Republic of Macedonia
Municipality Delcevo

PROJECT APPRAISAL DOCUMENT

Extension of kindergarten “Veseli Cvetovi” in the Municipality Delcevo

World Bank
Municipal Services Improvement Project

Skopje, January 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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CeProSARD would like to express many thanks for their generous and immense contribution to:

WB MSIP team – PMU office, Skopje
Mr. Darko Sehtanski, mayor of the municipality
Mr. Toni Ivanov, manager of the kindergarten "Veseli Cvetovi" Delcevo
All municipality staff that help in receiving quality data and information
All representatives from the municipality council who participate at the interviews
All residents who participate at the focus group

Skopje, January 2015

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1.

INTRODUCTION

In municipality Delcevo there is one kindergarten “Veseli Cvetvi” that provides services in two buildings, one on the street S. Markovikj, which is near to the municipality building and the other, which is near the primary school “Sv. Kliment Ohridski”.

The building on the street S. Markovikj was recently renovated according to the energy efficiency principles that reduced heating costs for 30%. Previously annual heating costs were Euro 30,000 and now they are Euro 20,000. The reconstruction was made within the UNDP project, where the kindergarten participated with 50%, i.e. Euro 35,000, while the total investment was Euro 70,000. The investment in the kindergarten was made with its own funds. This investment will allow savings to be even bigger in future.

The existing kindergarten has an excellent reputation in the city, and dues the number of citizens that want to include their children in the kindergarten. At the moment, there are 259 children accepted in the kindergarten that is 31% of the number of children in the municipality in the age group 0-5 years. With the extension, number of children accepted in the kindergarten for the next year will be 380 that is 45% of the total number of children in the same age in the municipality. This is far above the country average which is approximately 20%.

The extension is in accordance with the strategic objective of the municipality to include as many as possible children in pre-school education.

The project assumes extension of the existing kindergarten located on the street S. Markovikj in the municipality Delcevo. The extension will be performed in order to increase the capacity of the existing kindergarten and to improve conditions for children care. The purpose of the facility is kindergarten care of children from youngest to preschool age. In the extended part should be accepted approximately 120 children who are already waiting to be accepted for childcare.

In accordance with the existing regulation in the country and EU, considering the construction field, the kindergarten should be built as energy efficient building with good thermal protection and rational utilization of thermal energy. Additional benefit is that in the extended part will be installed under-floor heating system $40/30^0$C. The required energy for heating will be provided from existing hot water boiler and by using mixing valve the temperature will be lowered to 40^0C. At the same time, the under floor heating system will be connected with a solar collectors system.

Use of solar energy will allow for providing sanitary hot water in the existing and extended building, as well as heating the water of under-floor heating system in the extended building. With this approach of setting solar collectors, the consumption of oil for heating and electricity for heating the sanitary water will be reduced. In that way, the project has positive impact on the environment, with providing significant energy savings.

The technical documentation for the construction of the extension of the kindergarten has been approved by the municipality Delcevo under the document No.12-478 from November 20, 2012. The extension of the kindergarten has been already launched with municipal funds and substantial share of works was completed (technical acceptance was done on 4.06.2014). However, due to the lack of finances, so far is prepared only part of the excavation, concrete and reinforcement works, and the additional financial assets for completing outstanding works are requested from the MSIP project.

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 pre-school age children care is directly linked with improving social services, 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 the municipality

Delcevo is a big urban[1] municipality and it is located in the endmost eastern part of the Republic of Macedonia. According to its absolute attitude it is included in the group of municipalities with nearly average values in the country. It extends from the north-west to south-east. It borders with Blagoevgrad in Bulgaria on the east, municipality Pehcevo on the south-east, municipality Berovo on the south and municipality Vinica on the west. The biggest part of the local communities is spreading in Pijanec valley, while a small part of the south slopes on Osogovo Mountains, i.e. in the upper basin's region of the river Bregalnica.

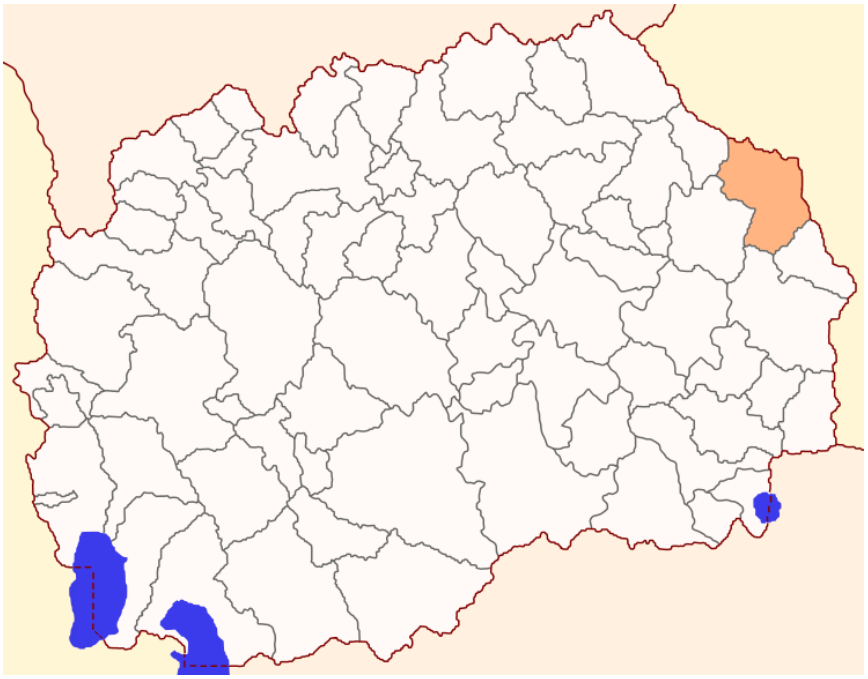

Figure 1Location of Municipality Delcevo
Source: Municipality Delcevo, 2014[2]

Municipality and its wider surrounding are extended between the following coordinates: N 41º 58' and E22º 46', at 630m above the sea level. The total area of the municipality is 422.39 km^2. Likewise Delcevo is situated on a very important cross road through which, in parallel direction, leads the shortest link between the valley of Vardar on one side and valley of Struma on the other side.

In the municipal territory crosses the main road M5, which connects the municipality with the Republic of Bulgaria. With the traffic system of the country the municipality is connected with several regional roads: R533 connects Delcevo with Kocani and from there with Shtip and Veles, R521 connects the municipality with Vinica through the village Bigla, R522 connects Delcevo with Golak Mountain and R523 connects Delcevo with Berovo.

Municipality consists of 22 local communities, from which only Selnic is hilly and all the others low land (Bigla, Vetren, Virce, Vratislavci, Gabrovo, Grad, Dramce, Zvegor, Iliovo, Kiselica, Kosovo Dabje, Novi Istvenik, Ocipala, Poleto, Razlovci, Stamer, Star Istvenik, Trabotiviste, Turija, Ciflik and the city of Delcevo). The city of Delcevo, the central local community in the municipality, besides that it is on the periphery of the Republic, it has good geographical position and traffic connections. It is an important chain for so-called "Eastern Macedonian Arterial

[1] An urban area is the region surrounding a city. Most inhabitants of urban areas have non-agricultural jobs. (Source National Geographic, http://education.nationalgeographic.com/education/encyclopedia/urban-area/?ar_a=1, accessed: 04.12.2014). According to the State Statistical Office data in 2013, the agriculture is represented with only 6.4% from the total active business subjects in the municipality Delcevo.

[2] www.delcevo.gov.mk, accessed: 14.11.2014

Road", which connects all larger settlements in this part of the country and further with parts of territory in neighboring Bulgaria. The city is only 10km from the border passage "Arnautski grob" (1,117m altitude) toward neighbor Bulgaria.

Figure 2 Local communities within Municipality Delcevo
Source: Municipality Delcevo, 2014[3]

Municipality is connected to the power supply network of the Republic of Macedonia with 110KV transmission line from Kocani - Makedonska Kamenica – Delcevo – Berovo and with 35KV transmission line from Kocani – HE "Kalimanci". Power supply network coverage in the municipality Delcevo is 100%.

The climate in municipality Delcevo is Eastern European with moderate - continental mode. The meteorological data show average annual temperature of 10.7^{0}C with an absolute minimum of -26.7^{0}C and an absolute maximum of 37°C, while the mountains average annual temperature is reduced to 3.5^{0}C.

Table 1 Temperature in municipality Delcevo in ^{0}C

Measurement unit	Month	Temperature
The hottest month	August	21.6
The coolest months	January	0.1
	February	0.4
	December	2.6
Absolute minimum		-26.7
Absolute maximum		37
Average annual temperature		10.7

Source: Profile of Municipality Delcevo, 2014

[3] http://www.stat.gov.mk/Opstininm.aspx?mbop=1325, accessed: 14.11.2014

Cloudiness and fog is not big, so during the year dominate bright and sunny days. The average solar insolation or shine is 2,310h.

The average number of rainy days per year is 71, with an average annual rainfall of 548mm. Precipitation although relatively low, their schedule in vegetation period (April-September) is favorable and is over 50% of the total annual rainfall. Vegetation period with the temperature above 10^0C lasted 191 days during the year.

Table 2 Local communities in municipality Delcevo

#	Local communities	Absolute attitude	Area (km²)	Population		Agricultural structure (ha)			
				1994	2002	Cultivated soil	Pastures	Forests	Total
Municipality Delcevo		714	432.3	17,258	17,505	11,727	7,375	19,296	38,398
1	Bigla	760	31.9	69	274	469	787	1,591	2,847
2	Vetren	800	14.8	167	114	542	347	527	1,416
3	Virce	740	29.7	610	498	983	257	1,537	2,777
4	Vratislavci	800	11.7	78	32	315	163	633	1,111
5	Gabrovo	680	26.7	824	794	505	503	1,545	2,553
6	Grad	700	27.0	683	534	1,014	356	1,142	2,512
7	Delcevo	635	27.8	10,470	11,500	989	358	1,126	2,473
8	Dramce	770	55.2	412	288	815	991	1,562	3,368
9	Zvegor	680	21.3	945	904	623	233	1,036	1,892
10	Iliovo	630	14.4	168	127	360	96	756	1,212
11	Kiselica	865	10.5	73	35	373	343	280	996
12	Kosovo Dabje	700	-	34	21	-	-	-	-
13	Novi Istveik	760	17.1	258	144	799	115	738	1,652
14	Ocipala	600	6.7	104	92	212	179	218	609
15	Poleto	580	-	113	194	-	-	-	-
16	Razlovci	690	60.2	895	826	1,650	1,160	2,944	5,754
17	Selnik	880	11.1	66	28	266	348	442	1,056
18	Stamer	740	13.7	443	344	387	162	700	1,249
19	Star Istvenik	700	17.7	136	70	559	574	526	1,659
20	Trabotiviste	660	22.5	564	533	634	291	1,144	2,069
21	Turija	730	4.9	126	102	103	49	322	474
22	Ciflik	600	7.4	20	51	129	63	527	719

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

According to the last revised Census of population and households (2005) in 2002 the population density is 41 residents per one km², which is almost a half the average in the country. The number of residents has been increased for 247 or 1.4% since 1994. The total number of households is 5,568, i.e. 3.1 residents live in every household. In both cases they are below the average number in the country. In the central local community Delcevo live 11,500 residents, this is 66% of the total number of residents in the municipality.

The most prevalent in the agrarian structure are the forests with 19,296ha, cultivated agrarian soil with 11,727ha and pastures with 7,375ha. This proportion provides quite good conditions for development of farming and forestry, and in some particular mountain regions for cattle breeding. Forests in municipality Delcevo take approximately 48% of the total municipality territory. In their structure the most represented is oak forest, pine and then at the end with the lowest percentage is represented beech forest. The forests are rich with various herbs, berries and plants. The forest areas consist of a rich flora and fauna, and particular attention should be paid to endangered species: wild boar, deer, wild rabbit, Black Eagle, partridge and owl.

Dominant place in the economic development of the municipality takes manufacturing sector followed by agriculture and construction, with emphasized participation of trade, food service and wholesale. There is located one of the biggest textile combines “Partizanka”, now renamed as “Palteks”. The largest number of working

capable population from municipality is employed in the combine. The second important economic subject is the factory for production of woollen homemade thick blankets, Persian carpets, and tufting carpets “Goblenka”, while the third one is the factory “Frotirka” for production of terry products and clouting terry “Lukovica” for production of species and other additions.

2.2 Demographic and economic profile

2.2.1 Demographic profile

According to the last revised Census of population and households (2005) for 2002 the number of inhabitants who live in municipality Delcevo is 17,505 and 5,568 resident households, with an average of 3.1 members per households. In 2013, the total number of population has decreased to 16,515 inhabitants. The decreasing of population is due to the decreasing of live births and rate of natural increase per 1000 inhabitants. Also, the number of immigrants in the municipality is lower in comparison with the immigrants in 2002. In 2013 there is a big difference between the total number of immigrants and emigrants, i.e. there are 71 emigrants more than the number of residents who immigrate in the municipality.

Table 3 Main demographic indicators

Demographic indicators	Municipality Delcevo	East Region	Republic of Macedonia
Data from the last revised Census for 2002			
Total population	17,505	181,858	2,022,547
Natural increase per 1000 inhabitants	2.3	1.1	4.8
Livebirths per 1000 inhabitants	10.9	10.2	13.7
Total households	5,568	57,896	564,296
Average households members	3.1	3.1	3.6
Total dwellings	7,163	72,248	698,143
Total immigrated residents	101	728	11,861
Total emigrated residents	132	924	11,219
State Statistical Office estimates for 2013			
Total population	16,515	177,988	2,065,769
Natural increase per 1000 inhabitants	-5.2	-1.7	1.9
Livebirths per 1000 inhabitants	6.7	8.6	11.2
Total immigrated residents	35	705	8,405
Total emigrated residents	106	957	8,860

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

According to the municipality Delcevo, data received by the Ministry of Justice, the statistics of immigrated residents show that all immigrated residents are working age population (between 15 and 64 year) and the ratio between male and female immigrants is 1:3. Reasons for immigration are mostly family reasons 50%, marriage 40% and employment only 7%. According to the education most of the immigrants are without higher education. Also, the ratio between unemployed and employed immigrants is 7:1.

On the other side, according to the same source, statistics of emigrants show that the ratio between male and female emigrants is 1:3.7 and they are all in the category of working age population. Reasons for emigration are mostly marriage 28.7% and family reasons 10%. In addition, most of the emigrants have finished higher education that indicates on outflow of highly skilled staff from the municipality. The migration balance according to gender indicates increased emigration of female population and distinctively negative migration balance of this gender.

The rates of population movement considering natural growth, births and migrations per year (from 2001 to 2013) of municipality Delcevo are shown in the table 4 below. Hence, the analysis shows negative average rates for all three indicators of population growth and movement through the years. In addition, an average natural growth rate is -0.5, average birth rate is -0.3 and average migration rate is -0.2. 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 4 Increasing/decreasing of population in municipality Delcevo

Year	Natural growth rate	Birth rate	Migration rate
2001	0.9	-0.6	0.3
2002	0.3	0.9	-0.5
2003	-0.5	0.2	0.4
2004	-0.6	-1.1	-9.1
2005	-2.0	-2.0	1.4
2006	1.6	1.7	7.4
2007	-2.5	-1.3	1.6
2008	0.8	0.8	-2.2
2009	-1.6	-1.3	-1.7
2010	0.5	1.5	-0.6
2011	0.0	-0.7	-0.8
2012	-0.8	-0.1	1.1
2013	-2.5	-1.9	-0.2
Average	-0.5	-0.3	-0.2

Source: State Statistical Office, MAKStat database[4]

The analysis of live births through years in municipality Delcevo shows similar data compared to the live births in the East region and the overall country. This indicated on aging of the population in the country, especially in the smaller local communities. Live births data are shown in table 5 below.

Table 5 Live births according to gender

Year	Municipality Delcevo			East Region			Republic of Macedonia		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
2009	66	67	133	970	830	1,800	12,340	11,344	23,684
2010	82	76	158	913	865	1,778	12,631	11,665	24,296
2011	70	75	145	808	759	1,567	11,752	11,018	22,770
2012	71	72	143	817	839	1,656	12,243	11,325	23,568
2013	54	57	111	843	697	1,540	12,093	11,045	23,138
Average	69	69	138	870	798	1,668	12,212	11,279	23,491

Source: State Statistical Office, MAKStat database

The next table gives an overview of a gender structure in municipality Delcevo compared to the East Region and the Republic of Macedonia. In all three samples the male population is bigger than the female population. This difference in municipality Delcevo is around 1.6%.

Table 6 Population according to the gender in 2013

Gender	Municipality Delcevo		East Region		Republic of Macedonia	
	Number	Share	Number	Share	Number	Share
Male	8,394	50.8	89,996	50.6	1,034,841	50.1
Female	8,121	49.2	87,992	49.4	1,030,928	49.9
Total	16,515	100	177,988	100	2,065,769	100

Source: State Statistical Office, MAKStat database 2013

The age distribution and its share in the total population in municipality Delcevo, East Region and the Republic of Macedonian 2013 are shown in the following table.

[4] http://makstat.stat.gov.mk/pxweb2007bazi/dialog/statfile18.asp, accessed: 16.11.2014

Table 7 Population according to the age structure in 2013

Repartition	Municipality Delcevo		East Region		Republic of Macedonia	
	Number	Share	Number	Share	Number	Share
0	110	0.7	1,528	0.9	22,913	1.1
1-4	572	3.5	6,743	3.8	93,301	4.5
5-9	755	4.6	8,275	4.6	112,351	5.4
10-14	818	5.0	9,339	5.2	119,851	5.8
15-19	945	5.7	10,365	5.8	137,385	6.7
20-24	1,131	6.8	12,572	7.1	155,698	7.5
25-29	1,279	7.7	13,647	7.7	164,394	8.0
30-34	1,253	7.6	13,617	7.7	162,384	7.9
35-39	1,120	6.8	12,814	7.2	153,564	7.4
40-44	1,141	6.9	12,268	6.9	146,353	7.1
45-49	1,266	7.7	13,114	7.4	147,433	7.1
50-54	1,297	7.9	13,710	7.7	141,756	6.9
55-59	1,277	7.7	13,537	7.6	134,995	6.5
60-64	1,162	7.0	11,898	6.7	117,663	5.7
65-69	938	5.7	8,923	5.0	87,896	4.3
70-74	624	3.8	6,617	3.7	70,067	3.4
75-79	463	2.8	5,121	2.9	53,549	2.6
80-84	262	1.6	2,821	1.6	30,079	1.5
80 and more	102	0.6	1,073	0.6	13,778	0.7
unknown	-	-	6	0.0	359	0.0
Total	16,515	100	177,988	100	2,065,769	100

Source: State Statistical Office, MAKStat database 2013

Municipality Delcevo has 21 rural communities – villages and only one urban community – city of Delcevo. According to the State Statistical Office, last revised Census data (2005) in 2002 most of the population lives in the city 65.7%, while the reminding 34.3% is rural population. Comparing to the population structure in the Republic of Macedonia, there is 57.8% urban population. Comparing to the previous Census in 1994 in municipality Delcevo 60.6% is urban population, while the remaining 39.4% of the population lives in the rural areas. This indicated on gradual abandonment of villages and increased concentration of the population in the urban areas.

Most of the population in the municipality is Macedonian, 95%. From the other minorities there are only 651 (3.7%) Roma, while the other minorities represent 1.3% from whom 122 (0.7%) Turks, 35 Serb, 7 Albanians,4 Vlachos and 49 other ethnic minorities. The minority repartition is shown in the table 8 below.

Table 8 Population according to ethnic affiliation in 2002

Repartition	Municipality Delcevo		East Region		Republic of Macedonia	
	Number	Share	Number	Share	Number	Share
Macedonians	16,637	95.0	168,046	92.4	1,297,981	64.2
Albanians	7	0.0	20	0.0	509,083	25.2
Turks	122	0.7	3,163	1.7	77,959	3.9
Roma	651	3.7	6,929	3.8	53,879	2.7
Vlachos	4	0.0	2,535	1.4	9,695	0.5
Serb	35	0.2	594	0.3	35,939	1.8
Bosnians	-	-	25	0.0	17,018	0.8
Others	49	0.3	546	0.3	20,993	1.0
Total	17,505	100	181,858	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 Delcevo, East Region and the Republic of Macedonia. In municipality Delcevo there are 34 health and social institutions, 40 transport and storage institutions and only 3 water supply and sewage management institutions. Health care in the municipality Delcevo takes place at the level of primary health care in PHC Centre "Goce Delchev", in which within the process of privatization are located increasing numbers of private clinics. Primary health care units are located in the villages Trabotiviste, Razlovci, Dramche, Grad, Virce, Stamer and Bigla.

There are 8 educational institutions, from which 2 primary and one secondary school. Primary schools have several regional units and secondary school has 16 classes that provide lectures in the socio-humanistic area, natural science and mathematics, textile and chemical technology. In 2013 there were 1,299 children in the primary and 509 children in the secondary school. At the municipality operate 511 business subjects, while the GDP per capita is calculated on a regional level, since there are no available data on the municipality contribution.

Table 9 Main macroeconomic indicators

Macroeconomic indicators	Unit	Year	Municipality Delcevo	East Region	Republic of Macedonia
Infrastructure					
Local roads	km	2013	146	1,187	9,471
Health and social institutions	Number	2013	34	297	3,315
Transport and storage institutions	Number	2013	40	433	6,095
Water supply, sewage disposal and waste management institutions	Number	2013	3	35	306
Education					
Educational institutions	Number	2013	8	83	1,025
Children that attend primary school	Number	2012/2013	1,299	14,589	195,311
Children that attend secondary school	Number	2012/2013	509	6,939	89,884
Population literacy at age 10 and more	Number	2002	15,173	155,237	1,693,044
Women literacy at age 10 and more	Number	2002	7,273	75,039	829,755
Economy					
Active business subjects	Number	2013	511	5,797	71,290
GDP per capita	MKD	2011	-	206,773	223,357

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

The municipality has only one kindergarten for all local communities. According to the State Statistical Office data for 2013[5], the capacity of the kindergarten is lower than the requirements of the population who live in the municipality. The kindergarten works with overused capacity, i.e. 47 beds more than the total capacity. Moreover, there are 120 children still waiting to be accepted in the kindergarten which is 46.3% more than the total available capacity. The interest of population to bring their children in the kindergarten increases every year and the number of children on the waiting list increase as well. In addition, the number of children per employee is 8.1 which is the highest comparing with the number of children per employee in East Region and Republic of Macedonia. The need to build a new kindergarten or to extend the existing one is quite emphasized that will satisfy the needs of residents and will allow women to find employment. The analysis of the number of children in preschool age who are going or are waiting to go in kindergarten and the kindergarten's capacity is shown in table 10.

[5] Kindergartens take care of the children through the whole year period including the summer period.

Table 10 Basic data of kindergarten capacities in 2013

Indicators	Municipality Delcevo	East Region	Republic of Macedonia
Number of kindergartens	1	10	57
Total capacity (number of beds)	212	3,095	25,074
Used capacity (number of beds)	259	3,433	29,013
Used/total capacity	122.2	110.9	115.7
Number of children waiting to be accepted	120	180	1,467
Number of employees	32	520	4,052
Number of children per employee	8.1	6.6	7.2

Source: State Statistical Office. (2013). Institutions for care and education of children – kindergartens, 2.4.14.01 770

According to the last revised Census data for 2002 the total number of people in age of 15 and over (working age population) is 14,250; economically active people are 7,458, of whom 71.1% are employed, while 28.9% are still looking for a job. The municipality has 6,792 economically inactive persons. Considering gender, there are 4.1% women less employed than men.

Table 11 Activity of the population between 15 years and more

Population activity		Municipality Delcevo		East Region		Republic of Macedonia	
		Number	Share	Number	Share	Number	Share
Economically active	All	7,458	52.3	74,875	51.0	743,676	47.2
	Employed	5,304	71.1	49,602	66.2	460,544	61.9
	Employed women	2,432	45.9	24,250	48.9	174,974	38.0
	Unemployed	2,154	28.9	25,273	33.8	283,132	38.1
Economically inactive		6,792	47.7	71,809	49.0	833,325	52.8
Total in 2002		14,250	100	146,684	100	1,577,001	100
Data from the last revised Census for 2002							
Activity rate		52.3		51.0		47.2	
Employment rate		37.2		33.8		29.2	
Unemployment rate		28.9		33.8		38.1	
State Statistical Office estimates for 2013[6]							
Activity rate		59.2		61.0		57.2	
Employment rate		39.5		49.1		40.6	
Unemployment rate		33.3		19.5		29.0	

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

The activity and employment rates in municipality Delcevo is lower in 2002 compared to the data for 2013. In 2002 the municipality has bigger activity and employment rates in comparing with the same data in the East region and the country. According to the data received by the municipality in 2013 the activity rate is 59.2% which is lower than the activity rate in the East Region, but bigger than the same rate in the country. However, the employment rate is lower and the unemployment rate is bigger comparing with the East Region and the Republic of Macedonia. This condition appears due to the immigration and remaining of population with low level of education and not qualified labor. Here, must be emphasized that highly educated and qualified population emigrates in more developed cities or countries.

Considering the educational level in accordance with the Profile of municipality Delcevo (2014), most of the unemployed (approximately 49%) are low-skilled with primary education. 39% of the unemployed population have completed only secondary school, while only 12% of the unemployed are with higher education.

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.

[6] Data for municipality Delcevo for 2013 are received by the municipality (Profile of Municipality Delcevo, 2014)

Table 12 Active business subjects by sectors in 2013

Sector	Municipality Delcevo		East Region		Republic of Macedonia	
	Number	Share	Number	Share	Number	Share
Agriculture, forestry and fishing	33	6.5	427	7.4	2,866	4.0
Mining and quarrying	-	-	18	0.3	164	0.2
Manufacturing	93	18.2	924	15.9	7,918	11.1
Electricity, gas, steam and air conditioning supply	1	0.2	8	0.1	132	0.2
Water supply, sewerage, waste management and remediation activities	3	0.6	35	0.6	306	0.4
Construction	19	3.7	216	3.7	4,322	6.1
Wholesale and retail trade; repair of motor vehicles and motorcycles	152	29.7	2,048	35.3	25,429	35.7
Transportation and storage	40	7.8	433	7.5	6,095	8.5
Accommodation and food service activities	41	8.0	354	6.1	4,482	6.3
Information and communication	6	1.2	66	1.1	1,446	2.0
Financial and insurance activities	1	0.2	10	0.2	390	0.5
Real estate activities	2	0.4	32	0.6	485	0.7
Professional, scientific and technical activities	32	6.3	352	6.1	5,817	8.2
Administrative and support service activities	10	2.0	54	0.9	1,514	2.1
Public administration and defense; compulsory social security	3	0.6	23	0.4	258	0.4
Education	8	1.6	83	1.4	1,025	1.4
Human health and social work activities	34	6.7	297	5.1	3,315	4.7
Arts, entertainment and recreation	6	1.2	80	1.4	1,179	1.7
Other service activities	27	5.3	337	5.8	4,147	5.8
Activities of households as employers	-	-	-	-	-	-
Activities of extraterritorial organizations	-	-	-	-	-	-
Total	511	100	5,797	100	71,290	100

Source: State Statistical Office, MAKStat database 2013

According to State Statistical Office there are 511 active business subjects in municipality Delcevo in 2013. The most important and dominant sectors are wholesale and retail trade with 29.7%, manufacturing industry with 18.2%, transport and storage with 7.8%, accommodation and food services with 8% and agriculture with 6.4%.

Dominant place in the economic development of the municipality takes manufacturing, especially textile industry and clothes production. There is located one of the biggest textile combines “Partizanka”, now renamed as “Palteks”. The largest number of working capable population from municipality is employed in the combine. The second important economic subject is the factory for production of woolen homemade thick blankets, Persian carpets, and tufting carpets “Goblenka”, while the third one is the factory “Frotirka” for production of terry products and clouting terry “Lukovica” for production of species and other additions. Agricultural sector is especially important for business development in the municipality. The agricultural soil takes 24% of the total area in the municipality. According to the geographical location and favorable climate-soil conditions, available pastures and meadows, municipality has preconditions for the development of orchards and livestock breeding.

2.2.3. General description of the Project

The goal of the project is to satisfy the needs of 85-90% of the population who request care of the children in the municipality in a modern building with increased energy efficiency which will allow comfort and convenience of the children who will stay in the building.

The extension of the kindergarten “Veseli Cvetovi” is an extension of the existing building, located near the municipality building in the local community Delcevo, shown in figure number 3.

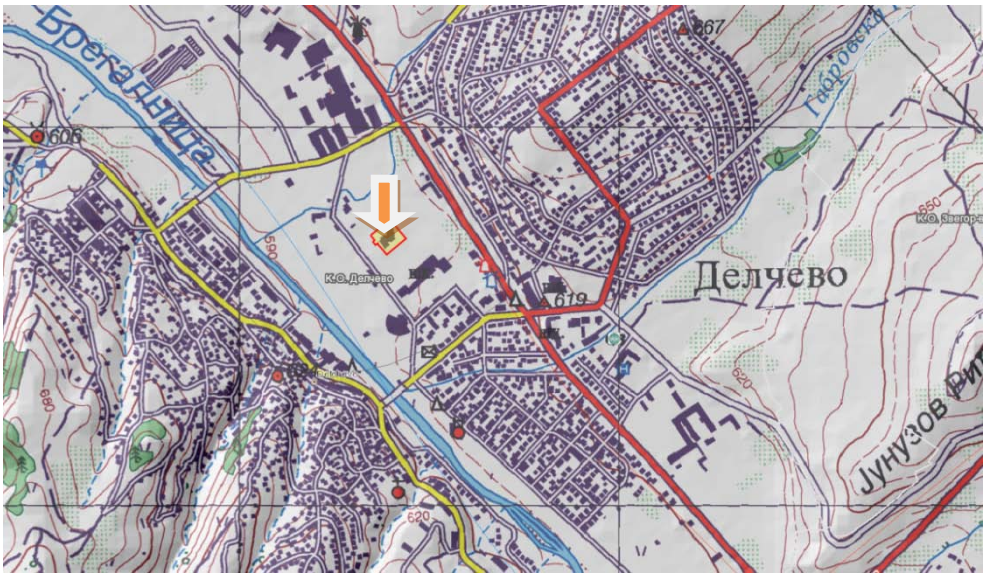

Figure 3 Location of the kindergarten "Veseli Cvetovi" in municipality Delcevo
Source: Agency for Cadastre of the Republic of Macedonia

Current situation

In municipality Delcevo there is only one kindergarten "Veseli Cvetovi" which operates in two buildings. The first one is the existing kindergarten building located near the municipality building, and the other is a part of the kindergarten located in the primary school "Sv. Kliment Ohridski". Both locations are in the city of Delcevo, since approximately 80% of the children in the kindergarten are from the city of Delcevo, and only 20% from the rural communities near the city, mostly from: Zvegor, Gabrovo, Stamer and Trabotivishte. There is no transport provided for the children from other local communities. Detailed analysis of the number of children and staff in the kindergarten "Veseli Cvetovi" through years is shown in the following table.

Table 13 Number of children and staff in the kindergarten through years

Year	Number of children and staff in the kindergarten		Number of increase/decrease of children and staff		Percentage of increase/decrease of children and staff	
	Children	Employees	Children	Employees	Children	Employees
2005/2006	146	24				
2006/2007	177	24	31	0	17.5	0.0
2007/2008	151	21	-26	-3	-17.2	-14.3
2008/2009	170	22	19	1	11.2	4.5
2009/2010	223	30	53	8	23.8	26.7
2010/2011	247	31	24	1	9.7	3.2
2011/2012	240	32	-7	1	-2.9	3.1
2012/2013	236	29	-4	-3	-1.7	-10.3
2013/2014	259	32	23	3	8.9	9.4
2014/2015	250	33	-9	1	-3.6	3
		Average	12	1	5.1	2.8

Source: State Statistical Office, MAKStat database, Children and employees in institution for care and education; Kindergarten "Veseli Cvetovi" Delcevo

Kindergarten "Veseli Cvetovi" is intended for pre-school children (from nursery to 5 years), where in 2014/2015 school year resided 250 children deployed in ten groups. There were 33 employees. Working time of the kindergarten is 5:30am to 4:30pm for the children, i.e. to 6pm for the employees.

Figure 4 The existing kindergarten located near the municipality building
Source: CeProSARD archive[7]

The extension is predicted to be located next to the existing kindergarten, near the municipality on the street S.Markovikj in municipality Delcevo (shown in figure 4). According to the Agency for Cadastre of the Republic of Macedonia the total area of the kindergarten area is 3,362m^2, while the existing building has a total area of 1,237m^2 (source: http://gis.katastar.gov.mk/arec),with total heating area of 1,160m^2. The kindergarten is built in 1981 in hard building (bricks) with thickness 30cm.

The existing building was recently renovated within the UNDP project and in accordance with energy efficiency and environmental principles. After the reconstruction of the building, asbestos roof tiles are removed, as well as similar parts of the construction that will have negative impact on the environment. There are no more asbestos elements in the building.

The needs for heating the existing building are satisfied with two boilers on liquid fuel – oil. The boilers are located in the basement of the building (shown in figure 5 and 6 below). One of the boilers is type Laitherm from 2003 with a capacity of 262kW, while the other is product of EMO Celje from 1980 with a capacity of 233kW. For distribution of heat within the building are used cast-iron heaters, product of "Radijator" Zrenjanin. The capacity of the heaters is 250kW.

Currently, the heating system and the boilers are in good working condition. However, in the future, the plan is the existing heating system on oil to be replaced with the renewable energy heating system, i.e. pellets.

Safety of the heating system (the boiler under pressure and the oil reservoir) is regulated with the Rulebook on using equipment under pressure published in the Official Gazette of Republic of Macedonia no.32 on March 4, 2009. The Rulebook is brought on the basis of the Law on technical inspection (published in the Official Gazette of the Republic of Macedonia no.88/2008) which is in accordance with the international standards and regulations. The housemaster employed in the kindergarten is in charge for safety functioning of the heating system. In accordance with the existing regulation in the country, the housemaster provides regular control of the heating system, annual cleaning of the heating boiler, as well as cleaning of the chimney. For each control he provides records. The control of his activities is provided by the manager of the kindergarten, competent authorities in the municipality and the State Technical Inspectorate that works within the Ministry of Economy.

[7] In November 13, 2014 CeProSARD team conducted field visit in order to determine the present condition of the relevant building

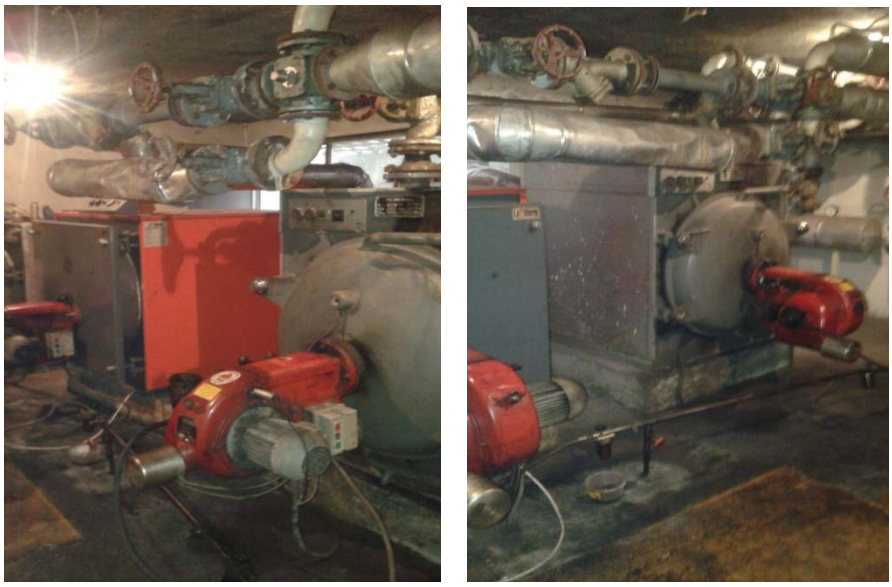

Figure 5 Heating system of the existing building
Source: CeProSARD archive

In accordance with the *Energy Efficiency Program of Municipality Delcevo for the period 2011-2015*[8], energy characteristics of the existing building are improved with roof reconstruction and change of doors and windows, which consequently improves the condition for children. In future, the existing building will continue to heat with the existing heating system of boilers with liquid fuel but in the part of rational use of the heat through the existing system it is predicted be used thermo regulatory valves for control and saving of energy. In addition, the project assumes establishment of solar collectors for heating of water that will be used for sanitary purposes and heating of kindergarten classrooms.

However, the capacity of the existing kindergarten does not satisfy present requirements to take care for all children. Due to a lack of buildings for childcare in municipality there is a need for extension by four additional kindergarten classrooms.

Municipality Delcevo has started with extending the kindergarten, but due to a lack of finances prepared is only part of the excavation, concrete and reinforcement works, shown in figure 6 below. After the technical acceptance on 04.06.2014, financial assets are requested for the extension from the MSIP project unit.

[8] Toplifikacija-Engineering Ltd. (2011). Energy efficiency Program of Municipality Delcevo

Figure 6 Present situation of the extension part
Source: CeProSARD archive

Future situation: assessment off alternatives

In determining the future situation in the municipality, following solutions were considered as important when analyzing the best approach to solve the kindergarten low capacity issue:

The first solution is not to take anything to improve the existing situation, i.e. zero condition. In this condition emigration of young working active population and young couples will continue and conditions for development of the municipality will be significantly reduced. This condition will cause lowering the investments and opening new businesses. This is unfavorable decision for the municipality and as such is not considered as future solution.

The second solution is to extend the existing building according to the energy efficiency principles. This is the fastest way to provide care of the pre-school children. This scenario will allow for better opportunities for youths and young couples to stay in the municipality. At the same time, the building with using energy efficiency measures and renewable energy sources is in accordance with the *Energy Efficiency Program of Municipality Delcevo for the period 2011-2015*.

The third solution is to find additional ways for accepting all children for children care and education. According to the Law on Child Protection (2013)[9] if there is not enough place for all children to be accepted in the existing kindergarten, an additional kindergarten classroom can be opened on another location (public school, hospital or house of culture). Moreover, children care and education can be provided in the kindergarten in other municipality only if there is no existing kindergarten in the current municipality. For all these options, an approval should be received by the Ministry of Labor and Social Policy. In addition, an investment should be made for the additional location to be prepared for kindergarten classroom. Considering that there is already opened an additional kindergarten classroom in a primary school in municipality Delcevo and there is still not enough place for all children to be accepted, this choice does not bring solution to the existing problem.

After analyzing all possible solutions a decision was made on extension of the existing kindergarten building which is located near the municipality. After receiving the approval for extension, the municipality started with

[9] Official Gazette of Republic of Macedonia (no. 23 from 14.02.2013). Law on Child Protection, Article 66, pg.18-19, accessed: 07.12.2014 http://www.endcorporalpunishment.org/pages/pdfs/Law%20on%20Child%20Protection%202013%20(Unsecured).pdf

construction of the extended part and implemented the concrete structure and reinforcement works by its own finances.

Strategic goals

Planned extension of the kindergarten "Veseli Cvetovi" is in accordance with the strategic objectives for development of municipality Delcevo. It is very important that the extension is planned to be built as an energy efficient building by using solar energy as renewable energy source.

In the Strategic Plan for Local Economic Development of the municipality Delcevo for the period 2014-2018, through SWOT analysis prepared by the municipal team for Strategic planning are defined strengths, weaknesses, opportunities and threats to the local economy and the quality of living in the municipality. One of weaknesses in the part of main weaknesses (location, infrastructure, population, labor, local business conditions) is lack of care centers for children[10].

In the *Energy Efficiency Program of Municipality Delcevo for the period 2011-2015*, achieving the main goal is to reduce energy costs in the municipality, firstly in the public buildings. This objective should be accomplished through implementation of energy efficiency projects and use of renewable energy sources, in each public building and increasing the awareness of the residents for the benefits of adherence to the Strategy for Energy Efficiency of the municipality.

The project has the following goals:

- To improve physical infrastructure in the kindergarten in municipality Delcevo;
- To integrate the local community;
- To follow the principles for environment protection;
- To improve the quality of life of citizens in municipality Delcevo.

In order to improve the vision of the municipality for modern and urban Delcevo in 2020, as attractive place for happy and healthy living of young and married couples, with contemporary and modern road, communal and social infrastructure, of particular importance is the realization of the planned project. Therefore, it can be claimed that this project envisaged to be financed with MSIP loan meets long run development municipal objectives.

Knowledge and experience of the municipality in projects implementation

The knowledge and experience needed for successful implementation of the project are related to project management, technical knowledge and execution of procurement practices. In its working existence, municipality Delcevo has implemented various infrastructure and educational projects some of which are mentioned in the table below.

[10] Local Economic Development Plan of Municipality Delcevo 2014-2018, page 13

Table 14 Implemented infrastructure projects

List of projects prepared by the municipality Delcevo				
#	Project manager/partner	Year	Name of the project	Budget (Euro)
1	Municipality Delcevo (EU - IPA II)	2011-2012	Reasonable use of eco resources on mountains Golak and Vlaina	74,663.2
2	Municipality Delcevo (EU - IPA II)	2014-2016	Measures for protection against flooding of rivers Bregalnitsa and Bistrica	498,125.5
3	Primary school "Vanco Prke" Delcevo (EU - IPA II)	2012-2014	A better life for children in the border region	458,507.8
4	Secondary school "M.M. Brico" (EU - IPA II)	2014-2016	Social cohesion through the establishment of activity centres of interest	267,584.0
5	Municipality Delcevo (Swiss Agency for Development and Cooperation)	2013-2014	Purchase of vehicles for waste collection	110,569.1
6	Municipality Delcevo (Swiss Agency for Development and Cooperation)	2012-2014	Construction and landscaping of public areas	91,968.8
7	Municipality Delcevo (UNDP)	2012-2013	Energy efficiency and taking energy efficient measures in the kindergarten "Veseli Cvetovi" Delcevo	80,406.5
8	Municipality Delcevo (Swiss Confederation, SEKO program)	2014	Raising the level of the river Bregalnica with rubber dam	64,118.9

Source: Municipality Delcevo

Given the fact that the municipality has implemented several projects on improving municipal services supported from the various domestic and international donors, it can be claimed that the municipality is able to contribute with the necessary experience to large construction projects such as extension of the kindergarten “Veseli Cvetovi”.

2.4 Conclusion

Conclusions to the necessary extension of the kindergarten in the municipality are the following:

- There is lack of sufficient capacity for pre-school age children care in the municipality;
- The extension will be build according to the energy efficiency principles;
- The heating energy will be achieved by using solar energy for production of hot water for support of the floor heating system in the extension and sanitary hot water for the existing and new building;
- By using renewable energy sources, in our case solar panels for hot water, the kindergarten saves the consumption of oil and electricity;
- For rational use of the heating energy through the existing heating system with radiators, regulatory valves will be placed for control and energy saving;
- The project is in accordance with the strategic documentation of municipality Delcevo and the investment plans. LED strategy for 2014-2018 identifies the investment needs in pre-school age children care;
- This project satisfies MSIP conditions for lowering of the cost.

3.

SOCIAL IMPACT

3.1 Sociological study

Data collection

The data collection included desk-top review of the relevant documents such as: main project documents, the World Bank Guidelines for assessing the social impact of the project, statistical data about the municipality, municipal documents verifying existing/used citizen participation mechanisms, Local Economic Development Strategy 2014-2018, Profile of Municipality Delcevo 2014 and Law on local self-government.

In addition, face to face semi-structured interviews were organized with five officials from the municipality: Mayor of municipality Delcevo, Head of municipality Council, two municipal councilors (one male and one female) and General Director of the kindergarten "Veseli Cvetovi". 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 citizens 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 citizens 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.

Moreover, one focus group with representatives of the local communities in the municipality was organized in order to solicit views of various residents. Direct observations during the field visit were used. The focus group consisted of municipal residents both direct and indirect users of the project. Most of the participants were from the city of Delcevo and three from the surrounding villages. There were 8 participants in the focus group from whom two women, half of them parents and two unemployed, both male and female.

Analysis and findings

The analysis is based on the processed data collected from the above mentioned instruments. According to the methodology laid out in the Social Impact part of the project document the research highlights five entry points of social analysis and will be analyzed separately:

- Social diversity and gender;
- Institutions, rules and behavior;
- Stakeholders;
- Participation and
- Social risk.

3.1.1 Social diversity and gender

Most of the population in municipality Delcevo is from Macedonian nationality 95%. From the other ethnic minorities there are Roma 3.7%, and less than 1.3% Turks, Serb and Albanian. The official language in the municipality is Macedonian. Around 65% of the population lives in the city of Delcevo and the remaining population in the other rural communities. According to the gender, male population is only 1.1% dominant over the female population. The municipality faces increased emigration to the big cities or other countries, especially to the Republic of Bulgaria, after the country acceptance in the European Union. This is due to the better social and economic conditions in the foreign countries especially for the higher educated population.

In order to satisfy the requirements of the local population, the main priorities of municipality Delcevo are improving the quality of life of the residents, improving the infrastructure especially on social and educational institutions, reconstruction of the streets and roads, improving the water quality and supply services, etc. According to female and male, employed and unemployed residents, the most important issue is construction of a new kindergarten or increasing the capacity of the existing one because there is only one kindergarten in the municipality located in the city of Delcevo. At the same time, councilors added the extension of the kindergarten as a priority because of the increasing number of children waiting to be accepted for professional care. This will contribute to improving the lives of all residents in the municipality through social inclusion and education of

children in the kindergarten. In addition, it will contribute to social inclusion and empowerment of women who will be allowed to apply for a job and dues to increase the economic benefits of their families and the municipality.

Most of the children in the kindergarten are from Macedonian nationality, but there are also Roma children. The language spoken in the kindergarten is Macedonian. In addition, all parents (both employed and unemployed) are willing to bring their children in kindergarten due to social inclusion, as well as increasing both formal and informal education. Moreover, a participant in the focus group and professor in the primary school stated that those children that were going to the kindergarten in preschool age are more independent, skilful and more socialized comparing with those children who stayed at home.

Considering the number of beneficiaries of the project, the interviewees expressed their opinion that all residents in the municipality will be beneficiaries of the project. There are no so many residents who live in the other rural communities, since many of the population is living in the city or in the nearest villages which allow the location of the kindergarten to be in the center and easy acceptable to all residents. The extension of the kindergarten will be beneficial for all parents, especially for women with preschool age children. At the same time, the project will allow increasing in the available labor especially of the female population and increasing in the economic condition of the municipality. Direct beneficiaries of the project are the children who are waiting to be accepted in the kindergarten (120 children), which is 46.3% of the total available present capacity of the kindergarten according to the available number of beds for children.

3.1.2 Institutions, rules and behavior

Currently the kindergarten is managed by the director of the kindergarten “Veseli Cvetovi”. It is envisaged that the newly constructed extension of four kindergarten classrooms with additional rooms will be connected to the existing kindergarten and under supervision of the director. At present there are 32 employees in the kindergarten, from whom 22 educators and nurses. Considering the ethnic repartition most of the kindergarten staff is from Macedonian nationality, and there are two personal from Roma minorities. 10 nurses and 8 educators are permanent employees through the Ministry of labor and social policy, five are employed through the Agency for employment (the municipality is responsible for their payment) and one is employed through a project for social inclusion of Roma people. The personnel that is paid by the Agency for employment were employed at the beginning of 2014. These employees and through the project for Roma inclusion should be employed permanently by the Ministry next year. This is important due to the need for new employments if the extension will be done for the next year. Considering this issue, for now there is no need for new employment, but when the kindergarten will take care of approximately 120 additional children, the need for new employees will be covered by employing new educators and nurses through the Agency of employment and paid by the municipality from its own budget. According to the interview with the Mayor, if necessary, the municipality accepts this approach of employment in order to satisfy the needs of children and to provide quality services of the kindergarten.

The existing kindergarten has 8 groups of children in different age, from which 2 are nursery care groups and 6 preschool groups. The children who attend the kindergarten are between 8 months and 5 years old. Moreover, it should be emphasized that at present there are more children in the existing part of the kindergarten than it is predicted. Hence, in accordance to the regulation in the country, the total number of children that should be in each group is approximately 15, but due to the low capacity of the kindergarten in municipality Delcevo takes care of approximately 30 children in each group. Additionally, the kindergarten has 2 more groups with half-day care of children. These two groups are located on other location outside the kindergarten and their daily activities begin early in the morning and finish until 11 o’clock. Each of these groups has approximately 25 children or 50 children at total. The problem with insufficient capacity to take care of all children exists in the last few years. With the new extension, a redistribution of children in the groups will be made in order the number of children to be lower in each group. Also, with the extension, approximately 120 additional children will be accepted in the kindergarten.

Considering the ethnic repartition of the children in the kindergarten, most of them are Macedonian while 30 children are from Roma minorities and only 2 are Turks. There are 6 rural communities near the city of Delcevo in the distance of maximum 6km away. Furthermore, approximately 80% of the children in the kindergarten are

from the city of Delcevo, and only 20% from the rural communities near the city, mostly from: Zvegor, Gabrovo, Stamer and Trabotivishte.

For participation in the kindergarten, parents have to pay Denar 1,490 or Euro 24.4 tuition fee per child per month for those children that are full day attending the kindergarten. For those children who proved half day attendance in the kindergarten the tuition fee is Denar 600 or Euro 9.7. This payment is 65% for food and 35% other costs for taking care of the children.

Several interviewees and the focus group participants pointed out that even there is a tuition fee for children to participate in the kindergarten and there is unfavorable condition in the municipality considering emigration and natural increase of the population, the willingness of parents to send their children to the kindergarten and the number of children waiting for acceptance is constantly increasing every year. This is due to the social views and modernization of the population, as well as the need for women labor in the textile industry.

Main bodies of municipality Delcevo are the mayor and the council composed of 15 members. The council consists of nine men and six women, all from the Macedonian nationality. Participation of both genders in local councils should be minimum 30% following last local elections regulations[11]. Favorable, in the Council of municipality Delcevo the participation of women is 40% and man 60%. Most of the councilors come from the city of Delcevo and the nearest local communities. In terms of political party representation eight members are from the ruling VMRO-DPMNE political party, while the remaining seven are from the opposition SDSM political party. In order all councilors to be informed about the project, the idea and the needs of kindergarten extension were presented in details at the council meeting. Then, a discussion with all counsellors was performed in order to select the best possible solution for solving the problem of kindergarten lack capacity. Given the goal of the project, all council members support the implementation of the proposed project for extension of the existing kindergarten building.

3.1.3 Stakeholders

All interviewed pointed out that private businesses will benefit from the extension of the kindergarten. It is difficult for women to apply for a job if there are not enough or no good quality services for children care. Thus the women are obligated to stay at home and to take care of the children. At present there are some bigger businesses such as the textile factories, milk processing industry and combines that are looking for women labor. In the textile factories 90% of the employees are women and only 10% men. According to the interviewees, some of the bigger textile factories that are operating in the municipality are: “Viteks”, “Trenteks”, “Frotirka Delcevo”, “Palteks”, “MSU Progres”, “Luoteks”, “Krzno” and “Damjanov”. There are also other big businesses, such as: “Granit” for civil engineering, cooler and dairy “Rudine MM”, tobacco combines “Tutunski kombinat” and the mine “Sasa” in Makedonska Kamenica.

All interviewees and focus group participants without a doubt stated that all citizens will benefit from the project. The director of the kindergarten stated that the citizens regularly complain and demand solution of the kindergarten problem from the local authorities.

The approach to apply for a loan for the extension of the existing kindergarten was proposed by the mayor and discussed at a council session and the councilors unanimously voted for the decision. Some interviewees pointed out that the kindergarten issue is so crucial to the citizens that none of the councilors has the will to come in front of the citizens and say that s/he is against the resolution of this problem and against the proposed project. The main reason for applying for the loan is the fact that the municipality does not have the financial resources to resolve it by itself i.e. to provide the full amount at once.

[11]Law on Local Elections of the Republic of Macedonia (2004)

3.1.4 Participation

The interviewees stated the problem with kindergarten capacity was discussed at the public activities commission in the municipality and then at the council session. According to the law, the citizens can participate in municipal council sessions and they can discuss issues with prior announcement. All council sessions are regularly broadcasted on the regional television and there is an announcement board at the entrance to the municipality with all council decisions. Meeting with representatives from local communities are used as means for soliciting citizen's problems.

Mayor considers that the citizens are aware of the project since it has been discussed at public meetings, at council sessions and broadcasted on TV, mentioned at meetings with citizens who come to his office daily. Moreover, the residents have submitted their complaints about the current situation in the kindergarten that is subject of this appraisal, which again implies that the residents are fully in favor of the project. As elaborated earlier, since this project is expected to influence the overall living standard in the municipality, it is expected that the residents will support it.

Given the above, it seems that all stakeholders support the implementation of the project given its high impact on their daily lives.

3.1.5 Social risks

All interviewees and focus group participants are unanimous that there are no social risks envisaged for the project implementation. The land where the extension is planned to be constructed is in the ownership of the state, a part of the existing kindergarten, so no private land needs to be acquired. The project is planned to be completed by next summer at the latest, long before the scheduled local elections in 2017, which may bring political leadership changes in the municipality. In addition, detailed design for extension has been prepared and construction permit issued.

Interviewees presented a wide range of priorities in many fields that are within the local government competencies. They identified the extension of the kindergarten as necessary for local economic development of the municipality, increasing the employment rate, increasing the awareness of residents as a good example for use of renewable energy sources and energy efficiency measures, improvement in social incusing of children and women in the municipality, etc. Without exceptions, all interviewees said that the one of the highest priorities is full capacity of the kindergarten to accept all children for social care and to provide a quality services and comfort of children by using renewable energy sources and energy efficiency measures.

Additionally, it was discussed in detail whether the residents are fully informed about the intended extension of the kindergarten that is subject to this Appraisal. In that way, there is no risk for resident not to be informed about the project. This approach solves the problem that was 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 municipality area.

The current lack of beds and place for additional children in the kindergarten also brings about certain residents especially female population not to be allowed to apply for a job position. Hence, the project will influence on reducing the risk of emigration from the municipality and will bring economic benefits to the population and overall municipality.

3.2 Other fields of considerations

The extension of the kindergarten in the municipality Delcevo which is subject to this Appraisal is expected to improve the overall population living conditions in the municipality. The implementation of the project is expected to create savings per unit in the item of the kindergarten budget for maintenance of the facility and saving in heating costs by using renewable energy sources and energy efficiency measures on the long term basis. This is because the utilization of fossil fuel for heating will be lower due to the installation of solar collectors.

The project will also increase the awareness of the overall population in the municipality for financial savings and quality living standards by using renewable energy sources and energy efficiency measures.

The extension of the kindergarten will increase welfare of the local population, but will also lower the costs that parents have to pay for private babysitters to take care of their children at home. By bringing their children in kindergarten, the residents will also improve the social inclusion of the children and will help their children to be more prepared go to school in the future. This approach follows strategic goals of the country for increasing of early education of children in a pre-school age.

3.3 Resettlement issues

When actions are undertaken within development initiatives they may induce physical or economic displacement, which in turn can lead to long-term hardship and impoverishment. For that purpose, appropriate measures need to be carefully considered and carried out within the project development cycle. The current project under assessment in the municipality Delcevo does not impact any resettlement issues because it refers to the extension of the kindergarten on an empty state owned land, which is part of the garden of the existing kindergarten and does not envisage expropriation or purchase of privately owned property.

However, one of the reasons for emigration of the residents from the villages to the big cities are the challenges that need to be considered for infrastructure improvement and a lack of social services and institutions in the smaller municipalities, which is the case in the municipality Delcevo. The increased capacity of the kindergarten will open new jobs for the local population and contribute to the employment of young people. In that way, the implementation of this project will cause better living conditions followed by the expectation of decreasing emigration within the municipality.

3.4 Conclusion on the project potential success and recommendations

The project for extension of the kindergarten “Veseli Cvetovi” in municipality Delcevo affirms a human rights ideology and adheres to its basic principles. Its aim is to ensure quality social services, pre-school age child care by using best practices considering energy efficiency measures and use of renewable energy sources.

The main drivers of the change that will bring about prosperity are the municipal authorities (mayors, councilors, kindergarten director) who have initiated and made the decision for seeking funding from the World Bank financed MSIP. Since the problem has been around for more than four years it has been publicly declared and discussed on many occasions. The main beneficiaries of the project are the children that are already waiting to be accepted in the kindergarten (increase by 46.3% in comparison to the total number of children in the kindergarten in 2013). Also, beneficiaries of the project are the parents (especially female population) that will be allowed to apply for a job in order to increase the economic conditions in their families. At the same time, the kindergarten will have a financial benefit by saving of costs for heating and maintenance of the facility.

High socials risks for carrying out this project cannot be perceived. There are no issues connected with ethnic distribution of population or inter-village rivalry: the action will allow benefits for both Macedonian as well as Roma population and other nationalities. The project brings benefits to the majority of residents in the municipality and there are no land ownership (expropriations and resettlements) concerns that need to be resolved. Gender balance needs to be incorporated in the strategic approach of the municipality and kindergarten towards all development efforts. The project is expected to be socially successful for the following reason:

- The project is relevant because is both cost-efficient and cost effective over a long run and also useful for the improvement of the community living and social inclusion in the municipality Delcevo;
- 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.

4.

ENVIRONMENTAL IMPACT

The kindergarten “Veseli Cvetovi” (located in City of Delcevo) is institution dedicated to care and education of children from youngest to preschool age in the Municipality of Delcevo. Currently, the kindergarten is taking care for 259 children that are 31% of the number of children in this Municipality in the age group of 0-5 years. 80% of the children in the kindergarten are from the City of Delcevo, and only 20% from the rural communities near the city such as settlements Zvegor, Gabrovo, Stamer and Trabotivishte. The kindergarten existing capacity is not sufficient to welcome more children living in the municipality (their number has been increased by 46.3% in comparison with the total number of children in the kindergarten in 2013) who are waiting to be accepted in the kindergarten.

Taking into account the lack of buildings for childcare in the Municipality of Delcevo, there is a need for extension the kindergarten “Veseli cvetovi” with additional four new classrooms in total space area of 396.13m^2 to accommodate additional 120 children. The construction of extension kindergarten building will be based on energy efficient usage of construction materials, under floor and surface wall heating systems and installation of solar panels for sanitary hot water and support of the existing heating system.

The main goal of the project is to increase the capacity of the existing kindergarten and to improve conditions for children care.

The reconstruction of the existing building and construction of the extension building started a year ago with main aim to improve the energy efficiency of the building and several activities have been accomplished so far (reconstruction of the roof of the existing building, for the extension facility: excavation of soil, improvement of the soil (geo-mechanical works), reinforcement works on the foundations, ground-floor slab and columns, concrete works on the foundations, ground floor slab and columns and lightning installation). The Technical approval for construction works for already accomplished extension building was conducted on 04.06.2014.

The main sub-project activities are:

a) Construction of four new kindergarten classrooms with lockers and toilets;
b) Construction of corridors for communication between the playgrounds and
c) Construction of additional auxiliary rooms for washing/dryer equipment.

The detailed sub-project tasks include: a) Installation of facade thermo protection walls; b) Installation of under floor and surface wall heating systems; c) Floor construction with laminated parquet; d) Installation of roof construction, windows and doors; e) Installation of solar system; f) Improvement of mechanical room (replacement of one broken boiler with two buffers for energy accumulation).

The floor construction is predicted to be with laminated parquet, which is designed for floors with under floor heating. The floor heating system is planned to set up at area of 396m^2. Windows will be performed of aluminium profiles with thermoplastic glass. Installation of solar system (boiler with a capacity of 80l and solar panels) is needed to fulfil the needs for the kindergarten for preparation and heating of sanitary hot water and to support of the existing heating system of the kindergarten.

With the implementation of the project for an extension of the kindergarten the benefits will be significant energy savings (more energy efficient building with good thermal insulation and usage of solar energy), positive environmental impact and positive impact on the economic growth and the poverty level, not only in a short term, but also in the longer term perspective.

Location of sub-projects

The project activities for extension of the existing kindergarten facility are located in urban area in City of Delcevo, in the Municipality of Delcevo. This facility provides services in the two buildings: one building is located on the street “S. Markovikj” which is near to the municipality building and the other building is at street “Sv.Kliment Ohridski” which is near the primary school in City of Delcevo. In vicinity of the project location the following objects are located: motorway A3 which is located 193m southeast from the project location, river Bregalnica (249m southwest from the project location), House of Culture “Nikola Vapcarov” (221m south from the

project location), regional road R2343 (264m north from the project location) and several family houses (300m east and west from project location). The following settlements are located far from the kindergarten: north from the project activities are located village Dramche (6.8km) and village Gabrovo (2.9km), south is located village Trabotiviste (9.6km from the project location), east is located village Zvegor (2.8km) and border passage "Stanke Lisichkovo" (8.6km from City of Delcevo) and on the west from the project activities the artificial lake "Kalimanci" is located. The location of the kindergarten "Veseli Cvetovi" is presented on the following figure.

Figure 7. Location of kindergarten "Veseli Cvetovi" in City of Delcevo

Main sub-project activities with environmental impact

Due to the fact that all preparatory works for construction of the extension building of the kindergarten were already completed, the real clearing the site and cutting vegetation will not be performed. The marking and fencing of the construction site is very important to be done because the construction activities will be done in the vicinity where the existing kindergarten building is located and children are playing nearby. The signing of the site and ensuring the implementation of OH&S standards (e.g. mobile toilet, adequate containers for waste collection) are very important as well. The constructive phase will include installation of floor and floor heating system, installation of thermal insulation of the facade, roof construction, window installation and installation of solar system. The special attention should be paid to the storage area where the construction material and construction items (solar panels, thermal insulation, etc.) need to be placed in the kindergarten yard far away from the children and covered properly to prevent any potential risks of injury.

The operation phase will include daily operation of the extension facility of the kindergarten "Veseli Cvetovi", proper maintenance of the whole building, heating system and solar system and proper energy management for efficient usage of energy and protection of environment.

Main environmental impacts and sensitive receptors

The kindergarten "Veseli Cvetovi" where the extension building needs to be constructed is located on the street "S.Markovikj" in Municipality of Delcevo. The project activities will be limited on the side near the existing kindergarten.

During the project activities the following possible adverse environment and health impacts could be occurred due to: a) not compliance with health and safety at work procedure during the installation of under floor heating

system and solar system, b) not compliance with waste management regulation and good practice, c) noise disturbance during transport and installation of construction materials and items, d) improper protection and fencing the site where the construction materials will be stored and around whole extension building.

In order to minimize the negative impacts on the safety of workers and children near the construction site, the Contractor should provide fencing, marking and putting signs on the construction site and should also provide use of personal protective equipment for workers in accordance with the good construction practice. Also, the population of the City of Delcevo should respect the alert signs placed on the construction site and recommendations from the Contractor - prohibition of entry into the construction site in order to prevent the possibility of injury and causing accidents. The internal traffic access roads/lines within the kindergarten yard need to be established in good coordination with the Director of the kindergarten, municipal staff and the Contractor. The area dedicated for storage of construction materials and items needs to be fenced as well.

The kindergarten is in close surrounding with River Bregalnica (approx. 230m). According to the Regulation on Classification of waterways, lakes, reservoirs and groundwater ("Official Gazette of RM" No. 18/99) the water characterization of River Bregalnica at that place is III class. This means that this river is hypertrophy with large organic load (low degree of self-purification) and also means that it is polluted and cannot be used for bathing and recreation, water sports and fish growing. The disposal of any waste stream on the banks of River Bregalnica is forbidden as well as any fuels, chemicals, paints, etc.

Air emissions that may occur during the project activities are from the construction phase originated from construction machinery which will be used for supply of building materials and VOC emissions from walls painting. The protection masks for painting workers are essential.

Waste generated as a result of construction activity will include solid and liquid waste. Solid waste includes waste from excess of construction materials and communal waste (paper, glass, plastic etc.) and possible very small quantity of hazardous waste (e.g. bins containing paints). Very small amount of packaging waste could be found from packaging material of heating and solar equipment. The main responsibility for regular collection and transportation of the communal waste is CSE "Bregalnica", so the Contractor should sign contract with the communal enterprise and other waste collectors (for other waste streams according to the Law on waste, taking into account the List with authorized waste collectors, transporters where the companies dealing with waste collection, transportation, treatment and final disposal are listed – web page of the Ministry of Environment and Physical Planning (www.moepp.gov.mk).)

Near the project location (approx. 100m) the primary school is situated and roughly 180m the House of Culture is located. The noise sensitive receptors will be workers, children, students and teachers. Taking this into account and requirements of the national legislation on noise limits, the maximum allowed noise level for this area should be 45dBA for night and 55dBA for day and evening (second degree of protection against noise).

Near the project activities is located mountain Golak which is, according to Law on Protection of Natural Rarities (Official Gazette of RM No.43/76) declared a special protection area with special natural features with protected Forest park "GoceDelchev"(12,500ha), but it is so far from the urban part of City of Delcevo where the project will be implemented. No impact on the biodiversity is expected. On the project location there is no any recorded endangered and protected species of animals and plants or culture heritage site.

Although all environmental impacts in construction phase are short-term with local significance several prevention and mitigation measures are provided in the following Environmental Mitigation Plan (Annex A) and monitoring parameters are provided in the Monitoring Plan (Annex B). The main responsibility lay on the Contractor to implement the proposed measures and to the Supervisor to monitor the implementation of measures and to communicate with municipality staff informing them about project implementation progress. The Director of the kindergarten and other staff (e.g. housekeeper, teachers) need to be in very close communication with the Contractor during the project implementation.

According the national legislation, there is no need for development of the Environmental Impact Assessment Report for this kind of project activities – construction of kindergarten. So, the proposed mitigation measures

presented in this document should be followed by the Contractor in order to prevent or minimize the negative impacts to the children and general public health and environment.

No significant adverse impacts are expected in the operation phase. The kindergarten management should keep records on technical documentation related to the construction works, regular maintenance checkups on solar system and permanent energy management (consumption of heating fuel, electricity for heating, hot sanitary water, etc.) in order to minimize the energy and water consumption, protection of environment and proper daily operation of the children care facility.

ENVIRONEMENTAL MITIGATION PLAN

Project activity	Potential impact	Impact scale	Proposed mitigation measures	Responsibility
Expanding of the Kindergarten in City of Delcevo				
Preparation activities before construction works start Marking out the route and expanding the kindergarten "Veseli Cvetovi"	Possible adverse social and health impacts to the pupils, students, teachers and workers due to: Lack of ensured safety measures at the start of construction works Injury passing near by the construction sites Not compliance with strict OH&S standards and work procedure	Local/within the Kindergarten "Veseli Cvetovi": Short term during the construction period Significance - major	➢ Marking out the construction site within the kindergarten yard; ➢ Adequate warning tapes and signage need to be provided (some warning signs need to be with pictures as the children are little kids and they could not read the written text); ➢ Installation of Notice board with general information about the project, Contractor and Supervisor; ➢ 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 surrounding area (kindergarten yard, streets near the kindergarten) should be kept clean, without waste disposed; ➢ The mobile toilet should be placed on the construction sites; ➢ 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 streets.	• Contractor –Bidder • Supervisor • Municipality staff (Communal Inspector and Environmental Inspector)
	Possible impacts on landscape and visual aspects	Local/within the Kindergarten "Veseli Cvetovi":	• Good construction practices have to be implemented – including fencing and protection of construction site; • Fully clean-up of the construction sites immediately after accomplishment of	• Contractor –Bidder • Supervisor

Project activity	Potential impact	Impact scale	Proposed mitigation measures	Responsibility
		short term /minor	construction activities and installation of all heating and solar equipment; • Selection of generated waste on daily basis and its collection, transportation and final disposal on appropriate places (according the type of waste – more details under Waste management issue).	
	Possible emissions by transportation vehicles, VOC emissions as a result of painting and impact on workers health due to: Vehicle movement and materials (concrete and thermal insulation) handling Evaporation of VOC from paints used for wall cover	Local/ within the Kindergarten "Veseli Cvetovi" short term/ minor	• 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 during the painting wall activity; • Restriction of the vehicle speed within the construction location; • 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 kindergarten site	Local/ within the Kindergarten "Veseli Cvetovi" short term /major	• Whole noise protection area is residential and belong to the area with second degree of noise protection and the maximum allowed noise level should be 45dBA for night and 55dBA for evening and day; • 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 water courses – river Bregalnica near the project site in the City of Delcevo	Local/ short term/ minor due to the distance from the project site	• Minimize final disposal of waste from construction materials near to River Bregalnica 's bank	• Contractor –Bidder • Supervisor

Project activity	Potential impact	Impact scale	Proposed mitigation measures	Responsibility
	Possible adverse environmental impact and health effects could occur as a result of generation of small amount of different waste streams The inappropriate waste management and not in time collection and transportation of waste streams	Local within the City of Delcevo short term/ minor due to the limited quantity of waste	• Identification of the different waste types at the construction site (construction material, pipes for heating and solar systems, packaging waste, bottles, food, etc.); • Classification of waste according the national List of Waste (Official Gazette no.100/05); • Small amount of solid municipal waste could be found (food, beverages), as well as packaging waste (paper, bottles, glass, etc.).	• Contractor –Bidder • Supervisor
			• Collection, transportation and final disposal of the inert and communal waste by the CSE "Bregalnica" Delcevo; • 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.	• Municipality staff (Communal Inspector) • Mayor of the Municipality of Delcevo • CSE" "Bregalnica" Delcevo.
• *No environmental impacts are expected during the Operational phase.* • *Proper maintenance for heating systems (under floor and solar system) – regular checks and cleaning of solar panel, regular checks for leakage for all connections during heating season, pumps and in time supply of spare parts;* • *Keeping records of all technical documentation for construction of extension building of kindergarten as well as the keep logs on all maintenance activities.*				

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	Expanding of the Kindergarten	Operations of the Kindergarten
Project stage: Preparation activities/ Startup of the construction work (marking out the construction site within the kindergarten's yard)								
The safety protection measures applied for the workers The measures dedicated for children and community safety	On the construction sites	Visual checks	At the beginning of each working day during the implementation of project activities	To prevent health and safety risks – mechanical injuries To be in compliance with national OH&S standards and communal safety (especially important is safety of children in existing kindergarten)			Contractor - Bidder Supervisor Communal Inspector at the Municipality of Delcevo	
Project stage : Construction works on extension building of the kindergarten in City of Delcevo								
Disposal of the waste streams (solid and liquid) near the river Bregalnica as potential pollution of good ecological status of water course	In Delcevo near the project areas	Visual check if the waste is disposed near the Bregalnica river and review of the documentation for quantity of waste collected and transported	During the construction period (once per week)	To ensure good status of water quality			Contractor - Bidder Supervisor	
Primary selection of the waste streams	On the site	Review the documentatio	At the beginning of work with new	To separate hazardous from the non-			Contractor – Bidder	

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	Expanding of the Kindergarten	Operations of the Kindergarten
as they are generated at the spots		n	material/s	hazardous waste as well as inert from biodegradable waste			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 the sites and around the sites in all three districts	Visual monitoring and reviewing the transportation and disposal lists from the sub-contractor	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 To have the real data for generated waste streams and to improve the waste management			Contractor – Bidder Supervisor and CSE "Bregalnica" Delcevo	
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	To improve the waste management on local and national level To be in compliance with national legal requirements			Mayor of Municipality of Delcevo/ Ministry of Environment and Physical Planning	

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	Expanding of the Kindergarten	Operations of the Kindergarten
			waste					
Temporary noise protection barriers installed around the schools and kindergarten	Around the schools	Visual check	Before the construction work start at the site near the kindergarten nearby the construction site	To minimize the noise disturbance of the sensitive group of people			Contractor – Bidder Supervisor/ Communal inspector	
Noise measurements	Near the kindergarten	Noise measurements	During the work peaks	To ensure noise level limits according regulation			Contractor - Bidder	

5.

TECHNICAL SOLUTION

5.1 Description

The main goal of the project[12] is to increase the capacity of the kindergarten "Veseli cvetovi" in Delcevo. The overall detailed design consists of reconstruction of the roof of the existing facility and construction of the extension of the facility. The reconstruction of the roof of the existing facility has been completed recently, so the technical documentation involves design for extension of the existing building. The kindergarten is located on the c. p. no. 6655, str. S. Markovikj in the municipality Delcevo. The location area is 3,362m^2, and the existing building has a total area of 1,237m^2 (source: http://gis.katastar.gov.mk/arec). According to the technical documentation for the project (phase architecture) the planed extension will have exploitable area of the premises of 396.13m^2 and it will be connected with the existing facility in functional manner.

The image bellow illustrates the disposition of the building existing building, the extension within the location, their orientation, approaches and entrances to the building.

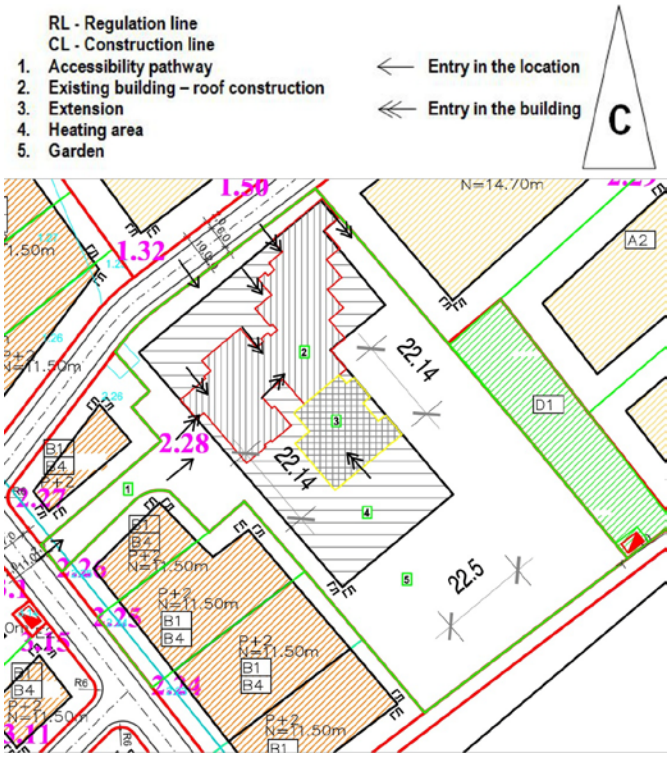

Figure 8 Disposition of the buildings within the location
Source: Main project

The municipality launched the construction of the extension building and funded the construction of the concrete structure.

The following activities have been completed:

- Excavation (soil works);
- Improvement of the soil (geo-mechanical works);
- Reinforcement works on the foundations, ground-floor slab and columns;
- Concrete works on the foundations, ground floor slab and columns;
- Lightning installation performed on the existing building, suitably connected with the extension to provide the necessary protection of the building as a whole.

[12] Technical number of the project documentation 628-12 in 2012 prepared by TDGR GEO ING LTD export – import Delcevo

Technical approval was conducted on 04.06.2014 and the completion of the above mentioned works was confirmed by the assigned construction supervisor. Illustrations of the completed construction works related to the structure of the extension building are shown below.

Figure 9Illustration of the completed construction works of the building's structure
Source: CeProSARD archive[13]

As a result of the limited funds for finalization of all phases of the construction, the municipality applied for additional funding from MSIP project. The following construction activities that in accordance with the project technical documentation have to be completed in order the building to become operational:

Table 15 Phase architecture

No.	Description
1	Preparatory works
2	Excavation works
3	Concrete works
4	Thermo and hydro insulation works
5	Masonry work
6	Reinforcement works
7	Roof covering works
8	Sheet metal works
9	Locksmith works
10	Ceramic paving
11	Painting works
12	Cement base and floor finish
13	Facade works
14	External water and sewer installation (including connection of the systems) and Internal installation (water and sewage installation within facility according to the technical documentation)
15	Electrical installation (implementation of high and low voltage installation and electrical equipment)

Source: Main project – bill of quantities of phase architecture

[13] In November 13, 2014 CeProSARD team conducted field visit in order to determine the present condition of the relevant building

The extension will be constructed following the principles for construction of energy efficient building and sustainability. The main structural system is composed of bearing reinforced concrete columns and beams. In compliance with the technical documentation for the construction, the reinforced concrete columns are designed with dimensions of 30/30cm and the reinforced concrete beams with dimensions of 30/40cm. The structural elements are made of concrete MB30, reinforced with RA 400-500-2 as a main reinforcement and additional reinforcement with GA 240/360 and welded reinforcement mesh MAR5 500/650 type Q.

The floor where an under floor heating system should be set has an area of 396m^2. The under floor heating system should be performed to maintain the internal temperature at 21^{0}C on average annual temperature of 10.3^{0}C. In the kindergarten classrooms, a construction of floor is predicted to be with laminated parquet, which is designed for floors with under floor heating. Wardrobes and sanitary facilities are predicted to be constructed with ceramic tiles. Thermal protection should be performed so that the value of coefficient of heat transfer to be lower than U=0.5W/m^{2}K in accordance to the standard EN ISO 6946. Selections of the construction materials in order to satisfy the above conditions are the following:

Table 16 Floor construction

Name of the material	Thickness (cm)	Coefficient of thermal conductivity **λ [W/mK]**
Ceramic tiles	1.00	1.30
Anhydrous liquid screed	5.00	1.20
PVC foil	0.30	0.20
Polyethylene foil	0.025	0.50
Extruded polystyrene EPS	5.00	0.03
Reinforced concrete (2% still)	10.00	2.30
Polyethylene foil	0.025	0.50
Extruded polystyrene EPS	10.00	0.03
Polyethylene foil	0.025	0.50
Concrete average density	8.00	1.15
Compacted gravel and sand	30.00	2.00

Source: Main project

Thermal protection in this case satisfied with the achieved coefficient of heat transfer U=0.18 W/m^{2}K. In the area of 194.4m^2, on the facade walls where the thermal heating systems will be placed in accordance with the standard EN ISO 6946, should be achieved coefficient of heat transfer U=0.20 W/m^{2}K.The layers of the facade wall where the thermal systems will be placed are defined in the following way:

Table 17 Facade walls where the thermal systems will be placed

Name of the material	Thickness (cm)	Coefficient of thermal conductivity **λ [W/mK]**
Knauf Gipson fireproof plate	1.50	0.25
Knauf Gipson fireproof plate	1.25	0.25
Polyethylene foil	0.025	0.50
Composition layers Knauf system	7.50	0.076
Hollow clay block	20.00	0.45
Glue (Termofiks)	1.00	0.80
Stone wool facade FKD	12.00	0.036
Glue (Termofiks)	0.80	0.80
Decorative silicate	0.30	0.70

Source: Main project

A facade walls on the columns with total area of 28.30m^2 and with coefficient of heat transfer U=0.27W/m^{2}K will be performed in the following way:

Table 18 Facade walls on the columns

Name of the material	Thickness (cm)	Coefficient of thermal conductivity **λ [W/mK]**
Knauf Gipson fireproof plate	1.50	0.25
Knauf Gipson fireproof plate	1.25	0.25
Reinforced concrete	30.00	2.60
Glue (Termofiks)	1.00	0.80
Stone wool facade FKD	12.00	0.036
Glue (Termofiks)	0.80	0.80
Decorative silicate	0.30	0.70

Source: Main project

Dilatation walls with a total area of 40m^2 and with coefficient of heat transfer U=0.29W/m^{2}K will be performed in the following way:

Table 19 Dilatation walls

Name of the material	Thickness (cm)	Coefficient of thermal conductivity **λ [W/mK]**
Knauf Gipson fireproof plate	1.50	0.25
Knauf Gipson fireproof plate	1.25	0.25
Polyethylene foil	0.025	0.50
Composition layers Knauf system	7.50	0.076
Extruded polystyrene EPS	10.00	0.04
Concrete mortar	2.00	1.60
Hollow clay block	25.00	0.45
Lime mortar	2.00	0.80

Source: Main project

Roof construction with total area of 396m^2 should be performed on a way to maintain the internal temperature on 21^{0}C, according to the following:

Table 20 Roof construction

Name of the material	Thickness (cm)	Coefficient of therm**al conductivity λ [W/mK]**
Knauf Gipson fireproof plate	1.50	0.25
Polyethylene foil	0.025	0.50
Air	3.00	0.188
Composition layers Knauf system	3.00	0.077
Stone wool 40 kg/m^3	10.00	0.037
Stone wool 40 kg/m^3	10.00	0.037

Source: Main project

Windows will be performed of aluminum profiles with thermoplastic glass.

Installation of under floor heating system on the extension part

For heating of the extension part it is predicted installation of under floor heating system with boiler. Besides the surface under floor heating system, the project proposes installation of surface wall heating system which consists of manufactured plates with pipes. With the proposed system, the four kindergarten classrooms will have faster and better heat distribution. The estimation of heat losses on under floor heating system is provided according to the standard DIN 4701 with designed temperature of -15^{0}C in winter. Activities that will be performed for installation of the under floor heating system are:

Table 21 Activities for installation of the underfloor heating system

No.	Description
1	Connection with the existing boiler and performance of the pipe network
2	Performance of under floor heating
3	Placement of the heat exchange units
4	Setting automatic regulation of the under floor heating and cooling installation

Source: Main project

Figure no.10 shows the detail of the floor composition including the disposition of the heat, the system for under floor heating and the final floor coating.

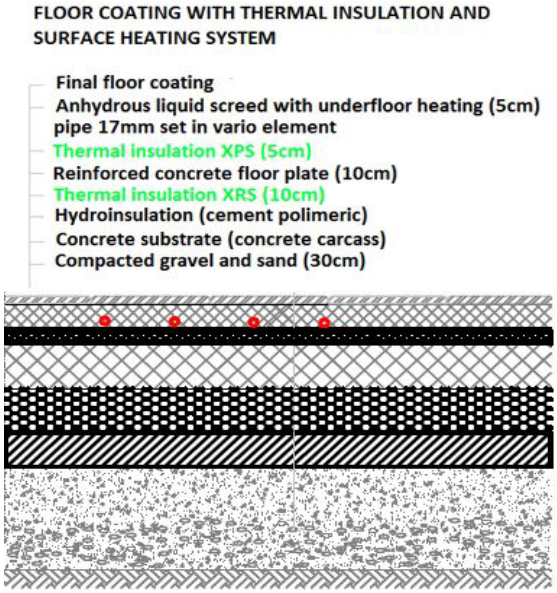

Figure 10 Illustration of the floor composition layers and the system for underfloor heating

Source: Main project –underfloor heating phase

The technical characteristics of the pipes of under floor heating

Table 22 Technical characteristics of the under floor heating pipes

Material	RAU – VPE (PE-Xa)
Thermal expansion of 1m 'when Δt = 50 ° C	1.25mm
Thermal conductivity	0.35 W/mK
Roughness of the pipe k	0.0007mm
Maximum operating pressure	3bar at 70^0C
Maximum operating temperature	70^0C

Source: Main project

Under floor heating system will be supplied with water from the existing boiler that uses liquid fuel, but it will be also connected with solar collectors system with high absorption coefficient of 95%. Placement of 10 solar collectors with a total area of 25.7m^2 as estimated within the technical documentation should satisfy the need for hot water in the existing building and the extension. The power of each solar panel is about 1.5kW considering the fact that the calculations depends on the quantities of the solar hours per day/ annually, the heating power is variable. The illustration below shows the functional scheme of the solar system:

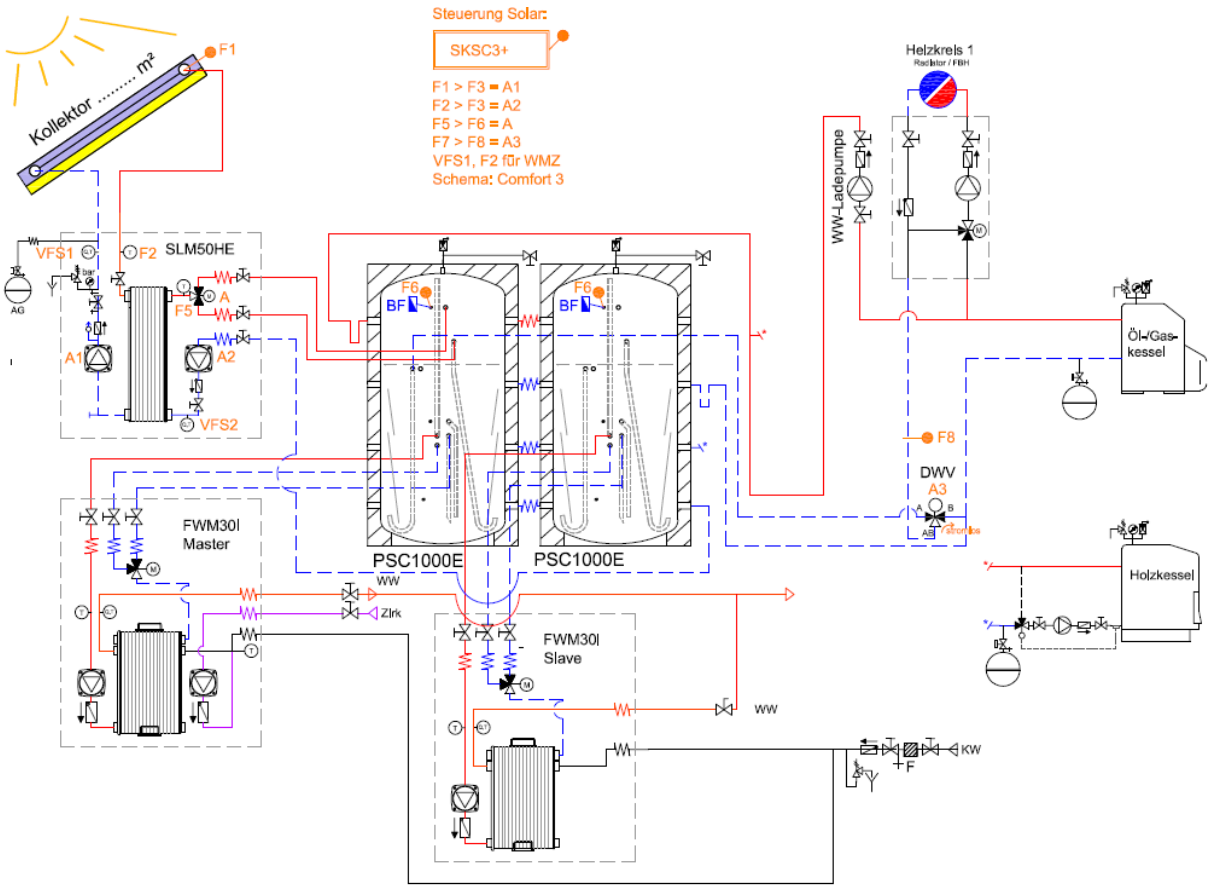

Figure 11 Functional scheme of the solar hygienic system
Source: Main project

Activities of implementation of the solar heating system on the extension part for sanitary hot water and support of the heating system are shown in tables 23 and 24:

Table 23 Solar heating system with hydraulic connection and replacement of valves with thermostatic valves

No.	Description
1	Setting solar system hygienic
2	Hydraulic connection
3	Replacement of the existing valves with new thermostatic valves

Source: Main project

Table 24 Additional activities for existing boilers to work on a solar system for support of the heating

No.	Description
1	Installation activities in the boiler room for connecting the solar system with the existing boilers
2	Extension part of the boilers for placing buffers
3	Electrical connecting of the solar system

Source: Main project

The selection of the equipment in the boiler room, circulation pump with capacity of Q=3.1m^3/h, and pressure H=4mVS, single phase, with power N=244W and triple mixing valve “ESBE” ø6/4 with manual adjustment of the water mixing is in accordance with the assessment of the amount of water that circulates in the installation G=0.86l/sec.

Improvement of the existing mechanical room

In order to achieve the required distribution and connection between the existing mechanic element and the new designed heat sources, some reorganization in the mechanical room have to be managed. In the mechanical

room there are three boilers of which two of them are in a function and one is broken. With the design for using the solar system as an addition to the heating system in the extension facility installation of two buffers for energy accumulation is required. Due to the limited access to the mechanical room, the broken boiler will be replaced with two new buffers through the opening that will be made on the exterior wall of the mechanical room. The design envisages repairing of the wall and building of roof structure over it.

5.2 Analysis, evaluation and potential amendments

The extension building has been designed to provide accommodation and care of 120 children. Therefore, the technical documentation foresees realization of the following construction activities:

- Construction of four new kindergarten classrooms with lockers and toilets;
- Construction of corridors for communication between the playgrounds and
- Construction of additional auxiliary rooms for washing/dryer equipment.

Below is an illustration of the rooms' disposition in the extension building and their interrelation. It is connected with the existing building through internal corridor.

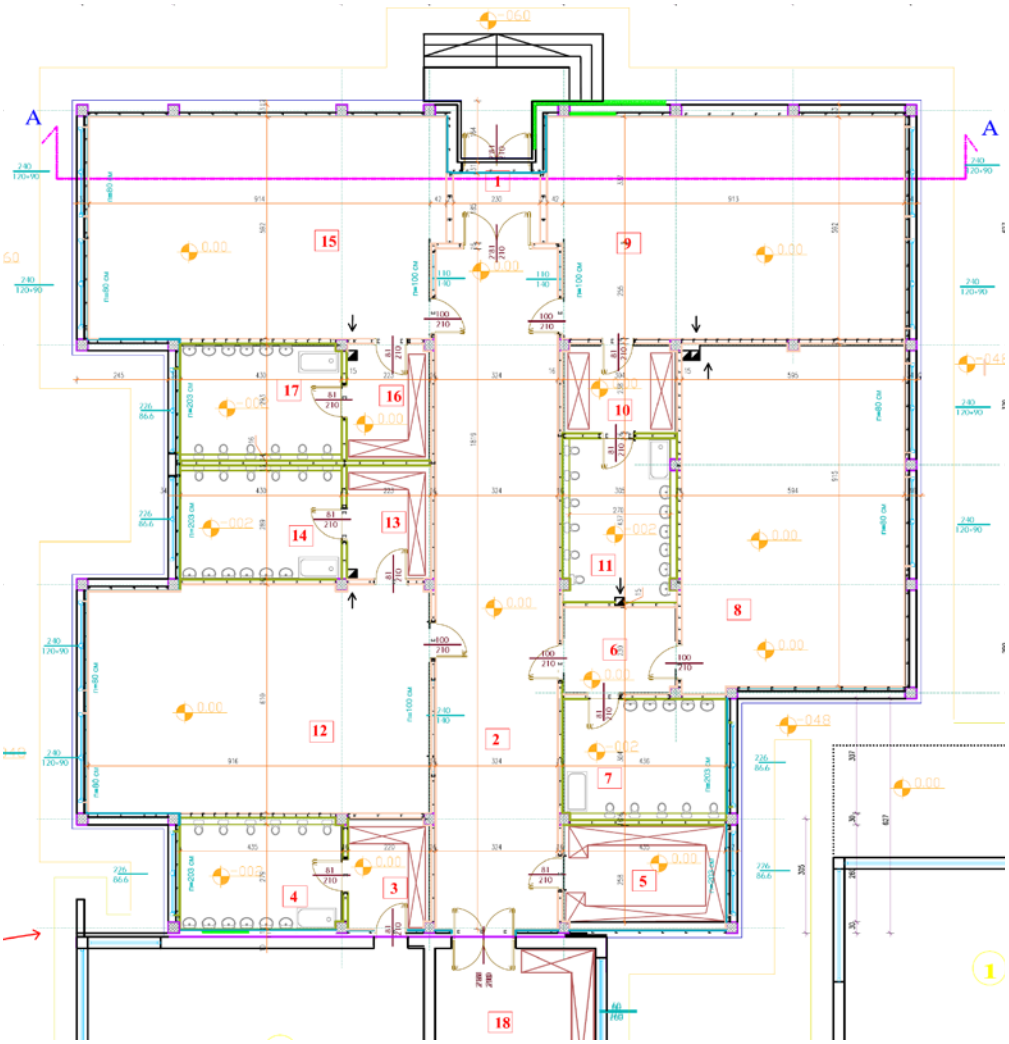

Figure 12 Rooms' disposition within the extension building
Source: Main project – phase architecture

Table 25 Legend

No.	Description of the room	Area (m²)	No.	Description of the room	Area (m²)
1	Extension entry	4.26	10	Wardrobe	7.11
2	Corridor	58.97	11	Toilets	13.33
3	Wardrobe	6.49	12	Playground	55.43
4	Toilets	12.88	13	Wardrobe	6.60
5	Additional rooms	12.05	14	Toilets	12.99
6	Wardrobe - corridor	6.90	15	Playground	55.27
7	Toilets	13.92	16	Wardrobe	6.82
8	Playground	54.29	17	Toilets	13.33
9	Playground	55.49	18	Towards existing building	
Total area					396.13

Source: Main project

In order to ensure greater energy efficiency of the building, it is planned installation of under floor heating for the entire extension area. Pre-condition for starting the activities for placement of the under floor heating system are: windows and doors to be installed, walls mortared and after completing the heating installation can be started with applying cement liner. Under floor heating as surface heating system represents low temperature system that requires temperature of 40^{0}C of the entry water (unlike regular radiators where temperature of 70-80^{0}C of the entry water is required) which increases the energy efficiency performance of the building. The automatic regulation of the heating will provide the most rational level of efficiency and energy savings (the temperature of the floor surface should not exceed the max of 29^{0}C). For regulation of temperature in a separate rooms predicted are regulators composed of 5 room thermostats. The room thermostats will provide turning on and off circulation pump placed in the room where room thermostats will be placed. At the same time, it will turn on and off burners of the boilers which will be used as heating source.

Besides these technical advantages, the system has also many health related advantages.

For the needs of the kindergarten “Veseli Cvetovi” Delcevo a design for solar system for preparation/heating of sanitary hot water, with possibility of connection with the existing heating boiler on liquid fuel was prepared. Preparation of hot water is planned for boiler with a capacity of 80l. Supply of hot water is provided to all sinks and tubs.

At the same time, the solar system will provide support of the heating system of the new building (extension). The inclusion of the solar system as support in the heating system lowers / replaces the need for the oil which was regularly used as energy source in the past.

In order to put the solar system in function, it is necessary to perform the following activities which are in accordance with the calculation given in the technical documentation:

- Placement of the solar system hygienic;
- Hydraulic connection;
- Replacement of valves with thermostatic valves.

Projected values of the solar system according to the given data, in total satisfy the needs for sanitary warm water in the existing building and the extension, while in the periods of no sunlight, the system should be connected for heating with the existing heating system (oil boiler) or with a reserve source with electrical heating of 9kW.

It is planned to connect the extension to the existing infrastructure systems of water supply, sewage system, electricity and existing telephone network. The area around the building will be landscaped with infrastructure walkways and greenery.

5.3 Conclusion

The need for extension of the kindergarten in the municipality Delcevo arises as result of the increased number of children waiting to obtain this service from the municipality. The existing building has no capacity to accept all children from the municipality. The reconstruction of the existing building already accomplished in the past, comprised reconstruction of the roof, replacement of the old windows with new and thermal insulation of the facade that increased the energy efficiency performances of the building. The extension will be constructed according to the energy efficiency standards in the country.

The use of renewable energy sources is additional measure that is of the benefit not only for the kindergarten, but also for the municipality. Moreover, the action of the public sector will provide a positive example of using renewable energy sources and energy efficiency practices for the commercial and residential sector in the municipality of Delcevo.

The construction of the extension will meet the required and planned capacity of the kindergarten, and as even more important, will provide better conditions for the children as final beneficiaries.