Municipality of
Petrovec, R. Macedonia

Construction of Primary School "Kocho Racin" Feasibility Study

Excerpts of the Project Appraisal Document approved by the World Bank on February 14, 2013 - market sensitive information is omitted

- Final Report, Rev.1 -

September-November, 2012

PointPro Consulting

Abbreviations

ACM – Asbestos containing materials

CAGR – Compounded Annual Growth Rate

€ – Euro (currency)

FS – Feasibility Study

GHG – Greenhouse gasses

ha – hectare

LGU – Local Government Unit

MDG – Millennium Development Goals

MKD – Macedonian Denar (currency)

MSIP – Municipal Services Improvement Project

MOE – Ministry of Education

MOF – Ministry of Finance

NPV – Net present value

PV – Present Value

VAT – Value Added Tax

WB – World Bank

1. Executive Summary

With the intention of upgrading the conditions for provision of primary education on a local level, in early 2012 the Municipality of Petrovec (Macedonia) has initiated activities for improvement of the schooling standards, above all the accommodation standards, in the central municipal primary school "Kocho Racin". The Kocho Racin school is the key primary educational institution on the territory of the Municipality, with over 50% of the total number of municipal resident primary-level students enrolled in it on a continuous basis. On the other hand, owing primarily to lack of funds for upgrading and regular proper maintenance of the school building, the facility currently represents a severely outdated, practically nearly dysfunctional for the purpose, and highly energy intensive structure.

This initiative of the Petrovec Municipality is grounded on the benefits derived from a long-term development project implemented by the Municipality, which are basically in the form of significantly increased revenues in the community budget over the past 2 – 3 years that accrue as a result of sale of land in the business/industrial development zone "Kjojlija", and associated augmented property taxes. Thus, the Municipality has financed the preparation of a full-scale design documents for construction of a new primary school, which define the school improvement standard and form the basis for an in-depth analysis of the initiative, and has ordered the preparation of this Feasibility Study. In addition, the Municipality has approached the WB's MSIP and has initiated discussions for obtaining a long-term loan under preferred conditions. At present, the MSIP is conducting an appraisal of the discussed project, following its internal procedures.

The Feasibility Study presented herein includes a comparative analysis of three alternative solutions to the project objective which include: (1) immediate minimal reconstruction of the school building and deferment of the construction of a new school building for 5 years (until 2018); (2) full immediate reconstruction of the school building and rescheduling of the new school building construction until 2026; and (3) immediate construction of a new school building for the Kocho Racin primary school. All three alternative solutions would result in specific energy reduction-related cost savings. Based on these analyses, it is concluded that Alternative 3 – construction of a new building structure for the primary school – represents the least-cost solution.

As regards to the key benefits of the selected alternative solution, above all the construction of a new school building would, over the analyzed 13-year period (relative to the expected loan repayment period), enable significant energy efficiency-derived cost savings in the range 27% of the total investment.

Following the comparative financial analysis of the project alternatives, detailed appraisal of the prospects relating to the possibilities of the Municipality to repay the MSIP loan requirements have also been conducted. It is concluded that under the projected loan terms: (1) the total annual debt repayment requirements do not exceed 20% of the Municipal operating budget, thereby abiding to the national legislative requirements specifying that the total debt repayment on the basis of long-term borrowing by municipalities cannot exceed 30% of the total revenues in the municipal budget during the previous year; and (2) with careful capital expenditure planning and stringent fiscal discipline the Municipality shall be in a position to straightforwardly repay the loan, using mainly proceeds from sale of land in the development zones and associated increased tax revenues.

The consequent feasibility analysis revealed that the project: (1) poses negligible threat to generating negative environmental impact; (2) has a moderate risk to its success and sustainability; (3) does not infer any potential social risk or instability; and (4) the project will bestow important positive long-term socio-economic benefits and values for the local community, as well as for the broader society as a result of its potential spillover effect.

It can be concluded that the timing and the conditions are conducive for implementation of the Petrovec Municipality's initiative for construction of a new building for the primary school Kocho Racin, and it is therefore recommended that the Municipality proceeds with the pursued project activities.

2. Introduction

2.1 Project Background

Following its specific continuing development path for economic growth and improvement of the living standard of its citizens, in early 2012 the Municipality of Petrovec, Macedonia, has decided to bring alive one of its most important long-term development projects – upgrading of the conditions for provision of primary education on a local level.

As regards the mentioned development path, the fortitude which forms the basis for overall local economic growth of the Petrovec Municipality is encored in an initiative that has been successfully implemented in the past 2 - 3 years, primarily related to the establishment of the "Kjojlija Industrial Zone". The Kjojlija zone, indeed, represents a business development facility with total size of approx. 165 ha (Annex 3), whereas proceeds from sale of land in the zone combined with increased communal and property taxes represent the main revenue sources which at present drive the overall development of the Municipality. In parallel to the sale of land, the Municipality has been using part of the new revenues for investments in infrastructure and overall improvement of the conditions for doing business in order to make the zone more attractive for investors. In addition to the initial proceeds from sale of land, on a longer-term basis supplementary benefits for the local community will certainly follow in the form of increased local employment and entrepreneurship ventures connected to the zone, and related living standard growth. Thus, it is this broad perspective to which the herein analyzed project for upgrading of the primary education standards on a local level is directly rooted.

The analyzed project in its core refers to upgrading of the accommodation standards in the central municipal primary school "Kocho Racin". The existing Kocho Racin school building dates back to 1964 when the school was established, and it houses approx. 520 six- to fifteen- year old primary-grade students, which represents over 50% of the total elementary school students in the Municipality. In spite of permanent efforts for maintenance of the school building over the past decades, owing mainly to lack of sufficient funds in the municipal budget, currently the school building represents a totally outdated and in many ways – from "technical" point of view – dysfunctional structure.

Therefore, in early 2012 and as part of the project planning efforts, in order to obtain accurate information regarding the required investment for construction of an entirely new school building (as one alternative solution), the Municipality has prepared a full set of architectural and engineering design documents. In addition, the Municipality has approached the World Bank's Municipal Services Improvement Project in Macedonia (WB MSIP)[1], with the intention of securing a loan under preferred conditions for financing the project implementation. This Feasibility Study (FS) also represents part of the project preparation documentation; however, it analyses the overall initiative from a broader perspective.

2.2 Goals and Objectives of the Feasibility Study

The specific objectives of the FS are to:

- Identify, compile and present all the information and data relevant to the project strategic context and relevant to the conditions for application of public primary education in the Petrovec Municipality, with specific focus on the conditions in Municipality's leading elementary education institution – the Kocho Racin school;
- Identify practical alternative solutions for upgrading and improvement of the conditions for provision of primary education in the Kocho Racin primary school, and assess their feasibility against multiple criteria (technical, environmental, financial, social and

[1] Development facility funded by the IBRD/WB: http://finance.gov.mk/node/1090.

organizational) over the project economic life-cycle;

- Identify and determine all project related costs and benefits, for the investment project itself (project incremental analysis);
- Select and structure the best project alternative, based on multiple criteria and analysis against few project performance indicators;
- Assess the potential of Petrovec Municipality for financing the upgrade of the Kocho Racin school infrastructure – i.e. repayment of a loan from the WB's MSIP – following the identified superior alternative solution;
- Identify and assess the wider socio-economic benefits of the project;
- Identify key risk factors and risk mitigation strategies.

2.3 Methodology

The Feasibility Study for Construction of Primary School in the Municipality of Petrovec has been prepared by PointPro Consulting, Skopje. The Study is primarily intended for use by the Municipality of Petrovec and the WB's MSIP as a basic decision-making tool for further implementation of the project.

The tasks that were performed to assess the feasibility for construction of the primary school included:

- Phase I: Data Collection activities, including site visits, desk research, analysis of technical documentation (design standards and drawings) and conducting meetings with various project stakeholders;
- Phase II: Analysis of Alternatives, which included activities focused on identification, assessment, ranking and selecting the most feasible 'school upgrading' solution;
- Phase III: Feasibility Analysis, i.e. detailed technical, environmental, institutional, financial, socio-economic, and risk analysis;
- Phase IV: FS Report writing.

In the course of preparation of the Study, available background information was provided by the MSIP team and Petrovec Municipality. Furthermore, discussions were held with representatives from Petrovec Municipality, Kocho Racin school personnel and the MSIP team members at several occasions to review the study objectives and opportunities.

2.4 Report Format

The findings of the feasibility assessment are presented in Sections 3 through 10 of this report. Supporting information is provided in Annexes. Technical information is presented in metric units and the costs are in Macedonian Denars (MKD) or Euro (€).

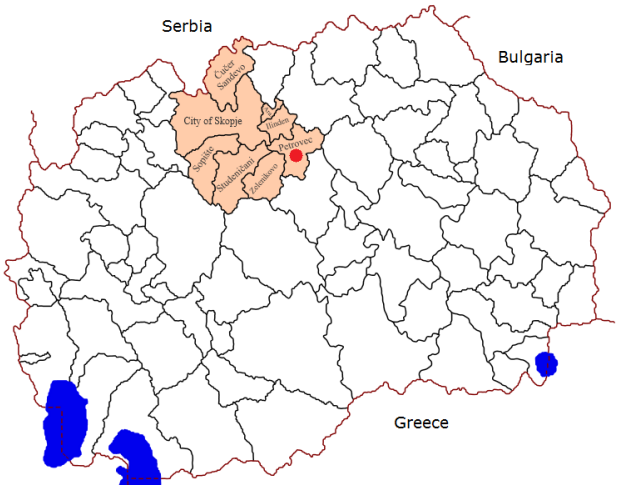
Section 3 of the report provides and overview of the project location, demography, and basic socio-economic indicators of Petrovec Municipality, along with an overview of the Macedonian education system framework, as well as information regarding the project objectives and scope and identified project alternatives. Section 4 provides information from the social assessment, while Section 5 information from the environmental assessment of the project. The project technical concept is detailed in Section 6. Detailed financial analysis is presented in Section 7. Section 8 deals with analysis of project's socio-economic benefits. Section 9 provides overview of identified project risks. Summary conclusions and recommendations are provided in Section 10.

3. Project Description and Rationale

3.1 Petrovec Municipality

3.1.1 Geographic location

The Petrovec Municipality is located in the southeastern part of the Skopje valley and belongs to its lower basin between the rivers Vardar and Pchinja. In the western part to the right of Pchinja River, which flows in the middle of the territory of the Municipality of Petrovec, lies the Skopje field (Skopsko Pole), while on the left side of the river, despite its alluvial plain towards Otovichko area, a hilly land rises known as Katlanovo Hill (Katlanovsko Brdo).



The Petrovec Municipality borders with seven (7) contiguous municipalities:

- To the north with the Municipality of Gazi Baba, Municipality Ilinden, and Municipality of Kumanovo;
- To the east with the Municipality of Sveti Nikole and Municipality of Veles;
- To the south with the Municipality of Veles;
- To the west with the Municipality Zelenikovo and Municipality Studenichani.

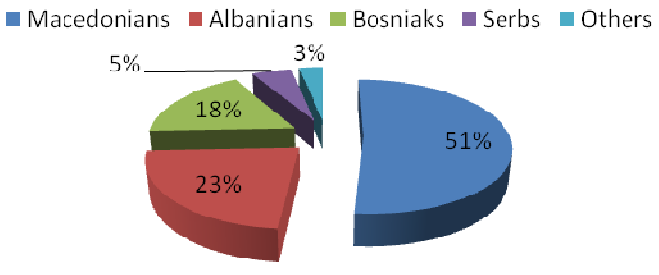
The Petrovec Municipality is characterized by a favorable geographical position (Annex 1):

- 17 km distance from the capital city of Skopje;
- 5 km distance from the Skopje airport;
- Located on the E-75 highway Skopje - Gevgelija - Thessaloniki;
- Located on the regional road R-103, Skopje - Veles;
- 10 km distance from the bus line Skopje - Belgrade.

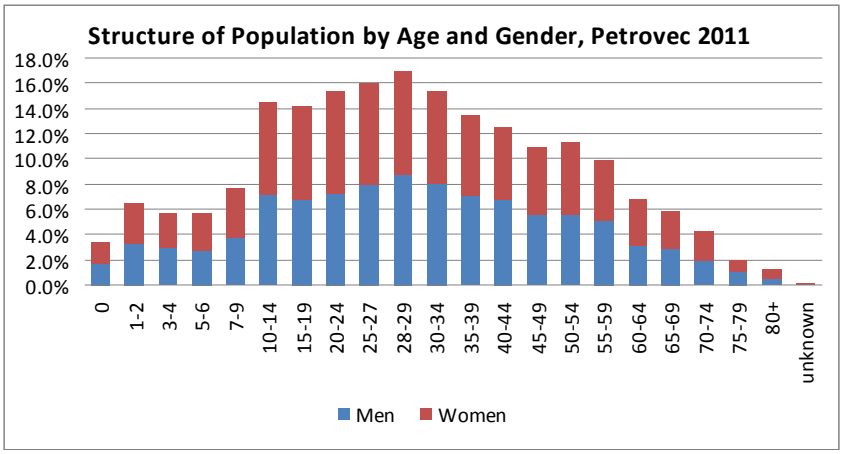
3.1.2 Demographic profile

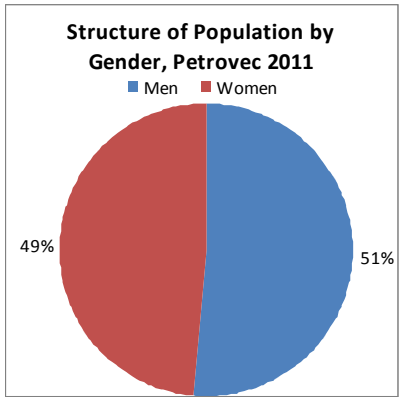
According to the 2002 Macedonian census, Petrovec Municipality has 8,255 residents, which shows a minor growth compared to the previous census in 1994 when 8,123 residents were registered (1.6% increase). Ethnic groups in the municipality include:

- Macedonians = 4,246 (51.4%)
- Albanians = 1,887 (22.9%)
- Bosniaks = 1,442 (17.5%)
- Serbs = 415 (5.0%)
- Others = 265 (3.2%)



The structure of the population in the Municipality of Petrovec by gender and age is shown on the charts below[2].





3.1.3 Economic profile

The detailed analysis of the Municipality Budget indicates a trend of outstanding growth in revenues in the last 2 years. The Budget in 2011 is over 4 times the Budget in 2009, growing from 0.34 million Euro to over 1.45 million Euro. This extraordinary growth in the Budget is primarily due to the decentralization reforms, that is, reaching the second level of decentralization in 2010 all the while introducing new sources of revenues. This approach, in the context of management, has made the Municipality of Petrovec a model municipality for the Country. Namely, in a long-term development strategy for the Municipality, the Mayor and his team made the decision to create industrial development zones (districts) and utilize the available land on the territory of the Municipality, which above all marks the birth of the Kjojlija Industrial Zone with total size approx. 165 ha (Annex 3). In addition, two other land/industrial-development zones – "Rzanichino" with approx size of 5 ha and "Dolno Konjari" with approx. size of 14 ha – were also created. Parallel to the sale of land, the Municipality has been using the new revenue source for investments in infrastructure and overall improvement of the conditions for doing business in order to make the zone more attractive for investors.

Table 3.1 Municipality of Petrovec: Budget Revenues 2009-2012

Revenue category	2009	2010	2011	01.01.-01.10. 2012
Tax revenues	**152,956 €**	**241,495 €**	**294,203 €**	**194,173 €**
Payroll taxes	*9,407 €*	*9,921 €*	*10,220 €*	*7,624 €*
Property taxes	*68,840 €*	*119,992 €*	*94,331 €*	*91,942 €*
Taxes on specific services (Public utilities fees)	*73,863 €*	*111,382 €*	*189,401 €*	*94,607 €*
Utilization fees or business permits	*847 €*	*200 €*	*250 €*	*0 €*
Non-tax revenues	**10,794 €**	**13,617 €**	**35,772 €**	**9,797 €**
Fees and reimbursements	*4,871 €*	*6,815 €*	*29,788 €*	*3,823 €*
Other government services	*1,697 €*	*2,351 €*	*5,315 €*	*515 €*
Other non-tax revenues	*4,226 €*	*4,451 €*	*670 €*	*5,459 €*
Capital revenues	**8,181 €**	**158,700 €**	**908,988 €**	**596,561 €**
Transfers and donations	**168,513 €**	**227,648 €**	**210,454 €**	**548,607 €**
TOTAL ANNUAL REVENUES	**340,443 €**	**641,460 €**	**1,449,417 €**	**1,349,138 €**
Annual growth rate		*88.4%*	*126.0%*	*n/a*

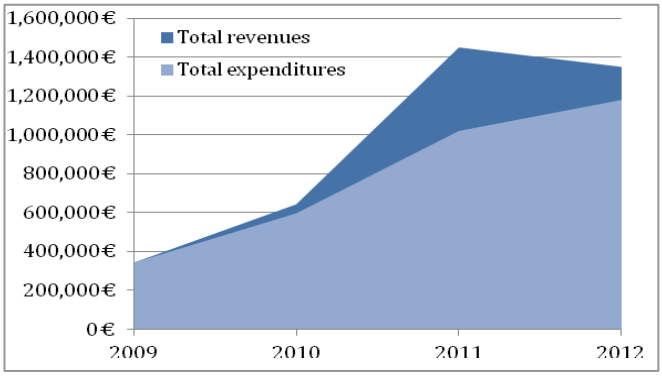
[2] Source: State Statistical Office (2012).

As can be seen from Table 3.1 above, the budget inflow is comprised of four main categories of revenues: (1) tax revenues, (2) non-tax revenues, (3) capital revenues, and (4) government transfers. The tax revenues have almost doubled in the last two years, mainly due to the increase in public utilities fees from the land that was sold. The major revenue category that drives the overall growth in the total budget is the capital revenue category, that is, the revenues from the sale of land from the industrial zone, with 40% of the total land available sold so far. Additional 19 ha are attached to the current industrial zone and the Municipality plans to sell them along with the remaining 108 ha from Kjojlija in the following 3 years (2013-2015).

Table 3.2 Municipality of Petrovec: Budget Expenditures 2009-2012

Expenditure category	2009	2010	2011	01.01.-05.10. 2012
SALARIES AND CONTRIBUTIONS	135,995 €	153,114 €	160,234 €	126,935 €
GOODS AND SERVICES	123,780 €	207,775 €	277,661 €	293,718 €
INTEREST PAYMENTS	734 €	607 €	319 €	0 €
SUBSIDIES AND TRANSFERS	931 €	4,053 €	12,034 €	14,566 €
SOCIAL BENEFITS	0 €	0 €	0 €	3,268 €
CAPITAL EXPENDITURES	78,743 €	230,427 €	570,255 €	741,873 €
TOTAL EXPENDITURES	**340,833 €**	**595,975 €**	**1,020,504 €**	**1,180,361 €**
Budget surplus / (deficit)	-390 €	45,485 €	428,913 €	168,778 €

The growth in expenditures (Table 3.2 above) follows the growth in revenues since the increase in capital revenues requires significant investments in infrastructure, such as: the construction and reconstruction of streets, roads and highways, wastewater treatment plants and sewers, buildings and facilities, etc.



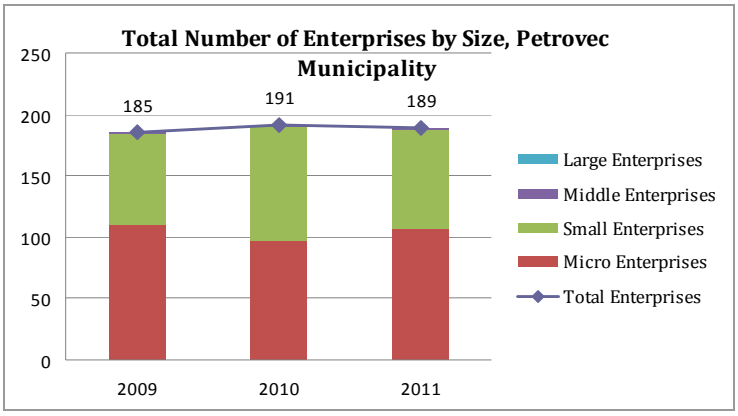
The increase in capital revenues has led to a significant budget surplus, creating more flexible environment for the future development of the Municipality. With extensive planning, fiscal discipline and spending, the Municipality can allow itself to include debt financing for some investment project of interest to the community.

The structure of the local economy in Petrovec Municipality by active businesses and their relative size is given in Table 3.3 and the chart below[3]. Evidently, the local economy is dominated by micro enterprises that make over 56% and small enterprises that make 43% of the total number of active businesses on the territory of the Municipality. It is, however, expected that this situation will change with further development of the industrial zones.

Table 3.3 Number of active business in Petrovec and their size

Petrovec	2009	2010	2011
Total Enterprises	**185**	**191**	**189**
Micro Enterprises	110	97	107
Small Enterprises	74	93	81
Middle Enterprises	1	1	1
Large Enterprises	0	0	0

[3] Source: State Statistical Office (2012).



As regards the main business sectors/prevailing industries (Table 3.4 and chart below), 33% of the active enterprises provide wholesale or retail trading services, followed by transport and warehousing services with 22%, while 11% of the total business are active in the agriculture sector[4].

Table 3.4 Municipality of Petrovec: Main sectors of Business activity

	2010		2011	
Main sectors of business activity	**Skopje**	**Petrovec**	**Skopje**	**Petrovec**
Total	**28,352**	**191**	**26,792**	**189**
Wholesale and retail; motor vehicle rep.	9,463	62	9,023	61
Transport and warehousing	2,115	50	2,149	42
Agriculture, forestry and fishing	238	21	218	20
Processing industry	2,713	10	2,625	14
Other service industries	2,089	7	2,014	12
Construction	1,833	11	1,792	10
Lodging facilities and restaurants	1,345	8	1,275	7
Mining and excavation	55	4	58	6
Health and social secutiry industries	1,019	6	1,048	6
Other industries	7,482	12	6,590	11

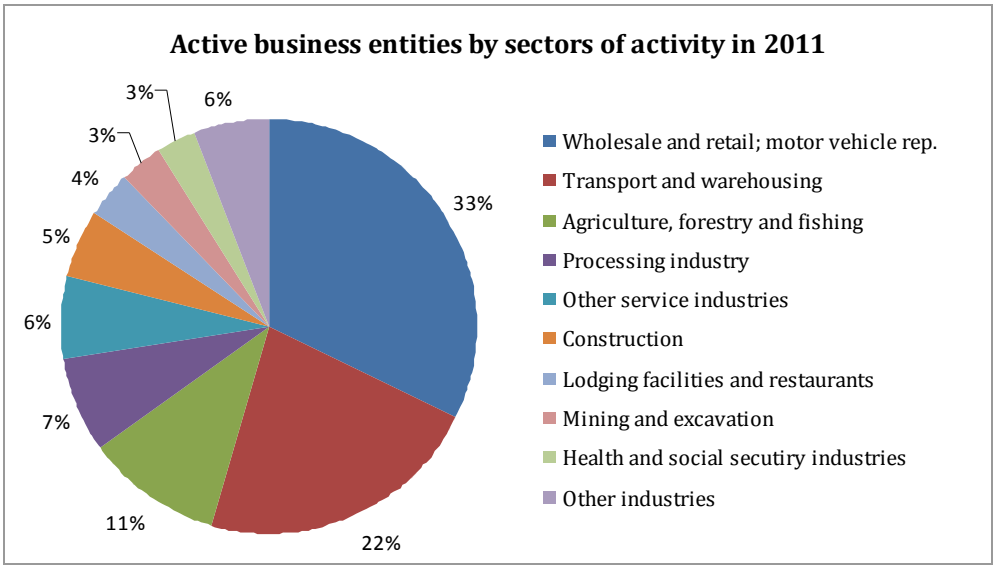
3.2 The Education System in Republic of Macedonia

3.2.1 Structure and organization

The Macedonian education system is divided into 4 main areas: pre-school care and education (from the age of 6 months to 6 years), primary education (lasting 9 years), secondary education (lasting 2, 3 or 4 years), and tertiary education. Primary and secondary education are compulsory by the law and free for the population. Higher education is partially financed by the state, but university students also contribute. The coverage of the basic education system is relatively low, although an increase has been witnessed in recent years. Secondary and tertiary enrolment rates vary considerably across income groups and regions.

Pre-school education: Pre-school education is provided in kindergartens and in the reception year-groups within primary schools. As of September 2005, the reception (pre-primary preparatory) year became part of compulsory education.

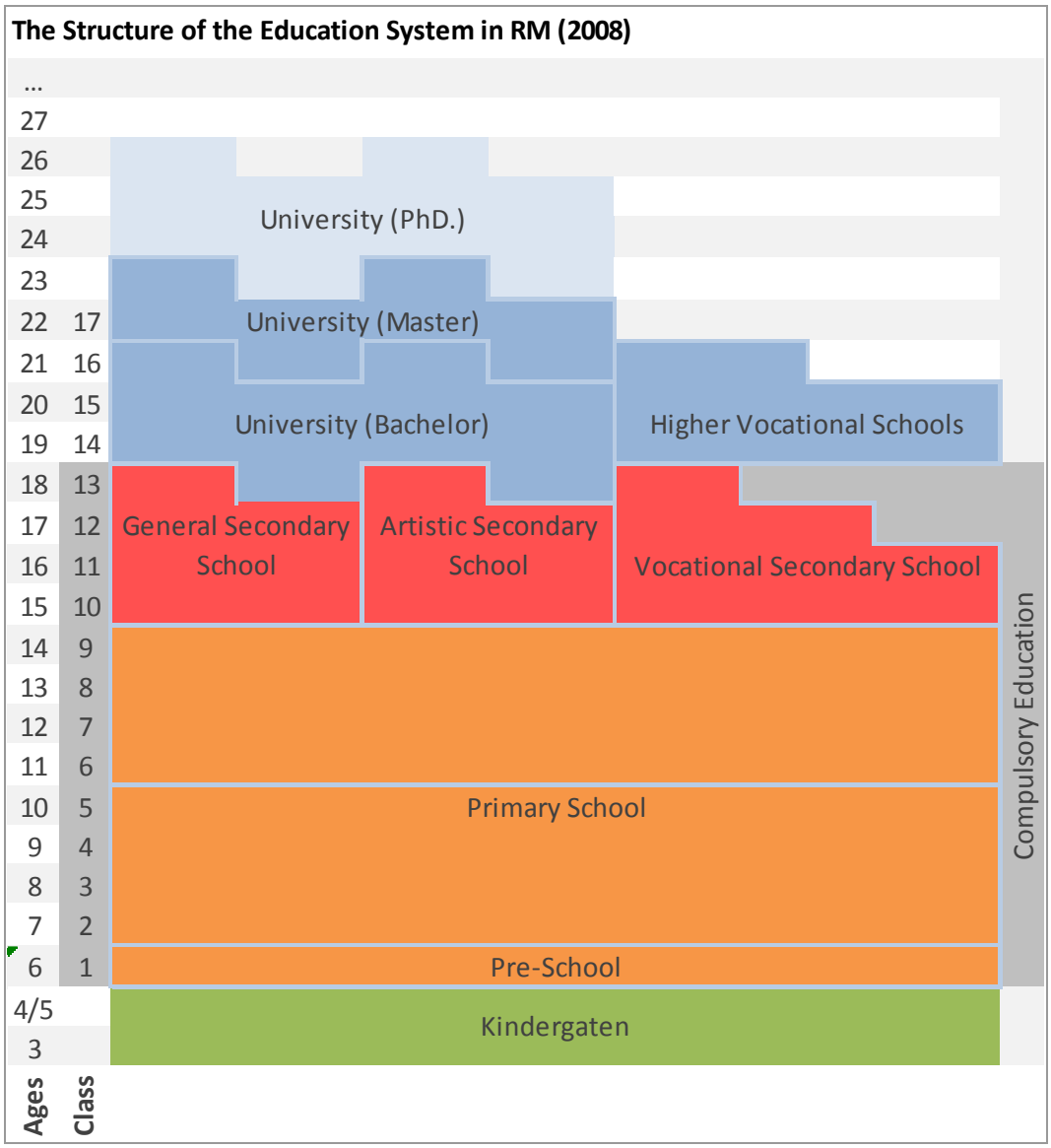
[4] Source: State Statistical Office (2012).



Primary education: Compulsory elementary (basic) education used to last eight years divided into two four-year cycles, and children who have reached the age of 7 by the end of the calendar year enrolled in the first grade of the elementary (basic) school. In 2004, a new nine-year basic education program, compulsory for all children in the age group 6-15 years, has been introduced, consisting of one preparatory pre-primary year followed by two four-year cycles (classroom teaching and subject teaching). According to legislative changes introduced in 2007, basic education lasts nine years, and is divided into three-year cycles (classroom teaching in grades 1 to 5 and subject teaching in grades 6 to 9). At the end of the program the successful students receive a certificate of completed basic education.

Secondary education: Secondary education is provided in: (1) general education of specialized (languages and science-mathematics) gymnasia offering four-year programs; (2) four-year technical education schools; and (3) four-year art, music, and ballet schools. Vocational education schools offer to basic education graduates two-, three-, of four-year programs leading to a certificate of technician. At the end of general secondary education students sit the *matura* exam. There are also final exams at the end of three- and four-year vocational education programs. According to legislative changes introduced in 2007, since 2009/10 secondary education is compulsory and free of charge in public schools.

Higher education: Students are required to pass an entrance exam to obtain access to higher education. Tertiary-level professional colleges offer two-year diploma programs. Before the implementation of the Bologna process in 2004/05 most university undergraduate programs lasted four years, with the exception of five years in the case of professional studies and six years in the case of medicine studies. In 2004/05 some faculties started to adopt the two-cycle pattern, and have also introduced programs within the first three-year cycle leading to a bachelor's degree. There are also faculties that continue to offer four- or five-year undergraduate degree programs. Concerning second-cycle programs, some faculties started offering master's degree programs lasting one and a half to two years (six to eight semesters), regardless of the duration of the undergraduate programs. Doctoral degree programs take a minimum of three years to complete.



Source: World Data on Education. 7th edition, 2010/11

The school year at the elementary and secondary levels starts in September and ends in June of the following year. At the elementary (basic) level the school year is divided into two terms. Schools operate five days a week and have to provide instruction for 180 days during the year (175 days in grade 9). The academic year is divided into two semesters (summer and winter) or in three semesters. Students normally have a one-month winter vacation and a somewhat longer summer vacation.

3.2.2 The educational process in primary education

The Ministry of Education adopts the Concept for Primary Education and on this basis individual subjects' curricula are developed. In primary school the educational process is organized and carried out according to the official curriculum and syllabi adopted by the Ministry of Education, upon proposal of the Bureau for Education Development (formerly the Pedagogical Institute). The primary school curriculum includes compulsory and elective subjects, additional and optional educational activities. The official curriculum also determines the annual and weekly number of classes for compulsory and elective subjects in each grade, as well as the number of weekly classes for additional and optional educational activities. It also

establishes the educational aims, contents, basic concepts, activities and method of teaching, the evaluation of students' achievements, and the conditions for implementation.

The Framework for nine-year Primary Education was prepared by the Bureau for Education Development and enacted in 2007, providing a basis for changes to the curriculum of compulsory primary education (grades 1-9). In 2008, the nine-year primary education curriculum was reformed and aligned to the child-friendly school philosophy and principles. The national child-friendly school framework includes standards in six areas: inclusiveness; effectiveness; safe and protective environment; gender equality; participation; and multiculturalism and child rights. A separate subject – life-skills-based education – has also been introduced in the curriculum. As a compulsory subject in grades 1-9, life-skills-based education includes contents about environmental education, sex education, child rights, multiculturalism and peaceful conflict resolution. As part of the reform also history of religion was included as an optional subject in grades 7 and 8, replacing the previous religious education that was rejected by the Constitutional Court in April 2009.

The State Statistical Office reports that in 2010/11 there were 990 primary and lower secondary schools (including satellite units) with a total enrolment of 201,914 students (of what 98,006 or 48.5% were girls). The total number of full-time teachers was 15,200, of what 10,061 or 66.2% were female teachers. A total of 729 schools provided instruction in Macedonian (130,200 students enrolled), 289 in Albanian (65,121 students enrolled), 62 in Turkish (6,043 students enrolled), and 7 in Serbian (550 students enrolled).

3.2.3 Assessing learning environments nationwide

The country participated in the 2003 PIRLS (Progress in International Reading Literacy Study) and 2006 TIMSS (Trends in International Mathematics and Science Study) exercises. Of all the countries in the region that participated in these two assessments, Republic of Macedonia scored last on both tests. The country ranked below the international average in both literacy and mathematics achievement. Teaching is thought to be largely ineffective because of outdated methodologies that concentrate on rote memorization and because of low teacher support in schools. Studies and reports call for introduction of basic learning standards for pre-primary and primary schools to ensure that students leave school with basic competencies, and that children who are in need of special assistance are identified and serviced. (World Data on Education. 7th edition, 2010/11).

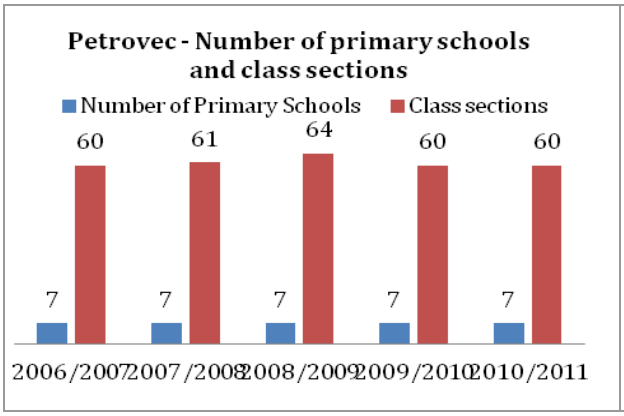
3.3 Primary Education in Petrovec Municipality

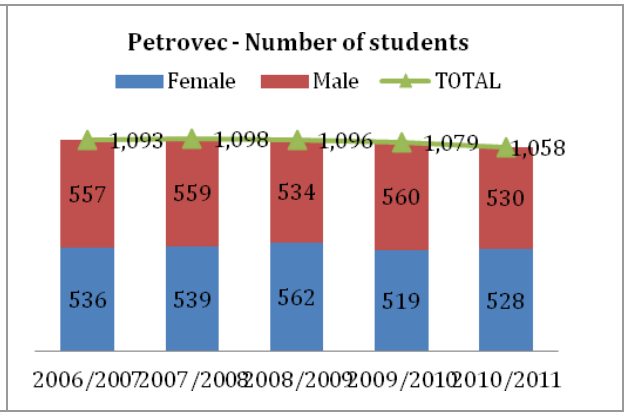
The primary education in Petrovec is held in 7 primary and lower secondary schools (2 central and 5 satellite schools), and the number has remained the same in the last 5 years. The total number of students has remained relatively stable at an average of 1,085, only slightly decreasing (a negative CAGR of 0.8% in the period 2006-2011). The total number of students enrolled in primary and lower secondary education in the school-year 2010/11 was 1,058 (of which 528 or 49.9% were girls), while the total number of teachers was 98 (of what 91 or 92.9% full-time).

The total number of students enrolled in primary and lower secondary schools in the Municipality of Petrovec takes up a 2% share of the total number of students in the city of Skopje, or 0.5% of the students in Republic of Macedonia[5]. Furthermore, based on population growth projections for the forthcoming 30-year period (up to 2041), although the total population in the country is expected to decrease by 0.3% over the entire analyzed period the population in Petrovec Municipality is expected to increase by 3.7%. However, as regards the

[5] Source: State Statistical Office (2012).

age-group of 5 to 14 years old in the Municipality it is expected to actually decrease by 3.5% over the entire 30-year period (Annex 2).





Over 50% of the total number of students in the Municipality is enrolled in the primary school Kocho Racin (520 students, of what 450 1-st to 8-th grade, and 70 pre-school groups). The average number of students per class during the past 5-year period equaled 18, which is slightly lower than the national average of 21. However, the average teacher/pupil ratio, also for the same period, equaled 0.082, which is higher than both the national (0.075) and the average ratio for the capital Skopje (0.063). The language of instruction in the school is Macedonian. More information about the school is provided in the tables below and in Annex 2.

"Kocho Racin Primary School: Student enrolment 2009 - 2013

Class	2009-10	2010-11	2011-12	2012-13
1-st			57	40
2-nd			40	57
3-rd			43	40
4-th			53	43
5-th			59	52
6-th	83	67	52	75
7-th	67	82	67	52
8-th	66	67	82	68
9-th	59	65	68	80
Total			521	507

"Kocho Racin" Primary School: Average achievement 2009 - 201

Class	2009-10	2010-11	2011-12
1-st to 5-th	4.28	4.15	4.19
6-th - 9-th	3.73	3.74	3.98
Average	**4.01**	**3.95**	**4.09**

Scale: 1 = Fail; 5 - Excellent

	Average number of students per class (class size)				
	2006/2007	2007/2008	2008/2009	2009/2010	2010/2011
Republic of Macedonia	21	21	20	20	19
Skopje	25	24	24	24	24
Petrovec Municipality	18	18	17	18	18

	Teacher/Student Ratio				
	2006/2007	2007/2008	2008/2009	2009/2010	2010/2011
Republic of Macedonia	0.066	0.071	0.075	0.078	0.084
Skopje	0.057	0.060	0.063	0.066	0.068
Petrovec Municipality	0.075	0.077	0.079	0.086	0.093

3.4 General Project Description

3.4.1 Project Need and Objectives

Problem/need Statement: as noted also earlier, the existing building (structure) of the Kocho Racin primary school, which is the principal elementary education institution in Petrovec Municipality, dates back to 1964 when the school was established. It accommodates approximately 520 primary-grade students, which represents over 50% of the total elementary students in the Municipality. In spite of permanent efforts for maintenance of the school building over the past decades, owing mainly to lack of sufficient funds in the municipal budget, currently the school building represents a totally outdated and dysfunctional structure. Among the core problems associated with the poor condition of the school are the following (see also Annex 9):

- The roof structure and the external walls of the building contain asbestos elements, thus posing a particular health hazard for the students and the overall community;
- The school building is extremely energy inefficient, resulting in unit energy use for heating of approximately 150 kWh/m2. Thus, on the average the school uses roughly 35 tons of fuel oil (diesel) for heating annually, yet even this volume of fuel oil does not enable standard comfort/heat conditions during winter periods with extremely low temperatures. As reported by the school personnel, practically every winter for 2-3 months the school gym is not used because it cannot be heated sufficiently for the purpose. The energy intensity of the school building is a result of inadequate thermal insulation of walls and ceilings, as well as of doors and windows (fenestration) being in a very poor condition;
- School's sanitary facilities (toilets) are at an exceptionally low standard, as well as in an extremely poor condition, i.e. such that even cannot properly serve the purpose;
- The school roof structure is not maintained regularly, thus precipitation leaks inside classrooms and other school premises frequently occur;
- Water supply and electrical installations inside the school building have not been replaced or even upgraded for extended period, thus practically being at the end of their reasonable life-time. Security aspects related to electrical installations (wiring) are thought to be among the critical features;
- The overall other conditions within the school, e.g. classroom space and height, lighting (illumination) conditions both natural and electrical, etc., are regarded as sub-standard.

Project Objective: the Municipality of Petrovec intends to invest funds and pursue project activities focused on *upgrading of the accommodation standards at the Kocho Racin primary school.*

Project goals and development outcomes: by creating state-of-the-art conditions for primary education at a local level, *the Municipality of Petrovec will enable equal opportunities, empowerment and strengthened community, thus will foster generation of truly enduring values to its citizens*.

3.4.2 Project's links with broader development objectives

The project is rooted in Petrovec Municipality's long-term development strategy for economic growth and improvement of the living standard of its citizens, which is based on investing the increased revenues in the community budget generated as a result of sale of land in the industrial development zones and associated augmented property taxes in priority infrastructure- and institutional-development needs.

Development and promotion of education has been among the top priorities of the Macedonian Government since country's independence in the early 1990-ties. Furthermore, the project is directly linked with the overall country's strategy for education development, as articulated in the National Programme for Development of Education in Macedonia 2005 – 2015[6]. The Programme has the following aims: (1) to predict the long-term needs of the state regarding education and to show a readiness which guarantees that the vision, concepts and values included in the strategy will be achieved; (2) to foresee future changes in the local field, changes in the Ministry of Education and Science, and changes in the society, creating relevant aims that are to be achieved; and (3) is focused on managing and directing the process of education development. The Programme attempts to realize its mission by a long-term orientation and efficient interventions in the following strategic/key intervention areas:

- Education for all/providing equality in education;
- Promotion of the culture of living;
- Raising social participation;
- Raising the educational, cultural and economic competency of the Macedonian society;
- Reinforcement and development of international cooperation;
- Change management.

The Programme also defines specific sub-programs related to: preschool education; primary education; secondary and post-secondary education; higher education; development of school staff; quality assurance and control in education; development of institutional support for the education reforms; and developing ICT in education.

In the past two decades, a number of programs financed and managed by multilateral and/or bilateral International Development Organizations in Macedonia have also been focused on education development and promotion. Among these, of particular impact and importance is the USAID Macedonia-funded Primary Education Project (PEP), which has been implemented throughout the 2006-2012 period. PEP's objectives are: (1) improvement of the quality of instruction with particular emphasis on helping students to develop critical thinking skills; (2) improvement of students use of ICT and increasing their employment skills; (3) improvement of the learning environments; (4) developing quality digital learning materials to enable active inquiry-based learning; (5) revitalizing math and science education; and (6) improve school-based assessment. PEP's components include: (1) School Renovations (of over 120 schools in Macedonia); (2) ICT in Schools; (3) Math and Science Education; (4) Student Assessment; and (5) Workforce Skills Increase.

3.4.3 Planned project implementation

The Municipality of Petrovec has financed the preparation of full-scale detailed architectural and engineering design documents for construction of a new modern school building. The design defines the standards – in technical, environmental and aesthetical terms – of the new school, and it enables accurate assessment of the investment needs. In addition, the design

[6] Ministry of Education and Science of the Republic of Macedonia: "National Programme for Development of Education in Macedonia 2005-2015.

enables definition of investment needs for partial or full reconstruction of the existing school building, as possible project alternatives.

The implementation of the project is planned to be accomplished through debt financing, i.e. by a sub-sovereign loan under preferential conditions from the WB MSIP. For this purpose, initial contact with the MSIP Implementation Unit has been established and the MSIP is currently carrying out an appraisal process for the project, following its internal operational procedure.

Following the MSIP provisions which stipulate that eligible for participation in the Project are municipalities which have been approved by the Ministry of Finance (MOF) of Macedonia for the second phase of decentralization, as well as that to qualify for investment funding under the MSIP a municipality must receive a positive opinion from the MOF allowing it borrow, the Municipality of Petrovec has already informed the MOF of its intention and has received a positive initial response. The final MOF decision is contingent on positive appraisal and financing decision made by the MSIP.

The Municipality of Petrovec has assigned its own project implementation team, which is responsible for preparation and administration of the project related requirements on a daily basis.

The (re)construction works on the project implementation are intended to be carried out by a single contractor (if applicable), to be selected based on competitive bidding procedure following national and MSIP standards.

3.4.4 Project Alternatives

The following alternative solutions to the project and its goals/objectives have been identified:

- **Alternative 0 – Do nothing (As-Is)**: although this is not considered to be a "true" (satisfactory) project alternative towards accomplishing the project objective, since it does not result in any improvement of the school accommodating conditions that have been assessed as sub-standard, it is yet mentioned here and used in the analysis as a baseline against which all other alternatives, as well as the overall project benefits, are compared.

- **Alternative 1a – Minimum (partial) reconstruction of the existing school building**, which includes: (1) replacement of all doors and windows; (2) full reconstruction of sanitary facilities; (3) upgrading of the heating system with replacement of heating devices (radiators) and piping; and (4) other minor priority improvements.

  This Alternative, although planned reconstruction efforts are minimal, would results in energy savings estimated to be in the range of 10% reduction of fuel oil used for heating purposes. Nevertheless, the Alternative is also considered to be only a partial solution to the overall project need and objective, indeed only a "temporary rescheduling" of or "real option" to the alternative which creates substantial solution to the problem (Alternative 2). Thus, under this Alternative, besides the immediate minimal reconstruction, construction of a new school building is planned to take place after 5 years (i.e. in 2018).

- **Alternative 1b – Full reconstruction of the existing school building**, whereas the structure of the existing school building would remain unchanged, however major refurbishment shall be carried out which includes: (1) reconstruction of floors, with application of thermal insulation (energy efficiency); (2) replacement of doors and windows; (3) reconstruction of external (façade) walls and application of thermal insulation (energy efficiency); (4) reconstruction of roof structure and ceilings with application of thermal insulation (energy efficiency); (5) full reconstruction of water supply and sewer installations; (6) full reconstruction of sanitary facilities; (7) full

upgrading of the heating system; and (8) replacement of electricity installations and lighting equipment.

This Alternative would results in important energy savings, estimated to be in the range of 35% reduction of fuel oil used for heating purposes and 58% reduction of electricity use. However, alike Alternative 1a, this solution is also regarded to be a temporary solution (real option), hence construction of a new school building (Alternative 2) is planned to take place after 13 years (i.e. in 2026, at the latest).

- **Alternative 2 – Construction of a new school building**, which represents thorough and substantial solution. The new school will be located at the same site (land parcel) where the existing one is; it will provide sufficient space built according to up-to-date standards, as well as match the requirements for elementary education in the Petrovec Municipality in the following 50-year period. Additionally, the Alternative will result in significant and lasting primarily energy savings, estimated to be in the range of 50% reduction of the current fuel oil used for heating purposes and 75% reduction of electricity use. Besides, the solution will generate important savings in annual operating costs, mostly for maintenance of the building.

- **Alternative 3 – Transport of school students to neighboring municipalities** and abandonment of the existing school building. Although this Alternative emerges as a potential solution to the problem, it has several major embedded shortcomings such as:

  (1) adequate space should exist in another school building in a neighboring municipality, since no alternate space/facility is in existence in Petrovec Municipality. The city of Skopje would of course come up as a prime source. However, the Kocho Racin primary school houses some 500 to 550 students, which would represent a major build-up for any existing school in the country.

  (2) Transportation of a contingent of 520 six- to fifteen-year old primary school students on a daily basis will represent a major logistics operation bearing significant operating costs, albeit a minimal investment compared to Alternative 2. Namely, based on current unit market rate of €25/hour for rental of transportation buses; the required number of buses – minimum 5, in 2 shifts – for organization of the transport; and estimated total time of 4.5 hours/day for the transport, the operating costs to be borne by the Municipality would equal over €100,000 per year. Or, for a 15-year period and assuming a uniform 3% annual cost increase the PV of the operating costs would roughly equal the investment costs for construction of a new school, i.e. approximately €1.5 million[7].

  (3) The daily transportation in 2 directions to an alternate school would take up a considerable amount of students' free (family) time, therefore putting them in an inferior position compared to their peers in other localities. Namely, if an alternative school is found in the capital of Skopje the expected distance would be no less than 20-25 km, and the travel time would be no less than 45 minutes in one direction; for both directions this equals to 1.5 hours per day of travel time.

  This is considered to be a particularly important disadvantage, since: (1) primary education – practically throughout the World – represents a merit right/good, requiring equal rights (chances) for all; and (2) the transport would reasonably capture time that would be otherwise used by the students for learning and homework preparation, thus harden their prospects for increased educational achievements in a critical age.

[7] More details regarding the investment for construction of new school building are provided further in the report.

Therefore, mainly for these reasons, Alternative 3 has not been taken into consideration in the subsequent project comparative and financial analysis. The Alternatives 1a, 1b and 2, on the other hand, have been thoroughly analyzed and compared against each other, with the aim of identifying the least-cost solution to the stated project objective.

4. Social Impact of the Project

4.1 Scope and Approach to Assessment of Project's Social Impact

Social assessment is an activity frequently undertaken by project developers, with the principal goal of incorporating stakeholders' views into the project design and establishing a participatory process for project implementation and monitoring. Through the social assessment the project developer: (1) identifies project stakeholders; (2) establishes appropriate framework for stakeholder participation in the project, particularly regarding potential vulnerable groups; (3) identifies and weights social benefits and costs of the project; and (4) makes the project receptive to social development aspects.

4.2 Project Stakeholders

Analyzed project is a complex task which involves a number of stakeholders – organizations (public and private), groups and individuals – who either have an interest in success of the project, can contribute/affect at least part of the project, or can directly or indirectly influence the design and implementation of the activity. During preparation of such projects, it is important to firstly identify all stakeholders, with the purpose of assessing their success criteria and turning these into quality goals. Generally, the stakeholders can have a significant influence on success of the project, such as:

- The project developer can use the opinions of the stakeholders to shape the projects at an early stage. This not only makes it more likely that the stakeholders will support the project, but their input can also improve the quality of the project;
- Gaining support from stakeholders can help the developer to gain more resources;
- By communicating with stakeholders early in the preparation and often, the developer can ensure that they know what is planned to be accomplished and fully understand the benefits of the project;

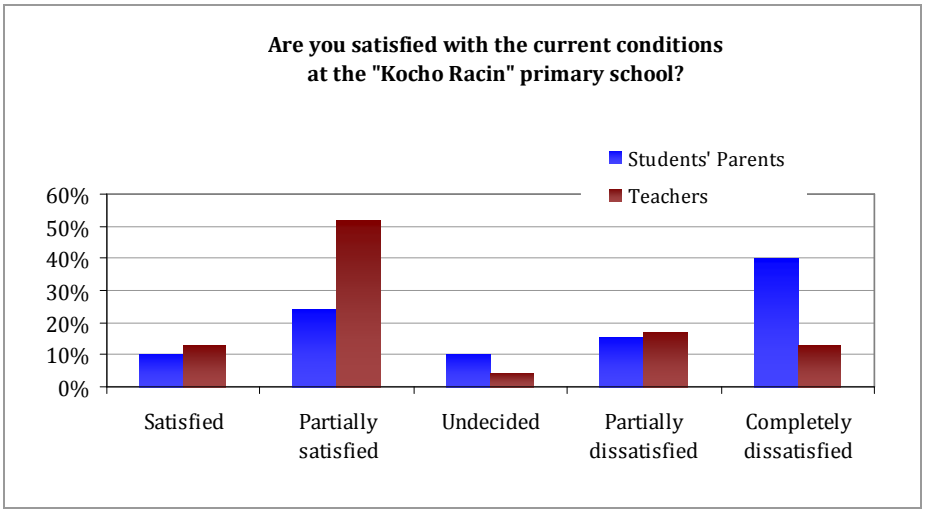
Provided below, as a first step in the stakeholder management task, is a list of stakeholders related to this project and their roles.

Stakeholders	Interest/Role in the Project
Primary Stakeholders	
Petrovec Municipality (institution)	Project Sponsor/Proposer
Primary School Kocho Racin	Project Partner
Central Govt. Organizations (MOF, MOE)	Project Sponsors; Co-financing entities
WB/MSIP	Primary financing (lending) entity
School students	Primary beneficiaries
Households (students' families)	Beneficiaries
Population of Petrovec Municipality	Beneficiaries
Secondary Stakeholders	
ZELS (Association of Local Government Units of Macedonia)	Project promoter/Advocate
NGOs	Beneficiaries; Project promoters
Media	Project promoters

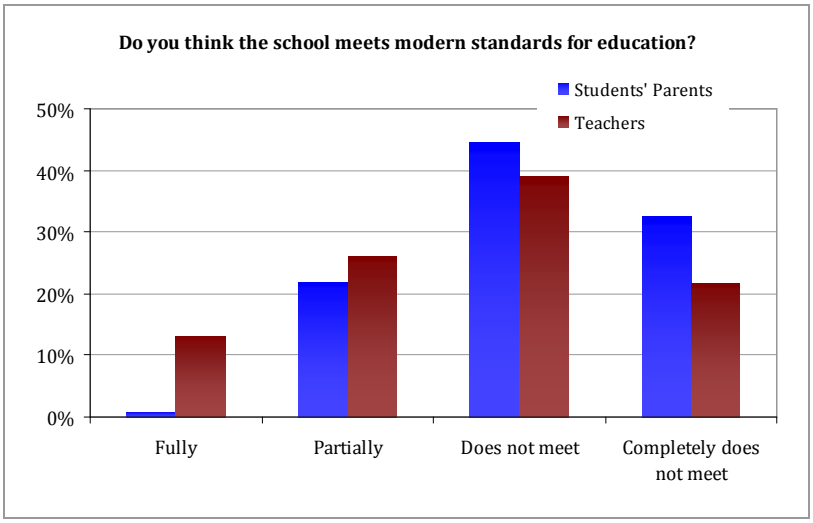
4.3 Assessment of the Public Opinion Regarding the Project

For needs of the study, or more precisely for assessment of the local population's perception regarding the current conditions at the Kocho Racin primary school and as well assessment of what affected local community representatives consider to be the key reconstruction priorities for the school, a brief research of the public opinion about the project was conducted. The research included preparation of a questionnaire and distribution of it to a wider group of 140 parents (families) of school students and roughly 20 school teachers. Results from analysis of the responses to the questionnaire are presented further.

(1) Overall, 56% of the parents and 30% of the school teachers are either partially or completely dissatisfied with the current conditions at the school. On the other hand, 65% of the teachers and 34% of the parents have stated that they are fully or partially satisfied with the current conditions, which clearly describes the differing views.

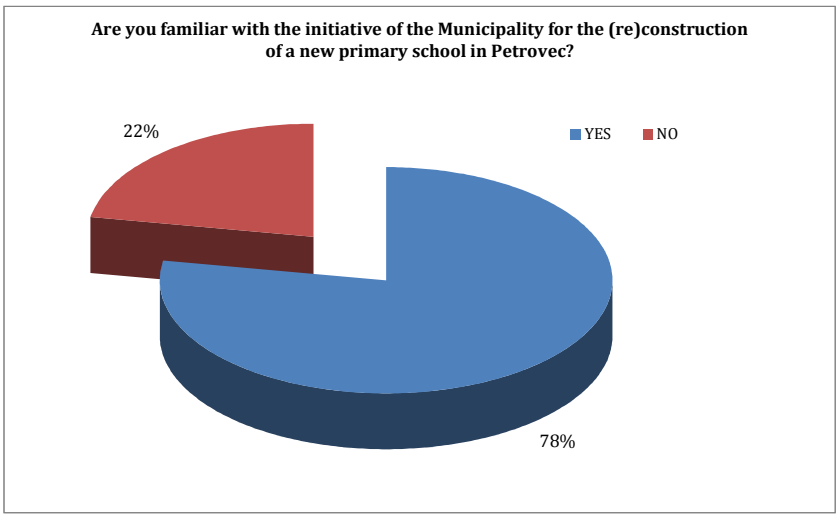


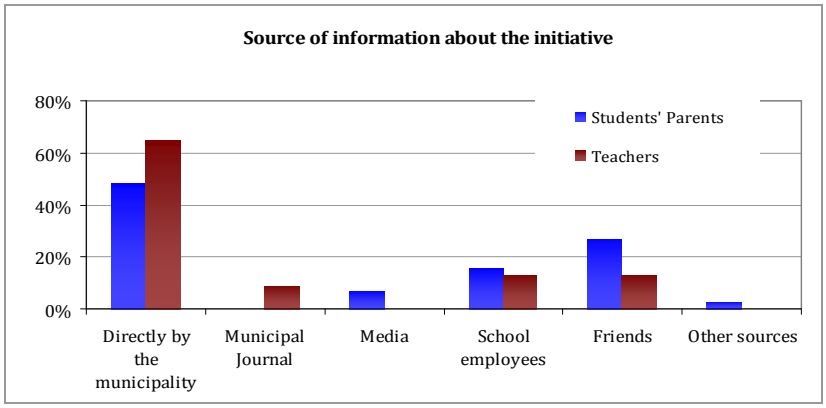
(2) The interviewees were also asked about their opinion whether the primary school meets modern standards for education. 77% of the parents and 61% of the teachers have stated a negative answer to this question, i.e. that the existing school either does not meet, or completely does not meet modern standards.



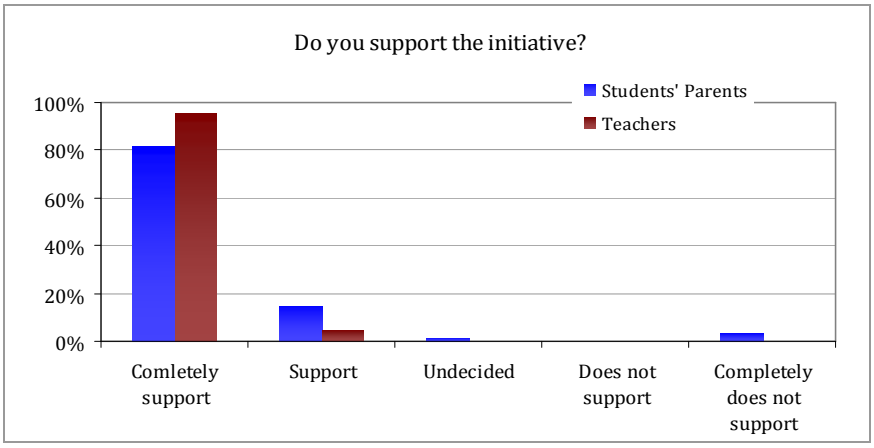
(3) Overall 78% of the parents have declared that they are familiar with Municipality's initiative for either reconstruction of the existing or construction of new modern primary school. Furthermore, nearly 50% of the parents have stated that they have been informed about the

project, in one way or another, directly by the Municipality which, given the size of the community, is not surprising.



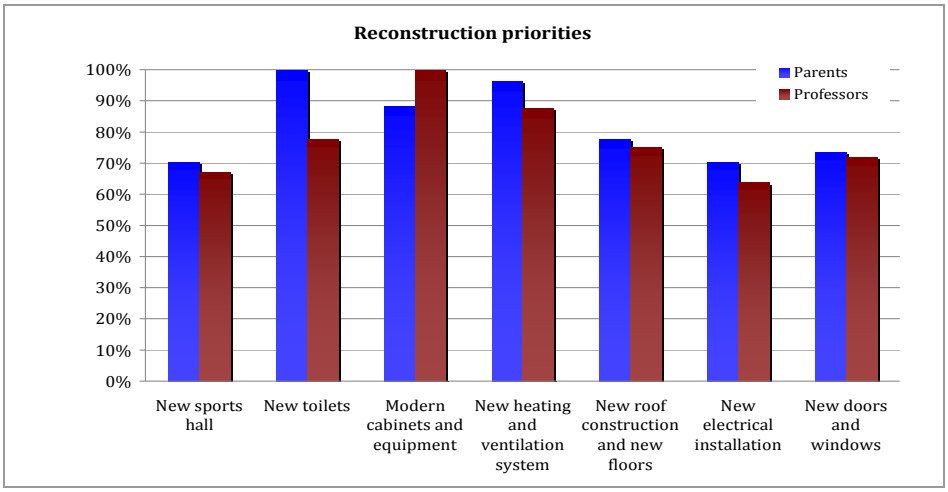


(4) Prevailing number of parents – 96% – and 100% of the teachers support the initiative of the Municipality. The really minor group that does not support the project is of opinion that the Municipality should allocate available funds for construction of public sanitary infrastructure (water supply and sewerage).



(5) Finally, regarding the opinion about the school reconstruction priorities, 100% of the parents and nearly 80% of the school staff that answered the survey have stated that number 1 priority is construction of new sanitary facilities, followed by – as number 2 priority –

'application' of modern cabinets (specialized classrooms for subject teaching) and supply of teaching equipment. Priority number 3, according to the survey, is modernization of school's heating system.



4.4 Potential Social Risks

It is a common practice in social assessments of investment projects to devote special attention to identification of potential social risks. These risks often range from involuntary resettlement to more subtle impacts such as institutional reforms that affect access to goods and services. In principle, the social risks are broken down into several categories, such as: (1) vulnerability, (2) country or political economy risk, (3) institutional risk, and (4) exogenous risk. Thus, it is one of the goals of the social assessment to identify and examine such risks and to explore how the project might address them so as to achieve its development objectives.

Based on the analysis, and especially the assessment (survey) of the local population's opinion regarding the project, it is concluded that:

(1) The local population is familiar with, and to a big extent fully supports, the project;

(2) All project stakeholders have been identified. Furthermore, it can be concluded that all the stakeholders (institutional, individual/public, etc.) are beneficiaries of the project;

(3) The stakeholders' priorities regarding the project objective have also been identified, and taken into consideration in the design of project's technical aspects;

(4) No institutional risks have been identified; the two main local organizations responsible for implementation of the project – Municipality of Petrovec and Primary School Kocho Racin – are respectful institutions that poses adequate capacity to implement the project according to highest ethical and professional standards;

(5) Any potential political risks, including political instability, ethnic tensions, etc., are to a greater extent outside of control of the Municipality. Nevertheless, the area of the Municipality is away from any likely political tensions.

4.5 Social Outcomes and Benefits of the Project

Expected long-term outcomes and benefits of the project for the society, and above all for the local community in the Municipality of Petrovec, are directly linked to the broad aspect of social benefits from (improved) education. The social benefits of education, in general, are widely recognized and extensively documented in numerous publications. Above all, two of the eight

Millennium Development Goals (MDGs)[8] pertain to education: universal primary education completion, and gender parity in primary and secondary schooling. Along with 188 other countries, in 2005 the Government of Macedonia pledged to reach the MDGs.

Investment in education benefits both, the individuals and the society. Education also promotes economic growth, national productivity and innovation, and values of democracy and social cohesion. Provided below is an overview of social benefits that are expected to emerge as a direct consequence of the project, as well as more general social benefits from education (adopted from various sources), which are also relevant for the project.

Benefits to individuals:

- *Reduced absence from school activities*: As a direct result from improved accommodation conditions in the new school.
- *Increased productivity and earnings*: Research has established that every year of schooling increases individual wages for both men and women by a worldwide average of about 10 percent.
- *Improved health and nutrition*: Education greatly benefits personal health. Particularly powerful for girls, it profoundly affects reproductive health, and also improves child mortality and welfare through better nutrition and higher immunization rates.
- *Reduced inequality*: Primary education plays a catalytic role for those most likely to be poor, including girls, ethnic minorities, orphans, disabled people, and rural families.
- *Reduced women's fertility rates***:** Women with formal education are much more likely to use reliable family planning methods, delay marriage and childbearing, and have fewer and healthier babies than women with no formal education. It is estimated that one year of female schooling reduces fertility by 10 percent.
- *Lower infant and child mortality rates***:** Women with formal education are more likely to seek medical care, ensure their children are immunized, be better informed about their children's nutritional requirements, and adopt improved sanitation practices.
- *Increased women's labor force participation rates and earnings***:** Education has been proven to increase income for wage earners and increase productivity for employers, yielding benefits for the community and society.

Benefits to society:

- *Increased economic competitiveness*: An educated and skilled workforce is one of the pillars of the knowledge-based economy. Increasingly, comparative advantages among nations come less from natural resources or cheap labor and more from technical innovations and the competitive use of knowledge.
- *Poverty-reducing effects*: Education can vitally contribute to the attainment of the Millennium Development Goals. While two of the goals pertain directly to education, education also helps to reduce poverty, promote gender equality, lower child mortality rates, protect against HIV/AIDS, reduce fertility rates, and enhance environmental awareness.
- *Increased democratization*: Higher primary schooling rates and a smaller gap between rates of boys' and girls' schooling tend to enjoy greater democracy.

[8] http://www.undp.org/content/undp/en/home/mdgoverview.html

- *Peace and stability promotion*: Education promotes issues of human security, equity, justice, and intercultural understanding. Education also reduces crime.
- *Promotes concern for the environment*: Education can enhance natural resource management and national capacity for disaster prevention and adoption of new, environmentally friendly technologies.

5. Environmental Impact of the Project

The Project activities will focus on upgrading the existing conditions of the central primary school "Kocho Racin" (dated from 1965). The school has around 520 students, which represents 50% of the total number of municipal resident primary-level students enrolled in it on a continuous basis. The school building is very old, very energy intensive and practically nearly dysfunctional for the purpose. After more than 50 years operation, the three sheds came depreciated; there are a lot of problems with roof leakages, crashes on the walls, high energy consumption due to old windows and doors. There was a replacement of the roof only for the pavilion I when asbestos sheets were removed. The sidewalls and roof on the other pavilions is covered with tin sheets containing asbestos. Around the school there is a metal fence which is ruined in some parts in the back of the school. The boys' toilets in the school are reconstructed while the others are in bad condition with leakage from the upper walls. Some of the doors are replaced and others are wooden and in bad conditions.

The heating system in the school is using heating oil. There are three boiler rooms for each pavilion in the school. During the site visit based on the discussion with the housekeeper of the school, the information was taken that there are three underground active fuel reservoirs (capacity of the reservoirs is not known, but is assumed to be around 20 t) and their location is before each pavilion and near the boiler room.

In the school yard there are some trees of pine (Pinus sp.), oak (Quercus sp.), lime tree (Thilliasp), Thuja (ThujaorientalisCupressaceae), (Thujaoccidentalis), Ashtree (Fraxinus Ornis), roses between pavilions, small bushes and hedge. Some of these trees need to be cut during the phase of clearing the site and preparation for construction work of the new school.

The surrounding of the school is residential area with family houses and private yards. The main regional road (Skopje – Petrovec – Katlanovo – Veles) is around 20m far from the school and the highway (Skopje – Thessaloniki) is around 500m far from the location.

Three alternatives were taken into consideration within the PAD: a) Minimum (partial) reconstruction of the existing school building, b) Full reconstruction of the existing school building and c) Construction of a new school building. The daily transport of school students to neighboring municipalities was rejected as the least appropriate solution.

Alternative C – Construction of a new school building

The technical solution envisages the construction of a new school of the location of the existing school in settlement Petrovec in the south – east part of the cadastral plot. The construction area is 2,750m^2 and the building itself has area of 3,147m^2 with ground floor (Bookstore; Store – Canteen; Toilets for students; Maintenance room; Control room, 10 classrooms + 9 cabinets and Teaching staff room and toilets and Ist floor for Library; Lecture room; Toilets for students, 7 classrooms + 6 cabinets and Administration offices). The space around the building will have infrastructure: pedestrian walk, access streets, parking space and green yards. The existing two sport courts and also new sport gym and tennis court which are under construction at the moment, will be used in the future by the students.

Prior the construction works the demolition of the existing 1, 2 and 3 blocks (pavilions) of the existing school facility need to be done (in two phases). The construction activities will take place over 10-12 months period and that is the construction will be performed according to the following sequence:

- Temporary accommodation of all the school students in 2 of the 3 blocks (pavilions) of the existing school facility. This will require temporary rescheduling of the classes in 2 shifts;
- Demolition of 1 block of the old school and construction of the new school building;
- Demolition of the remaining 2 blocks of the old school.

A particular aspect related to demolition of the existing school is the existence of a significant volume of obsolete construction materials in the old building (all 3 blocks, annexes, and the old gym) that contains asbestos. These waste materials include facade and roof elements estimated to amount to roughly 3,500m^2. Around 9000m^2 of non-asbestos containing material will be generated during the decommissioning of the pavilions due to removal of wooden walls, wooden elements of the roof construction, internal separation walls, concrete floor, tiles, wooden windows, doors etc.

The demolition of the existing asbestos-cement roof sheets will consist of the following activities:

a) Removing the old asbestos containing roof sheets;

b) Proper packaging and labeling the removed roof sheets containing asbestos waste which belongs to the group of hazardous waste (according the List of waste – Official Gazette of RM NO. 100/05) with waste code 17 06 05 – construction material containing asbestos;

c) Transport of the removed asbestos containing roof sheets from the primary school to the landfill "Drisla" which is authorized to accept and finally dispose the asbestos containing construction waste.

The demolition of the existing asbestos containing roof sheets (Asbestos Containing Material – ACM) will cause the most significant environmental impacts if no preventive measures are applied due to the fact that it is the hazardous waste which could cause impact on the workers who will remove the roof sheets and also there is a potential public and children health risk during the packaging, temporary storage and transporting for final disposal.

The main preventive and mitigation measures related to the demolition of asbestos containing roof sheets need to be focused on their proper removal and personal protective equipment and personal hygiene that must be provided to all workers, proper packaging in the damp proof packaging material/bags and labeling the hazardous waste containing bags, transport the roof sheets by the authorized company, clean - up of the working site and final disposal on the landfill "Drisla" in Skopje.

The Public Communal Enterprise Utility "Landfill Drisla" has a License for acceptance and final disposal of the construction material containing asbestos waste issued by the Ministry of Environment and Physical Planning. The landfill will accept the roof sheets containing asbestos if it is proper packaged, labeled and transported according the Rulebook on the handling the asbestos waste and waste materials containing asbestos (Official Gazette of RM No. 89/06 from 11.8.2006).

The various waste streams (not only asbestos-containing materials) are expected to be generated at the location, so the most important issue is the proper waste management according the waste hierarchy. There is a necessity for Waste Management Plan prior the start of decommissioning phase with identification of all types of waste streams with their characteristics (non-hazardous, hazardous) and proper handling and final disposal.

The good construction practice should cover several mitigation measures proposed mainly to overcome the occupational health and safety issues and waste management issues during the demolition of old blocks (old wooden windows, doors, facade and walls). The proper protection of workers from broken glass, wooden fibers and parts and proper selection of waste at the spots and appropriate waste management are crucial measures to be applied. At the same time, the measures to avoid and minimization of the health and safety risks for kids and school staff should be applied with focus on beginning and end of demolition and construction work, cleanup of classes and corridors and organization of lessons in occupied classes. The Dynamic Plan for re-schedule of the occupied school rooms should be done in accordance of demolition/construction work progress as the demolition will be done in two phases.

The proper handling of the left heating oil within the tanks (underground reservoirs) and boilers will be also important due to potential risk for pollution on the soil and underground waters.

During the decommissioning and construction phases the air emissions are expected and noise disturbance as a result of transportation activities and work of the construction machinery.

The preventive/precautionary and mitigation measures need to be applied before the demolition and during the construction activities and given into the following Environmental Mitigation Plan. The main responsibility for implementation of the mitigation measures lay on the Sub-contractor and the Supervisor is responsible to monitor the effective implementation of the measures and to report to the Municipality of Petrovec and to the MSIP.

The main inspection responsibility is given to the municipal staff (Communal Inspector) who need to control the implementation of the mitigation measures and proposed Monitoring Plan. The special attention should be placed on the proper removal and handling the asbestos containing roof sheets and personal hygiene for the workers.

The municipal staff (Project Manager) also needs to coordinate the working plan and proposed measures with the school officials (Director, Housekeeper) and Sub-Contractor for smoothly project implementation and minimization of environmental, health and safety risks. Regular meetings for coordination of the activities are essential.

For this type of projects (construction of primary schools) the Investor is not obliged to prepare the EIA Report according the national legislation.

According the WB Environmental Assessment Operational Policy 4.0.1 the EIA Study was prepared identifying in more details the baseline data, potential impacts and sensitive receptors, mitigation measures and parameters need to be monitored, responsible institutions and relevant national environmental legislation and WB, EU standards need to be followed by Sub-Contractor, Supervisor and Municipal staff during the decommissioning, construction and operational phase of the project.

5.1 Environmental Mitigation Plan

Project activity	Potential impact	Impact scale	Proposed mitigation measures	Responsibility
Demolition of the old school and construction of the new primary school "Kocho Racin", Municipality Petrovec	***a) OH&S issues*** Possible adverse health impacts to the workers, facility users and general population in the community due to: - Location of school in the rural area – near regional road R 103 (Skopje-Katlanovo – Veles) - Possible injury to people and school users due to ongoing works - Non - compliance with national health and safety at work procedures - Non - compliance with local community safety regulations	Local/ short term/certain to be happened /high significance	➢ Adequate warning tapes and information signs around the old school during the demolition activities and around the new construction need to be provided and maintained during the civil works ➢ For the workers - the legally prescribed health and safety measures should be applied, like: a) use of proper protective clothing and equipment by employees, especially masks against dust and small wooden parts and fibres, and safety harnesses for work at heights; b) Maintain a good level of personal hygiene; c) Health protection-fist aid kits and medical service on sites need to be provided during the works; ➢ The surrounding area (school yard) should be kept clean, without waste disposed there. The waste need to be collected and immediately removed from the yard as it could be a cause of injury. ➢ The old windows and doors should be temporary put on safe place which is designed to prevent access of unauthorized persons ➢ The demolition related activities should be conducted outside of normal school hours to the extent most feasible ➢ Separation of the work areas from demolition and occupied areas of the buildings as much as possible using physical barriers ➢ Limit the foot traffic between work areas and occupied areas of the buildings	• Contractor – Bidder • Supervisor

Project activity	Potential impact	Impact scale	Proposed mitigation measures	Responsibility
			➢ The project site should be lighted during the nights ➢ Following safety guidelines for the storage, transport, and distribution of hazardous materials to minimize the potential for misuse, spills, and accidental human exposure ➢ The eventually broken windows glass (in the class, corridors or outside) should be clean immediately ➢ Regular maintenance of vehicles to minimize potentially serious accidents caused by equipment malfunction or premature failure. ➢ Using labeling and placarding (external signs on transport vehicles)	
			➢ The cleaning schedule of the buildings should be increased to address the extra dust and dirt created by the demolition work ➢ Information that the demolition is ongoing should be posted on the entrance doors of the other prefabricated sheds ➢ The work during the breaks between class lessons should be prohibited ➢ The Dynamic Plan for re-schedule of the occupied school rooms should be done in accordance of demolition/construction work progress ➢ If possible begin and end demolition activities during the summer months or while staff and kids are not in school	• Municipal staff (Communal Inspector) • School officials

Project activity	Potential impact	Impact scale	Proposed mitigation measures	Responsibility
	b**) Waste management** Possible adverse environmental impact and health effects could occur due to inappropriate waste management with various waste streams	Local/ short term/certain to be happened with high significance	➢ Preparation of the Waste Management Plan for the expected waste streams during the decommissioning and construction phases of the project ➢ Identify the hazardous and non-hazardous waste and separate them at the demolition/construction site; ➢ The majority of waste (not in a high quantity) would be classified under the Waste Chapter 17 "Construction and demolition wastes" with the waste code 17 01 – Waste from concrete, bricks, 17 09 04 – Mixed waste from construction site including glass from old windows and manage in accordance with national waste legislation for inert waste (separation at the spot, collection and temporary storage, re-use if it is possible, transport to the final destination – Landfill Drisla). The proposed list of expected waste streams is attached in EIA Study ➢ Very small quantities of glue, paint, packaging waste from paints and glue, aluminum profiles, screws and other construction material could be found after the finalization of the project and manage in accordance with national HW legislation (collection of hazardous materials, label as hazardous waste and give to the authorized company) ➢ The contract with the company for waste collection and transportation should be signed for collection and transport of waste including old windows and doors; ➢ The materials should be covered during the transportation to avoid waste dispersion; ➢ Burning of construction waste is prohibited;	• Contractor – Bidder • Supervisor

Project activity	Potential impact	Impact scale	Proposed mitigation measures	Responsibility
			➢ The old windows and doors should be stored temporary in separate room in the school or if it is not possible outside in the yard covered and labeled "not to open/uncover" until final disposal – collection and transportation by the PUE "Petrovec" and final transportation to Landfill Drisla	• School officials
	c) Water quality a) Possible environmental impact on the underground water could occur due to ground contamination from the spillage of materials such as vehicle fuel, motor oils, lubricants b) potential impact on the underground waters could occur from the improper dismantling of the equipment (boilers and fuel reservoirs)	Local/Short term/probable Low	➢ Transportation vehicles should be enclosed to avoid potential leakage; ➢ Possible hazardous waste (motor oils, vehicle fuels, lubricants) should be collected separately and authorized company should be sub-contracted to transport and finally dispose the hazardous waste ➢ Dismantling of the equipment should be done by a trained persons in order to avoid the potential effects of oil spills on soil, which would contaminate the underground water	Contractor – Bidder Supervisor
	d) Noise a) The construction activities and traffic will cause noise and vibration due to the machinery and vehicles used for transport of	Local/Short term/Medium significance/ Certain to be happened	➢ The equipment should be fitted with appropriate noise devices that will reduce sound level ➢ The level of noise should not exceed more than 55 dB during the day and evening and 45 dB during the night ➢ The construction work should be not permitted during the	Contractor – Bidder Supervisor Communal

Project activity	Potential impact	Impact scale	Proposed mitigation measures	Responsibility
	construction materials, transport of workers, and transport of waste produce in decommissioning and constructive phase. The potentially affected will be students from the elementary school and nearby residents.		nights, the operations on site shall be restricted to the hours 7.00 -19.00 ➢ The vehicles that are excessively noisy shall not be operated until corrective measures have been taken (the area is residential and students might attend classes during the construction phase in other pavilions (I and II))	Inspector/Environmental Inspector
	e) Air quality The decommissioning and construction activities will initiate emissions from the mobile sources (vehicles and construction machinery) of CO2, NOx, PAH, SO2 and suspended particulates (PM10, PM 2,5). The airborne dust will be caused by dismantling of the equipment, excavation, vehicle movement and handling with materials, particularly around the construction site	Local/Short term/Low significance/ Certain to be happened	➢ Usage of protective masks for the workers; ➢ Vehicles and construction machinery will be required to be properly maintained and to comply with relevant emission standards; ➢ Conduction of regular maintenance of the vehicles and construction machinery in order to reduce the leakages of motor oils, emissions and dispersion of pollution; ➢ Vehicle loads have to be covered to prevent emission of dust; ➢ Construction site, transportation routes and materials handling sites should be water-sprayed on dry and windy days, especially due to students and residential areas neighborhood; ➢ Construction materials should be stored in appropriate covered places to minimize dust; ➢ Open burning of debris will not be permitted ➢ Restriction of the vehicle speed within the construction location	Contractor – Bidder Supervisor Communal Inspector

Project activity	Potential impact	Impact scale	Proposed mitigation measures	Responsibility
Removal of the asbestos containing wall panels and roof sheets (removal of the existing asbestos sheets, temporary disposal until final transportation and disposal of the asbestos sheets at landfill "Drisla")	**a) OH&S issues** Possible adverse health impacts to the workers, facility users, children and general public as a result of emissions of asbestos fibers and dust during the removal of asbestos sheets , their transport and final disposal	Local/ short term/major at the location of primary school "Kocho Racin"	➢ Post signs indicating" ASBESTOS REMOVAL – NO ADMITTANCE" on the workplace in the school yard; ➢ Restrict access to the removal area to those people directly involved in the asbestos removal and site supervisor and municipal inspectors; ➢ The roof should be demolish during nonworking days to decrease the health risks to pupils; ➢ Install barriers tape and warning signs in proximity to the school; ➢ For the workers - the personal protective equipment must be provided to all workers (full body covering including the head, water proof foot and hand protection and eye protection, dust mask with special HEPA filter ; ➢ Maintain a good level of personal hygiene (facility for washing hands and face should be made available and need to be used by each employee when leaving the work area, all protective clothing and equipment shall work in the work area, footwear is to retain in the work area until work is completed, ➢ Health protection-fist aid kits and medical service on sites need to be provided during the works; ➢ No smoking, drinking, eating or chewing is allowed inside the working area ; ➢ The surrounding area (school yard, halls and corridors) should be kept clean, without ACM waste disposed there. The ACM waste (roof and wall sheets) need to be collected, packaged and immediately removed from the school yard	Contractor – Bidder Supervisor

Project activity	Potential impact	Impact scale	Proposed mitigation measures	Responsibility
			➢ If possible begin and end demolition activities during the summer months or while staff and students are not in school	School officials
				Municipal staff (Communal Inspector)
	b**) ACM Waste management** Possible adverse environmental impact and health effects could occur due to inappropriate handling with waste containing asbestos	Local/ short term/major	➢ The personal in charge for removal of ACM roof and wall sheets should be trained on proper safety dismantling of the roof and wall sheets minimizing the health risks; ➢ The identification of the asbestos containing material – waste as a hazardous waste should be done; ➢ The ACM waste need to be classified as a hazardous waste under the Waste Chapter 17 "Construction and demolition wastes" with the waste code 17 06 05* – Construction material containing asbestos in accordance with List of waste (Official Gazette of RM NO. 89/06); ➢ The demolition and remove of the ACM sheets should be done very quickly by trained personal; ➢ The ACM waste should be placed in polyethylene bags or other containers of at least 0.15 mm thickness. ➢ Printed asbestos warning labels must appear on the outer surface of the container/bag; ➢ The break of the ACM roof and wall sheets into smaller pieces to fit into container/bag is forbidden; ➢ The roof and wall sheets should be handled very carefully and to be remove sheet by sheet in one piece , not to be broken because during the break the asbestos fibers and dust appear	Contractor – Bidder Supervisor

Project activity	Potential impact	Impact scale	Proposed mitigation measures	Responsibility
			and pose a health risks; ➢ It is better to avoid the temporary storage of roof and wall sheets within the school yard, but if is necessary to be done for one/two days, the precautionary measures should applied – the ACM waste should be stored in a designated area with posted signage and/or caution tape to eliminate any damage; ➢ The temporary stored bags/containers containing asbestos waste need to be labeled" Asbestos waste" ➢ The contract with the company for Asbestos containing waste collection and transportation should be signed for collection and transport of asbestos waste/roof and wall sheets; ➢ After the removal of the asbestos waste all surfaces in the school yard need to be dusted with a damp cloth or vacuumed with a HEPA filter; ➢ The workers who perform clean up should wear protective clothes as those who perform dismantling of the roof sheets; ➢ The contract with the Public Communal Enterprise Utility "Landfill Drisla" should be signed for final disposal of asbestos containing roof and wall sheets ➢ On the landfill the asbestos containing waste should be disposed on the special area for disposal of that type of waste	•Municipal staff (Communal Inspector/ Mayor)
Operational phase	No environmental risks are expected. Positive impact (more space for students, energy efficiency and energy savings) is expected with construction of the new school replacing the old one. The Fire prevention Plan should be prepared addressing the identification of fire risks and ignition sources, as well as measures needed to limit fast fire and smoke development.			

Project activity	Potential impact	Impact scale	Proposed mitigation measures	Responsibility
	The Plan for regular and preventive maintenance should be prepared to ensure proper operation of all infrastructure components of the school (sewer system, storm-water system, water supply system, heating devices, etc) and to ensure keep records on all technical documentation for the new school.			

5.2 Monitoring Plan

What parameter is to be monitored?	Where is the parameter to be monitored?	How is the parameter to be monitored?	When is the parameter to be monitored (frequency of measurement)?	Why is the parameter to be monitored?	Cost		Responsibility	
					Construction	Operations	Demolition of old school and construction the new one	Operations of the new school
Project stage: Start up of the demolition / construction activities								
The community safety regulation and protection measures applied	Around the project sites (primary school "Kocho Racin")	Visual checks	At the beginning of the construction work (first day) Every working day during the project activities	To ensure minimization of health and safety risks – mechanical injuries to the members of the local community – especially from broken glass, wooden windows and doors and spikes. Special attention should be put during the removal of the asbestos containing roof and wall sheets			Contractor - Bidder /Supervisor/ Municipal staff (Communal Inspector)/ School officials	
Fire Protection	Before the start of school	Review of the Plan	At the beginning of school work	To ensure that all fire protection measures are				Municipal staff (Communal

What parameter is to be monitored?	Where is the parameter to be monitored?	How is the parameter to be monitored?	When is the parameter to be monitored (frequency of measurement)?	Why is the parameter to be monitored?	Cost		Responsibility	
					Construction	Operations	Demolition of old school and construction the new one	Operations of the new school
Plan	operation			implemented				Inspector)
The OH& S protection measures applied for the workers at the sites	On the project sites	Visual checks	Every working day during the project activities	To minimize the risks on occupational health and safety of the workers especially protective equipment and clothes for workers who will remove asbestos containing wall and roof panels			Contractor - Bidder /Supervisor/ Municipal staff (Communal Inspector)/ School officials	
Avoid and minimize safety and health risks for the students and school employees	In the building and in school yard	Visual checks	At the beginning the demolition work and continuously every working day	To avoid injuries of the students or school staff from falling pieces of windows, doors, broken glass and inhalation of the asbestos fibers or dust			Contractor - Bidder /Supervisor/ Municipal staff (Communal Inspector)/ School officials	
Time for beginning and end of construction work and especially	On the project site	Visual checks and documents (time schedule) review	Every day	To avoid the environmental, health and safety risks			Contractor - Bidder /Supervisor/ Municipal staff (Communal Inspector)/	

What parameter is to be monitored?	Where is the parameter to be monitored?	How is the parameter to be monitored?	When is the parameter to be monitored (frequency of measurement)?	Why is the parameter to be monitored?	Cost		Responsibility	
					Construction	Operations	Demolition of old school and construction the new one	Operations of the new school
time for removal of existing wall and roof panels containing asbestos							School officials	
Waste Management Plan for waste management with all generated waste streams	On the project site	Review the document – Waste Management Plan	Before the demolition activities start	To ensure proper waste management of all waste streams (keeping records on waste amounts, type of waste, disposal location) to avoid potential risks to human health and environment			Contractor - Bidder /Supervisor/	
Existence of the broken glass, dust generated during the demolition Generation	In the school yard	Visual checks	For broken glass immediately/ For dust generation every day after competition of work	To avoid and minimize injuries and dust inhalation			Contractor - Bidder /Supervisor/ Municipal staff (Communal Inspector)/ School officials	

What parameter is to be monitored?	Where is the parameter to be monitored?	How is the parameter to be monitored?	When is the parameter to be monitored (frequency of measurement)?	Why is the parameter to be monitored?	Cost		Responsibility	
					Construction	Operations	Demolition of old school and construction the new one	Operations of the new school
of different types of waste			For inert waste on 2-3 days					
Level of dust – fine particulate matters	At the construction site	Visual monitoring and measurement devices	On the sunny, dry days only (once a week at the peak working hour)	To avoid and minimize the dust concentration into the air and to minimize the health risks for the students, workers and residents in the neighborhood.			Contractor – Bidder and authorized company for dust measurements	
Collection and transport as well storage of hazardous waste (if any occur).	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.			Authorized Contractor for collection and transportation of hazardous waste (if there is any occur) subcontracted by the Contractor-Bidder Environmental inspector	
Noise level	On the site	Monitoring of the noise levels	On regularly basis during the work, in	To monitor if the noise level is above/or below the acceptance noise level for that type of area -			Contractor – Bidder Authorized Company for	

What parameter is to be monitored?	Where is the parameter to be monitored?	How is the parameter to be monitored?	When is the parameter to be monitored (frequency of measurement)?	Why is the parameter to be monitored?	Cost		Responsibility	
					Construction	Operations	Demolition of old school and construction the new one	Operations of the new school
		dB (A) with appropriate monitoring devices	accordance with the national legislation	II exposure area for noise protection as residential district (55 dB (A) during the day time			performing noise levels measurements sub-contracted by the Contractor – Bidder Environmental Inspector to collect the noise level measurements	
Exposure of loud noise from vehicle machine, mechanization and equipment	On the construction site	Review the noise level technical specifications of the used vehicle, mechanization and equipment for their usage outside	Before the beginning of the work (first day) for all vehicles and equipment	To protect the workers against exposure to loud noise taking into account the technical specifications of the equipment and time duration of the work outside			Contractor - Bidder Supervisor Inspector for communal work	
Project stage: Demolition of roof and wall sheets containing asbestos								
Primary	On the project	Review the	At the beginning	To separate hazardous			Contractor –	

What parameter is to be monitored?	Where is the parameter to be monitored?	How is the parameter to be monitored?	When is the parameter to be monitored (frequency of measurement)?	Why is the parameter to be monitored?	Cost		Responsibility	
					Construction	Operations	Demolition of old school and construction the new one	Operations of the new school
selection of the waste streams at the project sites	sites	documentation – identification of the waste type according the List of waste	of work	(packaging waste from glue, paints, insulation material) from the non-hazardous waste as well as inert from biodegradable waste			Bidder Supervisor/ Municipal staff (Communal Inspector)	
Identification of the asbestos containing waste, proper packaging, labeling as a hazardous waste	On the project sites	Review the documentation – identification of the asbestos containing waste according the List of waste	At the beginning of work	The asbestos containing (ACM) waste is a hazardous waste with adverse environmental and health impacts			Contractor – Bidder Supervisor/ Municipal staff (Communal Inspector)	
Temporary storage of the old windows and doors	At separate room/basement of the buildings or in the yard	Visual checks	On daily basis	To minimize injuries			Contractor – Bidder School officials	

What parameter is to be monitored?	Where is the parameter to be monitored?	How is the parameter to be monitored?	When is the parameter to be monitored (frequency of measurement)?	Why is the parameter to be monitored?	Cost		Responsibility	
					Construction	Operations	Demolition of old school and construction the new one	Operations of the new school
with proper label and coverage Temporary storage of the removed asbestos containing roof and wall sheets proper packaged and labeled								
Collection transportation and final disposal of the wooden windows and doors	On the sites and around the sites	Visual monitoring and reviewing the transportation	After the collection and transportation of the waste from old wooden windows and doors by the PUE “Petrovec”	Not to leave the waste on the spot to avoid the environmental and health impacts to the children			Contractor – Bidder who need to sign the contract with licensed company for collection, transportation and disposal of the waste from replacement	

What parameter is to be monitored?	Where is the parameter to be monitored?	How is the parameter to be monitored?	When is the parameter to be monitored (frequency of measurement)?	Why is the parameter to be monitored?	Cost		Responsibility	
					Construction	Operations	Demolition of old school and construction the new one	Operations of the new school
The contract with the authorized transporter of the asbestos containing waste should be signed The contract with the Landfill Drisla should be signed as well for acceptance and final disposal of the waste	Before the removal/dismantle works start	Review the contracts	During the collection and transportation of the removed roof and wall sheets Before the final disposal of removed sheets	To be sure that the asbestos containing waste will be treated according the national legislation, international conventions, good practice			Contractor – Bidder who needs to sign the contract with licensed company for acceptance and final disposal of the asbestos containing waste. The Landfill Drisla has a License for acceptance and final disposal of asbestos waste issued by the Ministry of Environment and Physical Planning	
Fulfilled	Local self-	Review of	After the	To improve the waste			Mayor of	

What parameter is to be monitored?	Where is the parameter to be monitored?	How is the parameter to be monitored?	When is the parameter to be monitored (frequency of measurement)?	Why is the parameter to be monitored?	Cost		Responsibility	
					Construction	Operations	Demolition of old school and construction the new one	Operations of the new school
Annual Report for transportation and disposal of waste	government administration	documentation – Identification waste List	accomplishment the task of collection, transportation, temporary disposal and final disposal of different type of waste including asbestos containing waste	management and hazardous waste management on local and national level			Municipality of Petrovec	
Project stage: Operational phase of the School								
Drinking water quality	Before the distribution through the new water supply system, the water sample should be analyzed by the Authorized laboratories – Public Health	Laboratory equipment for physical-chemical and microbiological water quality analysis	Before the start with school operation	To ensure the distribution of high quality drinking water to the students minimizing the health risks of waterborne diseases				Municipal staff School officials Public Enterprise

What parameter is to be monitored?	Where is the parameter to be monitored?	How is the parameter to be monitored?	When is the parameter to be monitored (frequency of measurement)?	Why is the parameter to be monitored?	Cost		Responsibility	
					Construction	Operations	Demolition of old school and construction the new one	Operations of the new school
	institute Skopje/Accredited laboratories							
Fire Protection Plan	Before the start of school operation	Review of the Plan	At the beginning of school work	To ensure that all fire protection measures are implemented				Municipal staff (Communal Inspector) School staff
Plan for regular and preventive maintenance of the school	Before the start of school operation	Review of the Plan	At the beginning of school work					Municipal staff (Communal Inspector) School staff