
- The stakeholders are very motivated by the realization of the project;
- The project is not a subject to a resettlement issues;
- No expropriation issue is expected to be raised during the implementation of the project because they are already regulated.

The main drivers of the change that will bring about prosperity are the municipal authorities (mayors and councilors) who have initiated and made the decision for seeking funding from the World Bank funded MSIP. Since the problem of bad infrastructure exists for many years it has been publicly declared and discussed on many occasions. Direct beneficiaries of the project are the residents who live or work on the selected road.

A part of the vulnerable and poor groups identified by the municipality (people with special needs, single mothers and elderly people), as well as kids and school children have special needs considering paved roads that will ease their movement. Gender balance needs to be incorporated in the strategic approach of the municipality and public communal enterprise towards all development efforts.

High socials risks for carrying out this project cannot be perceived. There are no issues connected with ethnic distribution of population or inter-local community rivalry: the action will allow benefits for all nationalities, it will cover the majority of residents in the municipality and there are no land ownership concerns that need to be resolved.

4.

ENVIRONMENTAL IMPACT

The main aim of the project is to improve the traffic safety and economic conditions within the municipality through construction of a new road with total length of 3,646.03m between two settlements: Kalugjerica and Podares. The carriageway of the road will be with total width of 6m, which implies 4m wide road and 1 m wide shoulders on the both sides. The projected driving speed is V=40km/h. Construction of the new local road will directly contribute to improvement of the traffic conditions and traffic safety and air quality, improvement of the well-being of the local population and in the region and will contribute to positive socio-economic developments.

Current situation

According to the national legislation this road is classified as municipal public road and it has a major role in the municipal traffic flow. Despite being a link between two local settlements, this road also makes connection with the regional road Radovish-Strumica and with the center of the municipality. Currently, the road does not meet the national requirements for traffic safety, the road is unpaved and in bed condition, which contribute for increased level of dust emission, poor health of population, and presents safety risk for the population and farmers.

Project location

Project activities will be located in rural area in the municipality Radovis. The road passes through agricultural area and in one place crosses the river Stara (River Radoviska) through the existing bridge with of 4m wide and 11.4m long. Only small part of construction area is surrounded by family houses. The municipality Radovis performed the land expropriation by the local farmers on the locations where the road will be passed.

Main project activities with environmental impact

The main project activities during the preparation and construction phases are presented on the Table below:

	Planned project activities
The road between settlements Kalugjerica and Podares	Clearing and marking out the route of construction site where the project activities will take place; Removal of the vegetation layer, excavation of soil and making embankments; Placing a layer of crushed stone material; Pavement of the road (placing a layer of bituminous-asphalt layer) in distance of 3,646.03m with total width of 6m.

The expected adverse environmental impacts during construction project activities are: increased level of noise (generated from the operation with heavy construction machinery and equipment), incompliance with OH&S requirements (according to national legislation on safety and health conditions for the workers), air (dust) emissions and inappropriate waste management. All these impacts are expected to be generated in the construction phase of the project. In the operational phase, the main adverse impact (air emission) will be caused by the mobile source of pollution: vehicles.

Main environmental impacts and sensitive receptors

The location were the project activities will be performed is in rural area (agricultural area) between two settlements Kalugerica and Podaresh in the municipality Radovis. In order to ensure the safety and low risks of injuries for workers and local communities, accidents during the construction phase of the project, the Contractor has to fulfill the OH&S requirements/standards. The Contractor should prepare and implement (with prior approval by the Supervisor) the OH&S and community safety Plan. The construction site should be properly organized, marked and secured that would prevent possible injures for workers or local population. To provide safer and proper people and goods movement within the project location (and beyond) the Contractor should also prepared Traffic Management Plan (TMP) with re-routing directions and works time schedule. The TMP should include all necessary information and data related to proper transportation of workers, equipment and mechanization outside the settlement area. The scheme of the parking lots for the mechanization, temporary storage of construction material, vehicles speed limitation, horizontal and vertical signalization and other measures for safety traffic during construction phase should be included as a minimum within the TMP. The adverse impacts will be medium term – through the whole period of project duration with major significance for the workers, community and drivers driving along the road.

The sensitive receptors that will be exposed to increased level of noise during construction activities are farmers who work on their land along the local road and local population who lives near the settlement Podares. Mostly, the construction site belongs to area with IV degree of noise protection (according to the Law on noise sensitive protection, Official Gazette No. 79/07, 124/10, 47/11 и 163/13), but a small part (near the family houses in the local settlement Podares) belongs to area with III degree of noise protection. The noise limit values for area with III degree of noise protection should not exceed 60dBA for night and 55dBA for day and evening and IV degree of noise protection - 70dBA for night and 60dBA for day and evening. The impact will be short term, irreversible with minor significance.

During construction work of the local road the generated air (dust) emission will be produced from the operation of the construction machinery and equipment (which will be used for the supply of crushed stone material, bituminous asphalt material, transportation of excavated soil, etc.). The impact will be with short duration and moderate significance. In the operational phase of the local road the air emission that may occur are from the mobile source of pollution-vehicles.

During the construction phase, the municipal solid waste and waste from the excavation of soil and vegetation removal will be generated as the main waste streams. The estimated value (according to the Project Main Design) for waste from the excavation of soil that will be generated during construction activities is 4,234m^3. In order to manage all generated waste streams on the site along the road, the Contractor should prepare and implement the Waste Management Plan (approved by the Supervisor). The Contractor should sign the Contract with the authorized companies for collection, transportation and final disposal of various waste streams (inert, municipal waste, if any hazardous stream occurs, etc.). The transportation and final disposal of municipal and inert waste should be performed on municipal landfill “Sushica” - 2km northwest from the City of Radovis. There is a Public Enterprise for communal works established by the municipality (CSE “Plavaja” from Radovis) responsible for dealing with municipal solid waste and inert waste. It is forbidden temporary or final waste disposal near or in river bands (across the construction site passes Radoviska (Stara) River).

At the route chainage from km 0+670.99mm to km 0+684.17m there is an existing reinforced concrete bridge with width 4m on River Radoviska, so there is a risk of surface water pollution caused by improper waste disposal, wet concrete disposal or erosion near the river banks. According the national legislation (Regulation for Categorization of Water Courses and Lakes - “The Official Gazette of the Republic of Macedonia no. 18- 99”) the water characterization of the River Radoviska is III class (I-V classes are defined according the national legislation, the I class is the good quality and the V class is the worst quality). The III class means polluted, which cannot be used for bathing and recreation, water sports and fish growing. The adverse impact could be local with short duration but it could be with major significance. The main protection measures from water pollution are not

to dispose any wet concrete in, or close to watercourse (River Radoviska), prevent and monitor if any leakage of fuels, lubricants occurs, prevent the erosion of the soil near the river banks, etc. Also, the road should be kept clean and tidy to prevent the build-up of oil and dirt that may be washed into a watercourse or drain during heavy rainfall.

Protected areas and endangered and protected plant and animal species are not recorded at or near the project location.

In November 2013, the EIA Report was prepared for the construction of the local road between settlements Kalugerica and Podares by the company "Dizajn Centar Inzenering" from Kavadarci. The EIA Report was adopted by the Mayor Mr. Sasko Nikolov. The Report contains the main project goals, main project activities, photos of the location where the construction activities will be performed and general protection and mitigation measures.

The preventive and mitigation measures which should be implemented by the Contractor are presented in the Environmental Mitigation Plan and Monitoring Plan. The monitoring of their implementation is main obligation of the Supervisor.

Mitigation Plan

Potential impact	Impact scale	Proposed mitigation measures	Responsibility
Project activity: Marking out the route for construction of new road connecting local communities Kalugjerica and Podares in Municipality Radovis			
Possible adverse social and health impacts to the population, farmers, drivers and workers due to: – Lack of ensured safety measures at the start of construction works – Injury passing near by the construction site and open trench and manholes – Not compliance with strict OH&S standards and work procedure – Inappropriate public access within the local communities	Local/ between the local communities Kalugerica and Podares Medium term during the construction period (3,646 km length) Significance - major	➢ Preparation, approval and implementation of the OH&S Plan; ➢ Preparation, approval and implementation of Traffic Management Plan together with the municipal staff (Communal and Environmental Inspector) and prior start up activities; ➢ Provision of the information via municipal TV, radio and web site about the construction activities – start and finish of work for each day and location of activities, duration of work and traffic access on other streets; The information could be posted on the local community's notice boards; ➢ Application of good construction practice for marking out the construction site including: • Ensure the appropriate marking out the construction site /section by section along the street; • Placement of attention signs especially for limitation of speed driving near the construction site; • Warning tapes and signage need to be provided; • Installation of Notice board with general information about the project, Contractor and Supervisor at the construction site; • Forbidden entrance of unemployed persons within the warning tapes; • Community and Worker's OH&S measures should be applied (first aid, protective clothes for the workers, appropriate machines and tools); • The construction site should be kept clean; • The mobile toilet should be placed on the construction site; • Machines should be handled only by experienced and trained personnel, thus reducing the risk of accidents; • Constant presence of fire fighting devices should be ensured in case of fire or other damage; • All workers must be familiar with the fire hazards and fire protection measures and must be trained to handle fire extinguishers, hydrants and other devices used for extinguishing fires; • Larger quantities of flammable liquids should not be kept on the site along the reconstruction site.	• Contractor – Bidder • Supervisor • Municipal staff (Communal Inspector and Environmental Inspector)
• Project activity : Construction of new road connecting local communities Kalugjerica and Podares in Municipality Radovis			
Possible impacts on landscape and visual aspects	Local/ between local communities Kalugerica and Podares	• Good construction practices have to be implemented – including fencing and protection of construction site according to national legislation; • Minimization of the construction area as much as possible (careful planning and designing of the project activities according to the Traffic Management Plan for a certain period of time);	• Contractor – Bidder • Supervisor

Potential impact	Impact scale	Proposed mitigation measures	Responsibility
	short term /minor	• Fully clean-up of the construction site immediately after accomplishment of construction activities (section by section); • Collection of the generated waste on daily basis, selection of waste, transportation and final disposal on appropriate places (according the type of waste – more details under Waste management issue).	
Possible emissions by transportation vehicles and impact on air quality in the Municipality of Radovis due to: – Gases emissions of dust-suspended particulates – Traffic congestion will be caused as well causing changes in existing traffic flow	Local/ between the village Kalugerica and village Podares short term/ major	• Construction site, transportation routes and materials handling site should be water-sprayed on dry and windy days; • Construction materials should be stored in appropriate places covered to minimize dust; • Vehicle loads likely to emit dust need to be covered; • Usage of protective masks for the workers if the dust appears; • Restriction of the vehicle speed within the construction site; • Perform regular maintenance of the vehicles and construction machinery in order to reduce the leakages of motor oils, emissions and dispersion of pollution; • Burning of debris from ground clearance not permitted.	• Contractor – Bidder • Supervisor
Possible noise disturbance as a result of outdoor equipment usage and transportation vehicles driving around the site	Local between local communities Kalugerica and Podares short term /minor	• Majority of the constriction area is agricultural and belongs to fourth level of protection where the level of noise should not exceed 70dB during the day and evening and 60dB during the nights; • Only a small fraction of construction site passes through the family houses, so this area belongs to third level of noise protection and the level of noise should not exceeded not exceed 60dB during the day and evening and 55dB during the nights; • The control of noise level should be performed during work peaks; • The construction work should be not permitted during the nights; the operations on site shall be restricted to the hours 7.00 -19.00.	• Contractor - Bidder • Supervisor
Possible impact on soil and water (River Radoviska) and cause the erosion of the land as a result of - Construction activities	Local/within the municipality major	• The land needs to be stabilized in order to prevent erosion of land; this should be done by implementing proposed project solutions (curbs, adopted longitudinal and crosswise profiles) avoiding the suspended maters to flow into the stream; • Reduction / elimination of waste lubricants and oils in the waste water which will appear after rains or other precipitation; • Application of remedy measures as replanting the soil under the bridge with native species;	• Contractor - Bidder • Supervisor

Potential impact	Impact scale	Proposed mitigation measures	Responsibility
and large water level - water under the bridge - Loss of upper soil layer due to erosion as a result of construction activities - Damage of the soil structure by movement of vehicles		• To avoid storing water polluting substances (for example fuels, or substances for maintaining machines); • To avoid filling in vehicles and machines with fuel on the construction site or to store fuel, oil or lubricants along the road/bridge on River Radoviska; • Control and safety service should be established in order to control the vehicles and find possible defects which could cause uncontrolled leakage of oil, oil derivate, lubricants and other chemicals; • The cleaning and washing of construction machines should be performed on locations dedicated to that purpose and in a way not to cause runoffs into ground water; • All roads and asphalt surfaces should be maintained clean in order to prevent runoffs from them into the ground water and other water flows.	
Possible adverse environmental impact and health effects could occur as a result of generation of the different waste streams The inappropriate waste management and not in time collection and transportation of waste streams	Local between local communities Kalugerica and Podaresh short term/ major	• Identification of the different waste types at the construction site (soil, sand, vegetation, bottles, food, etc.); • Classification of waste according the national List of Waste (Official Gazette no.100/05) - The main waste would be classified under the Waste Chapter 17 “Construction and demolition wastes (including excavated soil from contaminated site)” with the waste code 17 05 04 – Excavated soil and 17 09 04 – Mixed waste from construction site; • Small amount of solid municipal waste could be found (food, beverages), as well as packaging waste (paper, bottles, glass, etc.); • Collection, transportation and final disposal of the inert and communal waste by PE “Plavija” from Radovis to the landfill Sushica-located 2km northwest from the City of Radovis; • Possible hazardous waste (motor oils, vehicle fuels) should be collected separately and authorized collector and transporter should be sub-contracted to transport and finally dispose the hazardous waste; • The materials should be covered during the transportation to avoid waste dispersion; • Burning of construction waste should be prohibited.	• Contractor - Bidder • Supervisor • Municipal staff (Environmental Inspector and Communal Inspector) • Mayor of the Municipality Radovis • CSE “Plavija”” from Radovis
• *No environmental impacts are expected during the Operational phase – the regular preventive maintenance of the road is needed*			

Monitoring Plan

What parameter to be monitored?	Where is the parameter to be monitored?	How is the parameter monitored?	When is the parameter monitored (frequency of measurement)?	Why is the parameter monitored?	Cost		Responsibility	
					Construction	Operations	Construction of local roads	Operations of the local roads
Project stage: Preparation activities/ Startup of the construction work (site cleanup, and marking out the route and construction site along the construction area)								
The safety protection measures applied for the workers	On the construction site	Visual checks	During the clean-up activities At the beginning of each working day during the project activities	To prevent health and safety risks – mechanical injuries To be in compliance with national communal health regulation and OH&S standards			Contractor - Bidder Supervisor Communal Inspector at the municipality Radovis	
Project stage: Construction of new road which connecting local communities Kalugjerica and Podares in the municipality Radovis								
Safety traffic flow through the construction site	On the site	Visual monitoring	During the working day	To ensure the coordinated traffic flow through the construction site			Contractor - Bidder Supervisor Communal Inspector	
Disposal of the waste streams (solid and liquid) near the River Radoviska as potential pollution of good ecological status of water course	Near the project areas	Visual check if the waste is disposed near the River Radoviska	During the construction period (once per week)	To ensure good status of water quality			Contractor - Bidder Supervisor	
Primary selection of the waste streams as they are generated at the spots	On the site	Review the documentation	At the beginning of work with new material/s	To separate hazardous from the non-hazardous waste as well as inert from biodegradable waste			Contractor – Bidder Supervisor	
Collection and transport as well storage of hazardous waste (if any occurs)	On safety temporary storage	Review the transportation list and conditions at the storage facility	Before the transportation of the hazardous waste (if there is any)	To improve the waste management practice on municipality and national level/ Not to dispose the hazardous waste on the waste disposal spots			Authorized Contractor for collection and transportation of hazardous waste (if any occurs)	
Collection transportation and final disposal of the solid waste	On/around the construction site	Visual monitoring and reviewing the transportation and disposal lists from the	After the collection and transportation of the solid waste on regular base each day	Not to leave the waste on the spot to avoid the environmental and health impact on residents			Contractor – Bidder Supervisor	

What parameter to be monitored?	Where is the parameter to be monitored?	How is the parameter monitored?	When is the parameter monitored (frequency of measurement)?	Why is the parameter monitored?	Cost		Responsibility	
					Construction	Operations	Construction of local roads	Operations of the local roads
		sub-contractor		To have the real data for generated waste streams and to improve the waste management				
Fulfilled Annual Report for collection, transportation and disposal of waste	Local self-government administration	Review of documentation – Identification of waste list	After the accomplishment the task of collection, transportation, temporary disposal and final disposal of waste	To improve the waste management on local and national level To be in compliance with national legal requirements			Mayor of municipality Radovis/ Ministry of Environment and Physical Planning	
Noise measurements	Near the houses	Noise measurements	During the work peaks	To ensure noise level limits according regulation			Contractor - Bidder	

5.

TECHNICAL SOLUTION

5.1 Description

The project assumes construction of a local road between two different local communities in municipality Radovis. Construction of the local road will be performed on dirt road that connects local community Kalugjerica and local community Podares and is with total length of 3,646.03m.

In order to enable the construction of the road, an expropriation has been successfully accomplished by the municipality to all plots that cross the road[2]. The road subject to construction is classified as a municipal public road and connects local communities within municipality and is of great significance for the municipal traffic[3].

All technical documentation and traffic communication for construction of the municipality road is prepared in accordance with the legislation and current standards in the country, as well as available data for existing and planned infrastructural facilities. The existing layout crosses the river Stara (River Radoviska) through the existing bridge with of 4m wide and 11.4m long. It should be part of the newly designed and constructed road layout. The road layout is shown in the following figures.

Figure 5 Local road Kalugjerica – Podares
Note: The local road subject to construction is marked with blue color and green flats
Source: http://gis.katastar.gov.mk/arec/

Figure 6 Local road Kalugjerica – Podares
Source: Infrastructure project with technical number 2979 since April 2014

[2]Elaborate for expropriation with technical number 07-261 since 03.10.2008
[3]Law on public roads, Official Gazette of Republic of Macedonia, number 84 since 11.07.2008

5.2 Analysis, evaluation and potential amendments

The technical documentation on preparation of infrastructural projects for construction of the road is classified as a municipal road for secondary traffic network and connects two local communities Kalugjerica and Podares. Technical documentation for construction of the local road consist of Infrastructural Project with technical number 2979 since April 2014 prepared by "Design Center Engineering" from Kavadarci and Main Project with technical number 023/2013 P since July 2013 prepared by "Doming PTP" from Radovis. On municipality Radovis request is prepared technical solution for protection of the pipeline for irrigation of agricultural plots that are located on the road layout the section from chainage km 0+000.00m till km 0+040.00m. The pipeline is in ownership of Water Economy "Radovisko Pole" and is located at depth of 50cm from the terrain. Technical report is prepared by "Doming PTP" from Radovis in addition to the Main Project.

Total length of the road planned for construction in municipality Radovis is 3,646.03m. The beginning of the layout starts in the local community Kalugjerica immediately after not leveled road node, and the end is immediately before the local community Podares.

In the process of preparation of project documentation are not prepared geo-mechanical and geotechnical research activities on the terrain. Terrain characteristics are received by visual observation. The terrain is healthy, stable, with no visible signs of existing landslides and landslides that could possibly occur. Geodetic surfaces are prepared with recording and with computer processing are supplemented to the necessary level for preparation of the Main Project. The structure, size and proposed technical solutions of the road is based on the current legislation, regulations and standards applicable for this kind of traffic on local roads.

In construction of the road, the following activities should be performed:

- Marking and ensuring of the alignment - the operation includes marking of the alignment, geodetic measurements regarding the transfer of data from the project to the location or from the location to the drawings and keeping the marks of the location throughout the period of construction. Despite marking of the alignment is provided cleaning of the existing bridge and the existing plate omission of trees and roots;

- Firstly, planning the route or excavation of parts of the route that is necessary will be performed. Excavations for making the underground (removal of humus of the parts under the embankment, compaction of the underground layers performed with mechanization for compacting according to the type of the underground layers), making embankments, leveling and compaction of the base;

- Excavations for the upper part of the road which includes making of the buffer. The first layer of the underground layer constitutes buffer which is made by spreading and compacting with vibration of crushed stone material with a thickness of 20cm;

- Preparation of stabilized edges with compaction and planning. The material for construction will be buffer;

- Paving the upper part of the road in accordance with the project documentation;

- Placement of reinforced concrete tube omission with a diameter Φ1000, performed with concrete type MB30 or more, on fresh concrete foundation prepared by concrete type MB20. It should start on the downstream side with effusion head, on previously prepared foundation according to the project.

5.2.1 Construction of a local road in municipality Radovis

The purpose for construction of the local road in municipality Radovis is to construct a new paved traffic road on over the existing dirt road. At the route chainage from km 0+670.99mm to km 0+684.17m there is an existing reinforced concrete bridge with width 4m. It will be part of the newly designed layout. At the chainage km 2+487.49m – km 2+491.91m there is existing reinforced concrete slab culvert that will be also used for drainage of surface waters and will be adjusted within the design.

The total width of the carriageway is 6m, and consists of roadway 4m wide and two sided 1m wide shoulders along the road, as it is shown in the following picture. Projected speed of driving is V=40km/h.

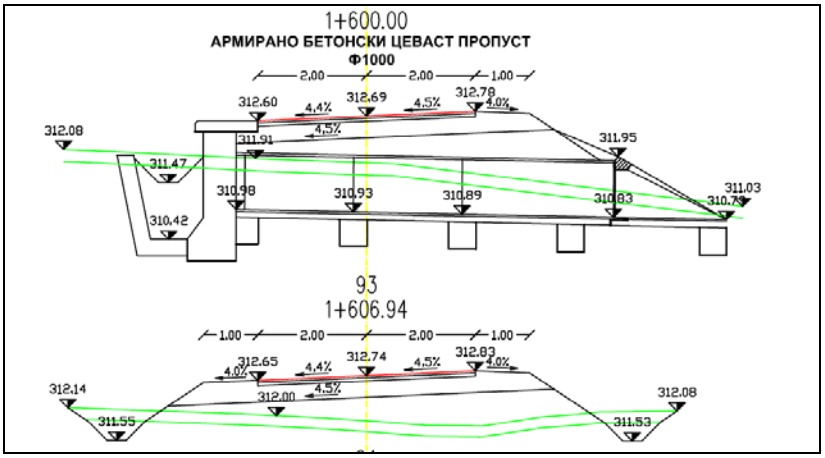

Figure 7 Profile of the local road with new tube omission and typical normal profile
Source: Technical design of local road Kalugjerica-Podares with technical number 023/2013 - P

The construction of the road bed structure will be performed on the following way:

- Wear Course of asphalt-concrete (AB – 11) …….. 4cm;
- Bearing Course of bituminous layer (BNS - 22)…….. 6cm;
- Road base crushed stone layer ……..... 30cm.

The horizontal solution is defined with 33 directions and 32 horizontal curves in accordance with the existing unpaved road and previously prepared RC slab culvert and bride.

The design attains the required maximal and minimal longitudinal slope for this category of road. The minimal applied longitudinal slope is 0.3%, and is on the limit of allowed values and the maximal longitudinal slope is 9.25%. The cross section profile the road is designed with a cross slope of 2.5% till maximal used cross slope of 5%.

The surface water on the road, through the channels dewaters in the existing culverts and discharges to the final recipient. The under carriage is leaded by unilateral slope by filtering the remaining water in the channels. The channels are predicted with two different dimensions. From chainage km 0+000m to chainage km 0+650m are predicted trapeze channels with width 0.5m and high 0.5m with a slope 1:1 of the slopes.

From chainage km 0+650m to chainage km 3+646.03m, i.e. to the end of the layout are predicted trapeze channels with width 0.35m and high 0.35m with a slope 1:1 of the slopes. On the chainage km 1+600m is predicted reinforced concrete pipe culvert with Φ 1000mm.

On the layout of the local road from the chainage km 0+000.00m till km 0+040.00m is placed the pipeline with Φ 225mm for irrigation of the agricultural plots in ownership of Water Economy “Radovisko Pole”. The irrigation water comes from the Lake Mantovo, but the pipeline is placed shallow and it should be protected before construction of the road. Water Economy “Radovisko Pole” on May 12, 2015 approved the protection of the pipeline from the intersection to the local road by giving positive opinion on the realization of the project. In accordance with the project documentation the pipeline will be dislocated at a safe depth of 1m, the pipe will be replaced with a more resistant pipe to vibration and will be additionally protected with metal pipe with Φ 273mm.

5.3 Alternative sources

In order to provide the most suitable solution, several alternative approaches are analyzed in detail. One of the solutions is to solve the infrastructural network in whole, by whole construction of the roads, i.e. construction without protection of the existing pipeline for irrigation of the agricultural plots. However, this solution is not

accepted because it will lead towards increased traffic and use of road by trucks and other heavy vehicles for the agricultural needs, and by that for a short period of time the existing pipe will damage and will lead to leakage of the water and damage of the newly constructed road. The existing unpaved roads are not functional and cause damage to vehicles and therefore the traffic is lower.

An alternative option is accepted by solving the infrastructure by protection of the existing pipeline, so before construction of the road the municipality will protect the pipeline. By this approach, the farmers can smoothly work and irrigate the agricultural plots and will provide safe and fast transport to the markets to the nearest municipalities. This will lead to gradual development of the economy of municipality Radovis. This is the main reason why the engineers in the municipality and the team for project design pointed out that there is no alternative solution for construction of the local road in the area.

5.4 Conclusions and recommendations

The project is in accordance with the existing positive laws and regulations in the country. In preparation of the documentation are used geodetic situations in size R 1:1000 for municipality Radovis, analyzing the terrain and determining the spatial limitations of the location.

The technical solution is in line with the positive regulation, or any applicable laws, by-laws and standards for the construction and urban planning in the design of linear infrastructure systems for construction of roads. It is very important that municipality Radovis proposed construction of this infrastructural linear system that connects several local communities in the municipality as its highest priority on the basis of public hearings and various demands of residents. Other benefits in the implementation of the project are developed in the following sections of this appraisal.