REPUBLIC OF MACEDONIA

PUBLIC ENTERPRISE FOR STATE ROADS

WORLD BANK

SOCIO-ECONOMIC IMPACT ASSESSMENT OF THE LOCAL ROADS REHABILITATED UNDER THE REGIONAL AND LOCAL ROADS PROGRAM SUPPORT PROJECT

FINAL REPORT

BAR E.C.E.
Naroden front 11 – 1/4
1000 Skopje, Macedonia
tel: + 389 23 215 773
fax: + 389 23 296 511
e-mail: bar@barece.com.mk
www.barece.com.mk

FINAL REPORT

Project Title:	**SOCIO-ECONOMIC IMPACT ASSESSMENT OF THE LOCAL ROADS REHABILITATED UNDER THE REGIONAL AND LOCAL ROADS PROGRAM SUPPORT PROJECT**	
Project reference:	**75320-MK**	
Country:	**Republic of Macedonia**	
Client:	**PUBLIC ENTERPRISE FOR STATE ROADS**	**Dame Gruev 14 1000 Skopje, Macedonia Tel: +389 23 118 044 Fax: +389 23 220 535 e-mail:** contact@roads.org.mk www.roads.org.mk **Ljupco Gjorgievski Director**
Consultant:	**BAR E.C.E.**	**Naroden front 11 – 1/4 1000 Skopje, Macedonia tel: + 389 23 215 773 fax: + 389 23 296 511 e-mail:** bar@barece.com.mk www.barece.com.mk **Aleksa Tomovski Director**
Date of Report:	**July 14, 2014**	
Contract Period:	**December 20, 2013 - July 20, 2014**	
Report created by:	**Dimche LAZAREVSKI (Team Leader)**	
	Svetlana TRBOJEVIC (Social Specialist)	
	Andon PETROVSKI (Traffic Engineer/Specialist)	
Report approved by:	**Aleksa TOMOVSKI (BAR E.C.E. Director)**	

TABLE OF CONTENTS

LIST OF TABLES

LIST OF EQUATIONS

ABBREVIATIONS AND ACRONYMS

WB	World Bank
RLRPSP	Regional and Local Roads Program Support Project
PAD	Project Appraisal Document on a proposed loan for a RLRPSP
EBRD	European Bank for Reconstruction and Development
MTSP	Ministry of Transport and Communication
PESR	Public Enterprise for State Roads
TOR	Terms of Reference
EU	European Union
STUDY	Socio-economic Impact Assessment of the Local Roads rehabilitated under RLRPSP
LOE	Level of effort
CBA	Cost Benefit Analysis
GDP	Gross Domestic Product
MKD	Macedonian currency (Denar)
EUR	Eurozone currency (Euro)
TTS	Travel Time Saving
VTTS	Value of Travel Time Saving
VOCS	Vehicle Operating Costs Savings
NESA	Network Evaluation from Surveys and Assignment
LER	Office for Local Economic Development
Km	Kilometers
Km/h	Kilometers per hour
m	Meters
p. a.	Per year
ha	Hectares
IPARD	The European Commission's Instrument for Pre-Accession Rural Development
RAS	Roads Accidents Savings
LVS	Land Value Savings
HEATCO	Harmonized European Approaches for Transport Costing and Project Assessment
(D0)	Scenario "Do Minimum" (in this STUDY "Before the rehabilitation" scenario)
(D1)	Scenario "Do Something" (in this STUDY "After the rehabilitation" scenario)

1. EXECUTIVE SUMMARY

The Macedonian Government with support from the World Bank (WB) and the European Bank for Reconstruction and Development (EBRD), under the Country Program carried out improvements to regional and local roads through a loan for Regional and Local Roads Program Support Project (RLRPSR), starting from 2008. The main objective of the Country Program is to reduce cost of access from Municipalities throughout the Macedonia to market and services, by improving the condition and quality of the network of Regional and Local roads.

The objectives of this STUDY was to assess from the beneficiary point of view wellbeing and welfare accruing to households using local roads that are being rehabilitated with the RLRPSR. The STUDY focuses on:

1) **Market Access**, where the Travel Time Savings, Vehicle Operating Costs Savings, Employment Benefits, and Accessibility and Social Inclusion Benefits (Community Accessibility and Comparative Accessibility) were determined;
2) **Human Capital**, where the Education Benefits (Access to Educational Facilities, Extracurricular Educational Activities, and Lifelong Learning Processes), and Health Care Benefits were identified;
3) **Road Safety**, where the Road Accidents Savings, Traffic Signalization and Road Conditions, and Road Safety Benefits were detected; and
4) **Land Value**, where the Land Value Savings, and New Opportunities were discovered.

The pilot study analyzes 21 municipal roads in 10 randomly selected municipalities by the Public Enterprise for State Roads (PESR) with completely rehabilitated local roads. From the 10 selected municipalities 5 municipalities are in the mountain regions and 5 in the lowland regions, all rehabilitated under the RLRPSP.

From the performed detailed analysis for all 21 local roads subject to this STUDY, Travel Time Savings of 53.7 million EUR, and Vehicle Operating Costs Savings of 22 million EUR were determined. Weighted average percentage decrease of unemployment is 44.7%, while the weighted average percentage decrease only for women is even higher 52.8%. For the community accessibility, without exceptions, the roads rehabilitation facilitate and improved access to local services such as health care, social, and educational facilities, economic capacities, municipality authorities, markets, etc. For the comparative accessibility, rehabilitated roads significantly improved the network coverage in all local places, but there is still local roads (network) need to be rehabilitated or built in almost all local places subject to this STUDY. The 21 roads rehabilitated under this STUDY are in total length of 44.87 km or 32% from the entire network of 140.2 km (entire network length in all 21 local places). Together with the existing network, 89.4 km or 63.76% are rehabilitated or built. On-site visits show that those non-asphalted 36.24% are also from great importance to all local citizens, and thus the recommendation is not to stop with the rehabilitation but to continue and to finish with the rest 50.8 kilometers in this 21 local places.

In the communities subject to this STUDY, 1,587 pupils that attend primary and secondary education in neighboring communities are experiencing the positive benefits from the roads rehabilitation - improved and faster transport. Before the roads rehabilitation, in some local places, pupils went on foot from their homes to the main road (to take a bus for school) sometimes even 2 km, under bad weather conditions (snow, rain, extreme heat, mud and dust). For most of the interviewees, there is a positive correlation between the number of pupils visiting extracurricular educational activities and the roads rehabilitation. Roads rehabilitation was the reason for organization of different courses, seminars, and workshops, helping the adults' lifelong learning processes. Overall, based on the findings from the conducted focus groups' interviews, roads

rehabilitation improved the access to health care services in all local places subject to this STUDY. In most cases, local citizens are using the rehabilitated roads to access the nearest medical institutions in or outside their local places. Road rehabilitation provides people with the appropriate health assistance, which means timely receiving the necessary assistance (emergency healthcare vehicles, mobile medical teams) and quality transport of patients especially for those whose conditions require meticulous care in transport.

Savings from reduction of Road Accidents (fatalities, severe injuries, slight injuries, and damages) in amount of 51.8 million EUR for all local roads subject to this STUDY were determined. In almost all sections horizontal and vertical traffic signalization and equipment does not exist (or is very old and damaged) that is not in accordance with the By-Law for traffic signs and signaling equipment on the road ("Official Gazette of Republic of Macedonia" No. 47/10 31/11, 74/11, 117/12). Road width is narrow 3 to 5 meters and there are no road extensions for passing between vehicles required by the By-Law on technical elements of construction and reconstruction of public roads ("Official Gazette of Republic of Macedonia" No. 110/09, 163/09, 26/10, 136/10, 94/11, 146/11). On those local roads that needed, there is no pedestrian crossings, no sidewalks, no berm, no sewing, no protection from rockslide for the inclination; protected area has high and low plants, no protection fence on the bridges, no rehabilitated bridges together with the roads, all of which substantially decrease road participants' safety level. All interviewees think that roads rehabilitation improved traffic participants' safety. Yet, interviewees point out on several aspects, which despite improvement, have deteriorating influence on roads safety. They are in line with the on-site control findings (stated in this paragraph).

The total user benefits from Land Value Savings (increase of the land value for 10% in average both for urban and agriculture land) is around 120 million EUR for all local places subject to this STUDY. Interviewees consider that the road rehabilitation creates employment opportunity such as reestablishment of weaving folk costumes, arrangement of picnic places, development of monastery and other kind of tourism, building of ethno houses, building of sports and recreational Centers, agriculture investments, etc. For this purpose, they point out the need for water and fecal system, investment in knowledge and skills enhancement of local farmers and women, agricultural products quality improvement, etc. Some communities point out the need for building of wholesale market that will enable better placement of agricultural products, which will decrease transport costs and make agricultural product more competitive on the market. In order to prevent emigration communities need investments in new kindergarten, primary and secondary schools, and other social and educational facilities. Some of them see the building of the economic development zone next to their communities, as an economic opportunity for investments and employment of local citizens. Roads rehabilitation was the needed impulse for rejuvenation of some communities. Their local citizens expect that the elderly (mainly pensioners) will be attracted to go back to the places of origin. Consequently, this will initiate renovations of old houses, investment in new dwellings and weekend houses.

Roads rehabilitation' main benefits, for most of the focus group interviews, are the improved communications among communities and quality of living. In addition, prevention of rural-urban migration, better product placement, faster approach to the desired destination, and more comfortable transport of people and goods, are also some of the important roads rehabilitation' benefits.

2. INTRODUCTION

2.1. Objective

The objective of this STUDY is to assess from the beneficiary point of view wellbeing and welfare accruing to households using local roads that are being rehabilitated with the RLRPSR. The Terms of reference (TOR) is provided in ANNEX 1 of this Report.

The study focuses on:

1) Market Access – to what extent has the rehabilitated road improved, agriculture or other entrepreneur productivity or/and access to markets in nearby urban centers by farmers and other entrepreneurs;
2) Human Capital – to what extent has the rehabilitated road, improved access to social services such as education and health facilities concentrated in urban areas or in neighboring village;
3) Road Safety – to what extent do household members believe road safety has improved along the road because of the rehabilitation.

In addition, the study documents any other socio-economic impact, such as increased land value or revealed new opportunity for the communities where the local roads have been rehabilitated.

2.2. Scope

The pilot study analyzes 21 municipal roads in 10 randomly selected municipalities with completely rehabilitated local roads. From the 10 selected municipalities 5 municipalities are in the mountain regions and 5 in the lowland regions, all rehabilitated under the RLRPSP.

In APPENDIX 1 of this Report, the List of all municipalities and local roads and their precise location (subject to this STUDY) is provided.

2.3. PESR Support

PESR made available to the Consultant sections from the municipalities project submissions and detailed designs relevant to the socio-economic impact assessment. PESR notify all sample municipalities about the upcoming research and assist the consultant in making appointments with all relevant municipality officials as well as assist in providing relevant data from pertinent central government institutions.

2.4. Team composition and Level of effort

The team recruited for the assignment consists of experienced and enthusiastic senior experts with adequate profile as required by the TOR. Team composition and Level of effort is provided in APPENDIX 2 of this Report.

2.5. STUDY Structure

The remainder of the STUDY is organized as follows: Section 3 Beckground of the Project and Area of influence (secondary data and desk-based review). Section 4 describes the Methodology for collecting primary data. Section 5 review the Main findings of STUDY-related outcomes and sections 6 Summary of principle results of the assessment and recommendations.

3. BECKGROUND OF THE PROJECT AND AREA OF INFLUENCE

3.1. Background

Road transportation infrastructure in the Republic of Macedonia is characterized by relatively high density, exception being the highways. Considering the small size of the country and its population, the road network size is mostly adequate, with little or no need for expansion.

While the Corridors and the National roads have received much attention and investment over the past 15 years, this has clearly not been the case for Regional (Secondary) and Local roads. Only routine and some limited periodic maintenance have been carried out on those roads, and their overall condition has slowly deteriorated over the past two decades. They provide access to the main corridor roads and to the core network of National roads. Regional and Local roads are very important to local economic development, attracting new investments, small businesses, and agricultural activities throughout the country. They are very much needed for sustaining rural communities and smaller towns and indeed for enabling economic and social development throughout the country. They are also essential for ensuring access by the poor and other socially vulnerable groups to markets and services (social and administrative).

The Macedonian Government with support from the World Bank (WB) and the European Bank for Reconstruction and Development (EBRD), under the Country Program carried out improvements to regional and local roads through a loan for Regional and Local Roads Program Support Project (RLRPSR), starting from 2008 (Project Appraisal Document on a proposed loan to Republic of Macedonia for Regional and Local Roads Program Support Project (World Bank Official Document: Report No: 42200-MK). The main objective of the Country Program is to reduce cost of access from Municipalities throughout the Macedonia to market and services, by improving the condition and quality of the network of Regional and Local roads.

This component of the loan intend to provide funding to cover about 420 km of paved and unpaved Local roads over the 2008 – 2012 period (about 5% of all Local roads) selected by the municipalities. It included (i) civil works for localized repairs or replacement of structural layers and drainage structures, followed by partial or full asphalt resurfacing or re-gravelling. It also included the preparation of final bidding documents (based on the submissions from the municipalities). The supervision of the works was financed from PESR's regular resources.

The RLRPSR is expected to have positive impacts on the living standards of Macedonian's population through its direct effects on employment and economic growth. The residence in the area of influence is expected to benefit from: (i) a reduction in travel times and transport costs, (ii) likely improvements in the quality of road passenger and cargo transport, and (iii) employment generation.

The main objective of this STUDY is to assess whether this benefits were achieved from the beneficiary point of view. The STUDY will focus on market access, human capital, road safety, and land value.

The Study use official statistic data, focus group data, and semi-structured interviews in order to deliver the previously defined objectives.

The team of consultants provided by BAR E.C.E. with previous successful experience with carrying out socio-economic assessment use up to date and extended literature in the field of socio-economic assessment in the road sector, in line with the EU directives, and National, WB and EBRD policies.

3.2. General territorial and socio-demographic aspects of the selected municipalities and local places

3.2.1. Municipality of Kichevo

The municipality of **Kichevo** is located in the western part of Macedonia and is situated in the Kichevo Valley that presents clearly a shaped natural whole, surrounded on all sides by high mountains. The five municipalities of Kichevo, Drugovo, Zajas, Oslomej, and Vraneshnica created with territorial division from 1996, with the administrative changes in 2013, merged into the municipality of Kichevo. The municipality covers an area of 49.14 km^2. According to the census in 2002, Kichevo had 30,138 inhabitants, which based on the data from the previous census in 1994, represents a population growth of 9.42%. The density of population is 615.1 inhabitants per km^2.

In 2002, Macedonians counted 53.6% or 16,140 from the total population in the municipality. In the same year, the Albanian population counted 9,202 or 30.5% of the total population. Turks counted 2,430 people or 8.1%, Roma population counted 5.4% or 1,630 persons, 76 identified themselves as Vlachos, 86 declared as Serbs which is 0.3%, Bosniaks 7, and as others declared 567 people or 2.1%. The municipality demographic structure after the territorial changes is 2013 is following: from the 56,739 inhabitants, Albanians are 30,932 or (54.5%), Macedonians are 20,278 (35.73%), Turks 2,998 (5.28%), Roma 1,631 (2.87%), Serbs 102 (0.17%), Vlachs 76 (0.13), Bosniaks 8 (0.01), other 714 (1.25).

There are five elementary schools: “Dr. C. Polezinoski”, “Kuzman Josifovski Pitu” and “Sande Sterjoski” in the city of Kichevo, “Regio Rushit” in Zajas and “Hristo Uzunov” in Drugovo. The municipality has two secondary schools “Mirko Mileski” and “Drita”. The Faculty of Law has been established as part of the dispersed studies from the University of St. Clement Ohridski - Bitola. Preschool education is provided by the kindergarten “Olga Miceska” and its clone “May flower”.

Kichevo has several sports halls, football stadium, tennis courts, and swimming pool. Sports life is organized in the professional sports clubs such as FC “Napredok”, FC “Vlazrimi”, HC “Partizan”, VC “Shutova” etc.

There are significant monuments of culture on the territory of the municipality that can be utilized for cultural and tourist development. More significant are: Fortress Kitino, an archeological locality in the city of Kichevo that remains unexplored, Church Ss. Peter and Paul from V or VI century, monastery Virgin Marry built in 1316, Museum of Antifascist War in the Western Macedonia, Cultural Center “Kocho Racin” with a theatre scene with 400 seats, smaller hall and workshop area, an Art Colony and House of Culture in Knezino. Apart from school libraries, there is city library with 937 specialized titles and 11,990 novel titles.

Mining and Energy enterprise “Oslomej” is the main economic capacity in the region with annual capacity production of 660,000 kWh. Besides the coalmine, the iron mine Tajmishte was located in the municipality but now the mine is transformed into a food production area. There are small size trading companies, trade stores, and bakeries in the municipality.

3.2.1.1. Villages Krushino and Knezino

Krushino and Knezino are located in the area of Upper Kopacha in Kichevo Valley. The villages are at approximate altitude of 893 meters. According to the census in 2002, there are only 12, mainly elderly, inhabitants in Knezino. The census from 2002 provides no available data on the number of inhabitants in Krushino. These villages had experienced significant migration especially after the 1900s. Thus, according to available data for 1900, Knezino had 280 inhabitants, whereas in 2002 the number decreased to only 12 persons. All of the village inhabitances are Macedonian.

According to 2002 census, there are 6 households and 40 dwellings. Population is primarily engaged in agriculture and beekeeping.

3.2.1.2. Village Brzdani

Brzdani is located at the Kopacka Valley along the river Belica at the altitude of 733 meters. Based on the geographical configuration of the terrain the village is at the food of Ilinska Mountain. The village is connected with the regional road Kichevo - Demir Hisar. Village has 162 inhabitants of Macedonian nationality, out of whom 83 males and 79 females. According to 2002 census, there were 53 households and 99 dwellings. This shows the process of migration from the village. The inhabitants are evenly distributed in all age groups. Predominantly, citizens are engaged in agriculture, livestock farming, and beekeeping. Apart from one grocery store, there are no other economic capacities in the village.

3.2.1.3. Village Drugovo

Drugovo is located in Kichevo Valley at the altitude of 700 meters. The village is located on the left bank of River Treska. It is only one kilometer away from the city of Kichevo. Drugovo has 1,492 inhabitants of whom 1,250 Macedonians, 108 Albanians, 128 Turks, 1 Roma, 2 Serbs, and 3 others. The gender structure shows a greater presence of male population 786 (52.7%) compared to presence of female population with 706 (47.3%). According to 2002 census, there were 441 households and 586 dwellings. Mainly the population is engaged in agricultural activities. Nonetheless, there are several smaller size economic capacities such as farms, groceries stores, mechanic stores, and metal plants.

3.2.2. Municipality Demir Hisar

The municipality of **Demir Hisar** is located in the southwestern part of Macedonia, or northwest of Pelagonia Valley. According to terrain configuration, it is predominantly mountainous, with small lowland parts on River Crna. The municipality is surrounded with the mountains “Bigla”, “Ilinska” and “Plakenska”. According to the census in 2002, the Municipality of Demir Hisar has 9,497 inhabitants living in one urban and 40 rural settlement. The city of Demir Hisar in 2002 had 2,593 inhabitants. The process of rural urban migration resulted in depopulation of the villages Leskovo and Cerovo. The municipality has the following ethnic structure: Macedonians 9,179 (96.65%), Albanians 232 (2.44%), Turks 35 (0.35%), Roma 11 (0.12%), Vlachs 7 (0.07%), Bosniaks 2 (0.02%), and others 18 (0.19%). The gender structure is the following 4,850 males and 4,647 females. There were 5.12% illiterate persons 10 years and older. According to the 2002 census there is a low density of the population of 19.77 inhabitants/ km^2.

The primary school institutional infrastructure is consisted of three regional schools. Regional public school “Goce Delchev” has one school branch in Demir Hisar where education is organized from first to ninth grade, and nine regional schools in rural settlements. “Brakja Miladinovci” is located in the village of Zhvan. Additionally, the school has four regional schools branches that provide education from first to fifth grade. Primary school “Dame Gruev” is located in the village of Smilevo; additionally this school organizes classes in the village of Obednik, whit one class in Macedonian and one in Albanian language. In total, there were 647 pupils enrolled in primary education in the school year 2010/2011. Secondary education is provided in the Municipal Public School “Krste P. Misirkov” the school offers gymnasium and vocational education. There were

total of 295 pupils enrolled on secondary school in year of 2010/2011. The kindergarten "2nd September" is the sole institution for protection and education of preschool children.

The municipality has one Public Health Institution and a Psychiatric clinic – Demir Hisar.

There are two significant cultural objects, Culture Home "Ilinden", where the national library "Petre M. Andreevski" is located, and one private library in the village of Babino. This library has a collection of 15,000 books and represents the biggest private library collection in the country. In addition, there are a number of significant religious monuments such as St. John and St. Nikola Monasteries from XIV century.

Traditionally, football is the most popular sport in the municipality of Demir Hisar. There is one professional football stadium in the city of Demir Hisar and several smaller stadiums in Graishte, Pribilci and Zhvan. In 2010, the city gained a new sports hall "Jordan Piperkata". This sport hall is suitable for handball, basketball, volleyball, table tennis as well as for training gymnastics. The hall has a capacity of 500 seats. In addition, a gym in the secondary school of "Krste P. Misirkov" is in the process of construction. In addition, there are several asphalted outdoor courts and one court with artificial grass.

The municipality has 42,673 ha out of which 18.70% is arable land, 57.32% ha are forests, and 23.98% are pastures. There are several farms and poultry capacities such as "Zlatec" v. Sopotnica, "Margo" v. Kutretino, cattle farm in s. Strugovo, poultry factory "Belche". There is one capacity for production of mushrooms "SimStef", a checkpoint for forest fruits "Ksenos". One mill "Zito Brest" v. Edinakovci, trade company "Evtinija", hospitality enterprise "Mladost", textile factories "Mont", "Zlatex", and "Denim", metal industry capacities "Zeleznik", and timber company "Ambient".

3.2.2.1. Village Pribilci

Pribilci is located at the northern part of municipality of Demir Hisar at the altitude of 660 meters. Based on the geographical configuration of the terrain the village is in the Valley of Crna River. The village is connected with the regional road Demir Hisar - Krushevo. Village has 266 inhabitants of Macedonian nationality, out of whom 139 male and 127 female. According to 2002 census, there were 89 households and 125 dwellings, pointing on the process of depopulation of the village. The inhabitants are evenly distributed in all age groups. Predominantly, citizens are engaged in agriculture and livestock farming.

3.2.2.2. Village Dolenci

Dolenci is located at the northern part of municipality of Demir Hisar at the altitude of 915 meters. Based on the geographical configuration of the terrain the village is located among the hills of Zadel, Kula and Osno. The village is connected with the regional road Bitola - Kichevo. The village is 17 km from Demir Hisar. There are 97 inhabitants of Macedonian nationality, out of whom 46 males and 51 females. According to 2002 census, there were 42 households and 82 dwellings pointing on the process of depopulation of the village. The inhabitants are evenly distributed in all age groups. Predominantly, citizens are engaged in agriculture and livestock farming.

3.2.3. Municipality Tetovo

The municipality **Tetovo** is located on the slopes of Shara Mountain in the middle of Polog valley and covers an area of 1,080 km^2. In its lower parts, the municipality is at altitude of 460-500 meters. According to the 2002 census, the municipality has 86,580 inhabitants. The municipality is located at the crossroads of Corridor 8 (passes through Tetovo) and Corridor 10 (40 km from Tetovo). Apart from Tetovo as an urban settlement, the municipality has 19 rural settlements. Most of these villages belong to the group of lowland villages and have high density.

Based on demographic structure, Tetovo is a multiethnic municipality with 86,580 inhabitants. The municipality is one of the most densely populated in Macedonia with 330.6 inhabitants/km^2. The structure of the population by ethnicity is as follows: Albanians 60,886 (83%), Macedonians 20,053 (12%), Turks 1,882 (5%), Roma 2357, Vlachs 15, Serbs 604, Bosniaks 156 and others 627. In terms of literacy 57,932 of citizens older than 10 years are literate, while the remaining 2212 are illiterate. Most of the population, 52,915 inhabitants live in city of Tetovo, of which 26,390 are males and 26,525 females, while the rural population comprises a total of 33,665 inhabitants, of which 17,153 males and 16,512 females.

Tetovo has rich natural resources such as: water, fertile land, and forests that requires proper management. The climate, soil, hydrographic and spatial conditions are appropriate for the development of agriculture and livestock farming. From grains, there are wheat (1,790 tons), rye (18 tons), barley (93 tons), oats (27 tons) and corn (4775 tons). Most commonly grown vegetables are potatos (3601 tons), onions (541 tons), garlic (68 tons), cabbages (758 tons), tomatoes (3,253 tons), pepper (5,496 tons) and melons (709 tons). Dominantly grown fruits are cherries (49 tons), wild cherries (89 tons), apricots (18 tons), apple (799 tons), pears (184 tons) and wholenuts (41 tons). The available resources created favorable conditions for the development of wood processing, construction materials, agriculture, textile, food industries etc.

There municipality has a well-developed network of educational institutions comprised of 12 elementary schools, nine regional schools, one primary state music school and six secondary schools. According to data from 2010/2011, the total number of children attending primary school in the academic year 2010-2011 was 10,3960 pupils, they were organized into 217 classes of which 169 are classes on Albanian and 44 on Macedonian language. The total number of students enrolled in secondary schools in 2011/2012 was 10,234. The gymnasium “Kiril Pejchinovikj”, 4 vocational schools and one special school, “N. Stein”, “Mosha Pijade”, “Goce Stojcevski” and “September 8”, offer secondary education in Tetovo. Two private educational institutions also offer secondary education[1]. The State University of Tetovo and South East European University are two universities that offer higher education on the territory of the municipality. Five state kindergartens[2] provide care for 487 children. The city has one retirement home and a Inter-municipal Center for Social Work.

The municipality has sufficient network of health care institutions. There is one Public Health Institute, eight health centers, 10 polyclinics, 120 ambulances, a medical center, 10 general hospitals, 15 specialist clinics, 47 pharmacies, 5 of which are in rural settlements.

There are four museums, a library and a historical archive “Koco Racin” in the municipality. There is one Cultural Centre with a theater. It is important to mention the cultural monuments of Arabati Baba Tekke, Tetovo’s Fortress and the Colorful Mosque.

[1] Wilson Woodrow School in village Brvenica and Jahija Kemal College in village Bogovinje
[2] Teteks 1 (90 kids), Teteks 2 (50 kids), Old kindergarten (92 kids), Potok (113 kids) and Sport Center (108 kids)

The municipality has five private football fields, four sports halls, two city stadiums. There are 76 sports clubs among which a Climbing Club and a Mountaineering Club "Ljuboten".

The economy on the territory of the municipality of Tetovo is experiencing rapid growth. From the numerous commercial entities, 98% are small and medium enterprises and 2% are large enterprises. "Jugohrom" is the biggest industrial capacity in the neighboring municipality, employing approximately 900 people. Another significant industrial capacity is the textile factory "Teteks", located on the outskirts of Tetovo. The Municipality of Tetovo has a significant increase in facilities for production and processing of milk and dairy products as well as meat and meat products. Other important economic entities are the bread and bakery factory "Zito Polog", factory for furniture production and carpentry "Jelak", factory for the production of aluminum by-products "Alumina", textile factory "Edinstvo", tobacco industry "Jugotutun", plant for medical plastic "Plastica" and "Avtoprogres". Recently the city got two city malls. There are numerous shops, commercial establishments, public warehouses and facilities for deep freezing and cooling.

3.2.3.1. Village Trebosh

Trebosh is a village located in Polog Valley at the altitude of 412 meters. Based on administrative division of the Republic of Macedonia the village belongs to the municipality of Zhelino but it mainly uses the administrative and institutional infrastructure in municipality of Tetovo. The village borders are almost merged with the borders of villages Sarakino and Palatica. According to the 2002 census, 99.3% Albanians, 0.2% Macedonians, and 0.5% declared as others of 2,388 inhabitants. Gender structure shows slightly higher presence of male population with 51.1%. According to age structure, Trebosh is a village with predominantly young population with highest number of inhabitance in the age groups from zero to 45 years. Trebosh is predominantly an agricultural, lowland village. The main industrial object is the poultry farm Veze Shari that has the first biogas plant in the country.

3.2.4. Municipality Berovo

The municipality **Berovo** is at altitude of 800 meters and covers an area of 500 km^2. The territory geographical configuration of the territory is predominantly hilly and mountainous, while the flat regions are only around the banks of the River Bregalnica. The municipality has one town and eight villages, all of them defined as rural local communities. According to the 2002 census, municipality population was 13.941. From 1921 to 1991, the number of residents was continuously increasing, and then, it started falling with an annual rate of 0.4%. With 23.4 people per square kilometer, Berovo is among the municipalities with lowest population density in Macedonia, where 50.4% of the residents are males, and 49.6% are females. With reference to the ethnic structure of the population, 13.335 (95.65%) declared themselves as Macedonians, 459 (3.29%) as Roma, 91 (0.65%) as Turks etc. Half of the population lives in urban areas, while the other half in rural areas. The average age is 36.3 years. The age structure indicates aging of the population in the municipality.

The municipality is rich in natural resources. The forests and the lakes are of particular natural importance. The oak and the beech tree predominate in the forests. The arable land is 68.226 ha, of which 57% are agricultural land, and 43% are forests. Sixty seven percent of the agricultural land is used, of which, 21% are gardens and fields, 33% are pastures, 2.2% are orchards, and 9.5% are meadows.

Of great importance for the development of the municipality are the mineral resources and the ores. There is a functional coalmine in the municipality. The potential of the municipality for silica crystals is still not explored. The situation with the kaolinite clay suitable for the production of ceramics and fireproof products is alike. Furthermore, quartz used for production of fireproof materials, coal, iron and other ore forms, which are partially active, and in greater part are only potentially attractive resources for further exploration and exploitation. The development potentials are mainly seen in the development of tourism, and in developing light and environmentally friendly food industry, as well as exploitation of the forest resources.

There are two central schools for primary education in the municipality of Berovo (one in town Berovo and one in the village Rusinovo). The primary school in Berovo has regional schools (branches) in seven villages. There is one secondary school in Berovo, and it provides gymnasium and vocational education and in addition, it has a regional branch in Pehcevo. The number of students in the primary and secondary education is decreasing.

Primary health care is provided in the Health care Centre in the town of Berovo, and in eight private General Practitioners offices. There are no private gynecologist practices. There is no private gynecologist office. Currently, there is an office point of a specialist doctor from another municipality. In the larger villages (Rusinovo and Dvorishte), there are facilities which provide primary health care and an ambulance. In the municipality of Berovo, there is a special prosthetic dentistry, specialist laboratory, specialist ophthalmology, internal medicine and X-ray. At primary health care level, there is a dispensary for school medicine and preventive dentistry. There is no polyclinic, neither specialist clinic, and when needed, the residents of this municipality travel to Kochani, Shtip or Skopje.

The central, municipal public kindergarten "23rd August" is responsible for upbringing and education of preschool children. One hundred and eighty children go to the kindergarten in Berovo, and together with its clones, located in the three largest villages, 248 children attend kindergarten. There is no private kindergarten. In the municipality of Berovo, there are neither public nor private nursing homes.

The Cultural Home 'Dimitar Berovski' is the only cultural institution in the municipality of Berovo. Within the Cultural Home, there is a library, museum and a cinema, but out of function. There are two gyms and three sport fields in the city Berovo, and seven in all the villages in the municipality.

The textile industry is the most developed economic sector on the territory of the municipality. This sector employs the majority of the workforce. There are 5-6 companies registered in this sector, and they employ 450-500 persons. There used to be 4-5 companies that employed over 1,200 persons, however only two have completed the process of privatization successfully.

3.2.4.1. Village Vladimirovo

Vladimirovo is second largest village in Maleshevia, covering an area of 120 km^2 (24% from Berovo municipality territory). It is located at the altitude of 891 meters. The vicinity of Vladimirovo is situated on the west banks of the river Bregalnica. According to geographical configuration of the territory, ¾ is mountainous and ¼ is lowland. The mountains have wide pastures areas, large complexes of high-class forests and evergreen wood as well as sizable arable land. Along the river banks there are meadows. Almost all of the lowland is arable whereas the valleys along Bregalnica and Selcka River are partly are used for gardening and partly for pastures. According to the census in 2002, the village has 879 inhabitants of whom 420 male and 441 female. The village has 318 households and 625 dwelling places that indicates on the process of migration from the village.

3.2.4.2. Village Rusinovo

Rusinovo is the largest village in Maleshevia. It is located in Maleshevia valley on the slopes of Maleshevski Mountain, covering a territory of 192 km^2 with an altitude of 922 meters. The village is on 5 km distance from Berovo. It is surrounded with the Mountains Golak and Beaz Tepe on north, Ograzhden on south, Kadiica and Vlaina on east and Plachkovica and Obozna on west. Rusinovo has 2,095 inhabitants of whom 1,096 male and 999 female. There are 710 households and 982 dwelling places. The village is with homogenous ethnic structure where 99.8% inhabitants declared as Macedonians, one declared as Serbian and one as other. According to geographical configuration, the territory is mountainous and lowland. There are several industrial capacities such as sawmills. Predominantly, citizens are engaged in agriculture, livestock farming, orchards and forest exploitation. Potatoes, wheat, rye, corn, onions, plums and plum brandy are dominantly produced in the village.

3.2.5. Municipality Vinica

Vinica is a small size municipality covering an area of 334 km^2. The municipality is located on the Southeast of Vinica - Kochani valley. The South side is bordered with northern slopes of Mount Plachkovica and on East with slopes of Mount Golak. The municipality has 1 urban settlement, the city of Vinica, and 16 rural settlements. The positioning of the municipality enables good connectivity with neighboring municipalities. The geographical configuration of the territory is predominantly hilly and mountainous, with valley relief structures along the river Bregalnica and Vinica - Kochani valley. The lowlands of the municipality are dominant on the northern and western part and are at the altitude of 390-450 meters. The landscape plays a significant role in defining the municipality development. Therefore, agricultural production is dominant in lowlands areas. The highlands provide good bases for the development of timber industry and farming.

According to the census in 2002, the population of the municipality was 19,938. With reference to the ethnic structure of the population 18,261 (91.59%) declared themselves as Macedonians, 1,230 (6.17%) as Roma, 272 (1.36%) as Turks, 121 (0.61%) as Vlachs, and 54 (0.27%) declared as others.

There are four schools for primary education in the municipality. “Slavcho Stojmenski” and “Goce Delchev” that are located in the city of Skopje, whereas “Nikola Parapunov” is located in the village Dragobrashte and “Kocho Racin” are in the village Blatec. Secondary education is provided in Public Municipal Secondary School “Vancho Prke” Vinica. Higher education is organized through the dispersed studies for Mechanical Engineering that is part of the University of “Goce Delchev”. The municipality has one city library “Vancho Prke”. There are two cultural institutions in the municipality, the museum of terracotta icons “Terracotta” and the Cultural Center “Tosho Arsov”. Vinica’s Fortress is one of the most famous archeological sites where authentic terracotta icons from the early Christian period were excavated.

The sports infrastructure in the municipality of Vinica consists of a sports hall, stadium, and two swimming pools. The sports life of the municipality is organized by FC “Sloga 1934”, BC “Slavcho Stojmenski”, KC “Blatec” and bagminton Club “Vincini”.

Besides agriculture as a dominant activity in the municipality, there are several industrial capacities that play a vital role in the economic development of Vinica: the factory for construction materials “Tondah”, textile factories “Triko”, “Vinka” and “Vinichanka”, wood processing facilities of “Mebel - Vi” and “Mebel Trejd”, food industry “Vinchini”, and some other smaller facilities. Nonetheless, the development of the municipality is based on the renewal and reconstruction of

existing industry and greater services offer. The municipality has planned the construction of new small and medium businesses capacities, with the creation of conditions for sustainable economic development.

3.2.5.1. Village Dragobrashte

Dragobrashte is located in the eastern part of Macedonia and in the North East part of the municipality of Vinica. It is on distance of 12 km from the city Vinica, connecting on the regional road Delchevo - Berovo. The village is located at altitude of 550 meters. The village experiences a significant migration especially in the period after 1980s. Thus, according to the census in 1981 it had 623 inhabitants whereas in 2002 the number decreased to 392. The gender structure shows dominance of male population with 55.1%. All of the village inhabitants are Macedonian. According to 2002 census, there are 119 households and 128 dwellings. Population is primarily engaged in agriculture, particularly in cultivation of tobacco. A significant part of active population from Dragobrashte temporarily works abroad.

3.2.5.2. Village Pekljani

Pekljani is located at the foot of Mountain Obozna in the municipality of Vinica. The village is 10.4 km from Vinica. The village is connected with the regional road Delchevo - Berovo. Pekljani has 423 inhabitants of whom 221 males and 211 females. According to 2002 census, there were 151 households and 145 dwellings. The inhabitants are evenly distributed in all age groups. According to geographical configuration, the territory is partly hilly and lowland. Predominantly, citizens are engaged in agriculture, livestock farming, and orchards cultivation. There are several small size industrial capacities such as a small factory for production of furniture. Significant economic capacity is the existing pig farm located at the outskirts of the village.

3.2.6. Municipality Resen

Municipality **Resen** is located at the southwestern part of Macedonia on the triple border with Greece and Albania. Based on its geographical configuration, the municipality spreads in the Prespa valley. It is surrounded by Baba Mountain on east, Galichica on west, Plakenska Mountain and Bigla on north, and with the Lake Prespa on south. Two National parks, Pelister and Galicica are surrounding Prespa Valley. The municipality covers an area of 739 km^2 of which approximately two thirds (562 km^2) is land and one-third (177 km^2) is water. The municipality neighbors with the municipalities of Ohrid, Bitola and Demir Hisar. There are 43 rural and one urban settlement. Four of the rural settlements are depopulated and no longer have dwelling residents.

According to the 2002 census, the municipality of Resen has 16,825 residents of whom 50.3% females and 49.7% males. There is relatively low density of population (23 persons per km^2). According to ethnic structure, there are 76.07% Macedonians, Albanians 9.13%, 10.68% Turks, 0.44% Serbs, Vlachs 0.15%, Roma 1.09 and 2.44% others. From the total number of citizens 48.0% live in rural and 52% in urban setting.

There are five central schools for primary education “Mite Bogoevski” and “Goce Delchev” in Resen, “Slavejko Arsov” v. Podbochani, “Dimitar Vlahov” v. Ljubojno, and “Brakja Miladinovci” v. Carev Dvor. The primary school Mite Bogoevski apart from Resen has regional school branches in the villages of Jankoec (first to ninth grade) and one combined class from first to fifth grade in

Bolno. "Car Samoil" is a secondary school institution that provides gymnasium and vocational education in the municipality.

The primary health care is provided by the Health care center in the city of Resen, a diagnostic center, three general private general practitioners offices, two gynecological practices, eight pharmacies and an Institute for Rehabilitation. The dental care is provided by the eight private dental practices.

The Cultural Home "Dragi Tozija" is a leading cultural institution responsible for organization of the cultural life in Resen. The city library and a gallery with the works from Resen ceramics colony are located in the auspices of the Cultural Home. The biggest professional ceramic colony on the Balkans is organized in the village of Oteshevo. Another significant cultural monument is Resen Saray, built by Ahment Niazi Bey. The Saray was built at the beginning of the 20th century. One of the most famous cultural and religious objects is the XII century Church St. Gorge in v. Korbinovo. One of the richest private ethnological collections is located in the house of Jone Eftimovski – ethnological museum in the village of Podmochani. The municipality plans to construct a memorial house of Risto Tatarchev.

The municipality has one City Stadium with capacity of 1,500 seats, several sport courts, and a sports hall in the process of construction. There is one karate club, three football clubs in "Jankovec", "Asamati", and Bratstvo (Resen), and one handball club Mladost.

Local citizens from rural settlements are mainly engaged in cultivating apples as dominant agricultural activity in the Municipality, with annual production of 100 thousand tons grown on territory of 3200 ha. There is small number of livestock farming and beekeeping. Fishing is present in the villages along the lakeshore. Only a small segment of population is employed in the local industry. The structure of economic enterprises is comprised of small size trade companies. There are five hotels and an auto camp. From four food processing and production factories, the Swissleon - Agroplod factory is the most significant. There are two textile factories (Resen, Stenje), and one metal industry enterprise.

3.2.6.1. Village Dolna Bela Crkva

Dolna Bela Crkva is located at the southeast side of the municipality of Resen. Based on geographical configuration of the terrain Dolna Bela Crkva is located in lowland. The regional road Resen - Markova Noga's is the main road section that connects the settlement with the city of Resen, surrounding settlements and border crossing Markova Noga. Based on the available data the village has 237 inhabitants predominantly engaged in agriculture. Growing apples is the dominant agricultural activity. Nonetheless, there is a small size production of vegetables and livestock, mainly for individual needs.

3.2.6.2. Village Stenje

Stenje is located at southwest side of the municipality of Resen and is 23 km from the central city area of Resen. The village has 438 residents. The municipality does not have precise information on the total number of employees. Based on the data in the year of 2012 there were 22 unemployed people, out of whom six are women. Growing apples and fishing are the dominant economic activities of local citizens. The municipality exports the following varieties of apples: Ajdaret and Golden Delicious.

3.2.7. Municipality Bitola

The municipality **Bitola** is located in the Southwestern region of Macedonia, covering the central part of the Pelagonia Valley. The municipality is at average altitude of 576 meters and covers an area of 794.53 km² of which 26.37 km² belong to city of Bitola, while the villages cover an area of 768.16 km². The geographical configuration of the territory is predominantly lowland and at its edges is surrounded with following mountains: Baba and Busheva on the west, Selecka and Nidze on east, Dautica and Babuna on north, while on south and south-west is Neredska Mountain. The river Dragor flows through the municipality. Bitola is the urban settlement in the municipality. As a city developed in the valley, Bitola has nearly a circular shape. According to its location, most of Bitola's villages are of lowland type and have high density.

According to the latest census in 2002, the municipality has 95,385 inhabitants. The population density is 121 inhabitants per km^2. Thus, Bitola is one of most densely populated municipalities in Macedonia. Regarding the gender structure of population, 46,969 are males, and 48,416 females. The municipality has the following ethnical structure: Macedonians – 84,616 (88.71%), Albanians – 4,164 (4.37%), Roma – 2,613 (2.74%), Turks – 1,610 (1.69%), Vlachs – 1,270 (1.33%), Serbs - 541 (0.57%), Bosniaks - 21 (0.02%) and other - 550 (0.58%). From the total number of residents, around 74,550 live in the city of Bitola, which is the administrative center of the municipality, while the rest of 11,858 inhabitants live in the rural settlements. Bitola region has a high rate of literacy of 98.1% among the age group 15 to 24 years. Natural resources represent an important factor in the development of Bitola's economy.

Bitola and its surrounding are well known for the variety of mineral wealth. This particularly refers to large quantities of lignite and other non-metals. The forest wealth, also, represents a solid base for dynamic development of the municipality economy, especially in regards of supply of fire and industrial wood. The agricultural production is of great importance for Bitola region. Agricultural activities are defined by lowland and mountainous terrain, where people are predominantly engaged in livestock farming (cows - 19,350 cattle, sheep - 55,706 heads, goats - 6,000 cattle, pigs - 10 388 cattle), poultry (chickens - 500.000) and apiculture (bee hives 2500). They are also engaged in production of grains (wheat - 14,500 ha, barley - 7,250 ha, rye - 400 ha, oats and maize - 3.927 ha), industrial grains (sunflower, rape oil, tobacco, sugar beet, etc.), forage crops (corn silage , alfalfa, livestock peas, artificial meadows, etc..) field crops (potatoes - 350 ha, watermelon - 200 ha of beans - 100 ha and more), vegetables (tomatoes - 440 ha, pepper - 310 ha, onions, cabbage, etc..), fruit (apple - 190 ha, peaches - 10 ha, apricots, plums, cherries - 317 ha, etc.), viticulture - 1,190 ha (wine and table varieties), mushrooms, natural meadows – 4,681 ha and pastures.

Thus, it can be concluded that agriculture offers great opportunities for the development of the economy, creating job opportunities, and enables good living standard for rural population.

There is substantial exploitation of raw materials and resources from the metal, textile, food, tobacco, and printing industry as well as production of milk and dairy products, alcoholic and soft beverages, sugar, yeast, spirit etc.

The municipality of Bitola has eleven primary schools and one central primary school. "Todor Angelovski" and "Dame Gruev" have two regional schools, in the following settlements: Gorno and Dolno Orizari, Karamani and Strelishte. In nine of the primary schools, the classes are held on Macedonian language, whereas in two besides on Macedonian, classes are thought on Albanian and Turkish. There are seven secondary schools, one general gymnasium, one school with gymnasium and vocational education, five vocational schools and one state music school. Apart from public secondary schools, there is one private gymnasium and one private high school. There is evident decrease in the number of high school pupils. The preschool care and education is provided by two

central kindergartens: "Esterija Ovadija Mara" and "May flower". Five kindergartens are part of kindergarten "Esterija Ovadija Mara" and in addition to them; there are three clones in the villages Bistrica, Kravari and Kukurechani. Six kindergartens are an integral part of "May flower" kindergarten. These kindergartens provide services for 1,152 children, of whom 490 are females. There are two elderly homes out of which one public with 140 beds and 1 private.

The Health Care Centre located in the central part of the city of Bitola provides primary healthcare protection in the municipality. There are total of 51 general and specialist healthcare practices of which seven are in the rural settlements: Kravari, Bistrica, Capari, Dolno Srpci, Dedebalci and Dolno Orizari. Two of the private specialist practices provide cardiologist services. In addition, there are nine medical laboratories. On the territory of the municipality, there are 82 registered dental practices, with eight dental technician laboratories. Only one of these dental practices is in the village of Ivanjevci. On the territory of Bitola municipality there is an Institute for rehabilitation of speech, hearing and voice, Public Health Institute Center for Public Health - Bitola and a Clinical hospital. There are 72 pharmacies and 6 gynecological practices.

The cultural life on the territory of the municipality of Bitola is very rich. There are number of cultural manifestations such as Bitola culture summer, "Bit-fest", "Interfest", "Manaki brothers" and many others. National theatre is the central cultural institution in Bitola. In addition, there is an Institute for protection of cultural monuments, the museum and gallery as well as the Cultural Center Bitola that organizes numerous cultural manifestations. There is a National university library "Kliment Ohridski" and small cinema hall that currently is out of function.

Sports life is organized in two sports halls, six school sports halls, one main football stadium and three assisting stadiums, one open swimming pool, six tennis courts, two sky slopes and three hunting places.

There were 3,295 registered businesses representing 6.45% of total registered business entities in Macedonia (Economy, conditions and perspectives). According to the available data most presented are businesses in the area of food and textile industries but the energetic capacities in the municipality are of significant importance.

3.2.7.1. Village Poeshevo

Poeshevo is a settlement located 3 km from the city center of Bitola. It is estimated that there is approximately 272 residents and around 50 individual houses. The municipality does not have precise information on the total number of employees. The employment agency in 2012 has registered 22 unemployed persons of whom 10 are women. Majority of residents either have registered private business or are registered as individual farmers. Nonetheless, significant number of Poeshevo's residents is employed at the energetic capacity of REK Bitola. Dominantly farmers are engaged in livestock farming, mainly in cow breeding, sales and distribution of milk to local dairies. In addition, the villagers are engaged in production of agricultural products. According to the available data, the village covers a territory of 670 ha.

3.2.7.2. Villages Dolno Orizari, Trn and Karamani

Dolno Orizari, Trn, and Karamani are settlements along the rehabilitated road. The road connects the three villages with Bitola. Trn is the most distanced settlement located at the altitude of 563 meters above sea level. The village extends to 170 ha. According to the 2002 census data, it has 110 inhabitants from Macedonian ethnicity. The villagers from Trn are engaged in production of grains such as wheat (150-200 tons), corn (250 to 300 tons), tobacco (20 tons). Each house has two

vehicles and agricultural machinery. The village of Karamani is located at altitude of 570 meters above sea level. Based on the last census there are 362 inhabitants. The population is mainly engaged in agriculture and produces approximately one million tons of crops a year. The most densely populated area is Dolno Orizari with over 1,834 people inhabiting around 1000 houses. The village of Dolno Orizari is located at the altitude of 564 meters above sea level. Based on its ethnic structure there are 1,828 Macedonians, 4 Roma, 1 Vlach and 1 declared as other. Dolno Orizari is predominantly agricultural population that produces vegetables, cabbage, tomatoes, and cucumbers. Apart from the horticultural products, inhabitants from Karamani, on a yearly base, produce around one million tons of crops.

3.2.8. Municipality Struga

The municipality of **Struga** is located at the western part of Macedonia. The municipality covers an area of 507 km^2 and has 1/3 of the Ohrid Lake coastline. The municipality covers one-half of the total area of the valley. The city of Struga is located at the altitude of 698 meters. River Drim divides the city on two parts. According to 2002 census, the municipality has 63,376 inhabitants. Struga is a multiethnic municipality composed of: Albanians - 36,029, Macedonians – 20,336, Turks – 3,628, Roma - 116, Serbs - 106, Vlachs - 656 and others 2,402. Young population under 20 years participates in the total number of inhabitants with 36.2% whereas the participation of population 60 and older is only 11.7%.

The total number of registered unemployed people in December 2011 in Struga municipality was 7,716; most specifically, the rate of registered unemployed aged 15-64 was 16.3% and the rate of registered unemployed aged 20-64 was 18.8%. The unemployment in Struga municipality is 2.74% of total registered unemployment in Macedonia. The unemployment of the rural population is dominant, representing 64.4% of the total number of registered unemployed in the municipality. According to the gender structure, the total number of unemployed men is 4,816 (63.58%) whereas the total number of unemployed women is 2,900 (38.41%).

There are five elementary schools and five primary regional schools in the Municipality of Struga. Elementary schools are located in Struga, Veleshta, Drslaica and Misleshevo. Regional school “Goce Delchev” from Jablanica has regional school branches in the villages of Lukovo, Podgorci, Piskulica, and Nerezi. Regional school “Arsim Agushi” has branches in Radolishta, Zagrcani and Frangovo. Regional school “Edisntvo” has branches in Dolna Belica and Oktisi. Regional school “Naim Frashteri” has branches in Gorno Tateshi, Delgozda, Korosishta, Livada and Mislodeza. Regional school “Josip Broz Tito” has branches in Vranishta and Struga. Secondary school education in the municipality is organized in two public schools “Niko Nestor” and “Dr. Ibrahim Temo”, and two private schools “Yahia Kemal” and “Fifth Private Gymnasium”. In addition, there is one private university.

The primary health care is provided in two Health care centers one in the city of Struga and one in Veleshta, one medical center in Struga, and a center for public health. In addition to this, there are three private general practitioners offices, seven gynecological practices, 13 pharmacies and Regional Nephrology Centre. The dental care is provided in the 26 private dental practices.

The Cultural Center “Brakja Miladinovci” is a leading cultural institution responsible for organization of the cultural life in Struga. The city library is located in the auspices of the Cultural Home. There is a Natural Museum “Dr. Nikola Nezlobinski” and a gallery “Vangel Kojhoman”.

The municipality of Struga has sports clubs in the following disciplines: handball, basketball, football, table tennis, boxing, cerate, sailing, peddling, paragliding, etc. Most of the 121 sports objects are open-air sport courts and due to their dysfunction are ranked in the third category of

objects. Mainly, they are property of sports clubs, hospitality organizations, schools or public enterprises.

Trade is the dominant activity participating with approximately 48% in local economy than follows construction with 11%, manufacturing industry with 11%, tourism and hospitality with 8%, communal, cultural, public and personal services activities with around 7% and others with 15%. Textile industry employs approximately 3000 persons, thus plays an important role in the manufacturing industry. There is a trend of increased investment in the wood manufacturing industry. The agricultural activities in the municipality are performed on 7,000 ha arable land of which 4,000 ha are grain cultures, 1,500 ha corn and 1,500 ha with different cultures. There are 495 tons of apples produced on 35 ha of land and vineyards planted on 95 ha.

3.2.8.1. Village Misleshevo

Misleshevo is located on the northern side of the municipality of Struga. According to its geographical location, it is located in the Struga Valley, on the right, east side of River Drim, at approximate altitude of 700 meters. The territory of the village borders on the north with the village of Moroishta, on northeast with the village of Volino, on east with the villages of Trebenishta, Gorenci and Orovnik, on southwest with the city of Struga, on west with the River Drim, and on south with the Ohrid Lake. The village covers a territory of 1,318 ha. Misleshevo has 3,507 inhabitants and based on their ethnic structure the village has a multiethnic character with 2,791 Macedonians, 527 Albanians, and 28 Turks, 13 Roma, 66 Vlachs, 15 Serbs and 66 others. The village has a well-developed economy with several economic capacities. From agricultural production, the most frequent is cultivation of grains, i.e. wheat and corn as well as tomatoes, peppers, onions, cabbage, cherries, apples, plums, and pears. There are several livestock farms for breeding of cows and sheep.

3.2.8.2. Village Veleshta

Velesha is located at North West side of the municipality of Struga. The village has 5,834 inhabitants of whom 2,971 males and 2,863 females. Based on its ethnic structure there are 98.7% Albanians, 0.02% Macedonians and others 1.28%. Considering that the village was previously an independent municipality there is a satisfying health care institutional infrastructure. The village has a well-developed economy with sizable economic capacities among which significant is the number of restaurant and hospitality capacities. In addition, local citizens are engaged in agriculture.

3.2.9. Municipality Kochani

Municipality of Kochani is located 120 km from Skopje, in the eastern part of Macedonia, more specifically situated on the north side of Kochani Valley. The city of Kochani is located on the south side of the municipality and is at altitude of 450 meters. The municipality covers an area of 360.32 km^2, with the lowest altitude at 320 meters and highest at 2085 meters. Municipality of Kochani has 28 settlements, one urban and 27 rural.

According to the census of 2002 municipality of Kochani has 38,092 inhabitants, of whom Macedonians - 35,472 (93.12%), Roma - 1,951 (5.12%), Turks - 315 (0.83%), Vlachs - 194 (0.50%), Serbs - 63 (0.17%) and other - 97 (0.26%). Out of the total population, living in the municipality, 19,192 are males and 18,900 are females. There are 16,610 economically active

persons, of whom 10,257 are employed and 6,353 unemployed, whereas 13,922 are economically inactive.

Primarily, the municipality is connected through a regional road with Shtip (30 km) and Veles (70 km) this road also connects Kochani with Central Macedonia. Kochani is a crossroads of several regional roads. The nearest city to the East is Vinica (10 km), Makedonska Kamenica (30 km), Delchevo (55 km) Berovo (60 km), and Bulgarian border (65 km). On the West is connected to Probishtip (36 km) and Kratovo (48 km). The existing railway, built in 1926, is a significant traffic network for the municipality. Through this railway, Kochani is connected to Shtip, Veles, and Skopje. The municipality has the following road infrastructure: 26 (60.5%) of the villages are connected by asphalt roads, while 17 villages (39.5%) are connected with dirt or mountain roads. Modern network of roads exists in the lowlands and plain-hilly villages, while mountainous villages lack the needed infrastructure.

Agriculture is a traditional industry in Kochani, which is determinate by the adequate natural and agro-technical conditions. The soil is fertile with alluvial origin. Most of the arable land is irrigated, through water accumulation facilities and well developed channel network in a length of 280 km. There is a centuries-long tradition of cultivating rice, with high yields and excellent quality. Annual the rice is sowed on 3,500 hectares, with a yield of over 5,000 kg / ha.

In accordance to the state conditions, the municipality of Kochani, generally belongs to middle developed industrial region with multiple industries. Most of industrial facilities were established before independents in the industrial zone, located in the eastern part of the city on the road to Vinica.

Municipality of Kochani provides a preschool education through kindergarten “Pavlina Veljanova” that has four clones. Primary school education is organized in six primary schools: “Cyril and Methodius” with two regional schools branches in the village Beli and Gorni Polog (1-5 grade), “Rade Kratovche” with regional schools in the village Nivichani (1-5 grade), “Nikola Karev” with two regional schools in the village Trkanje and village Grdovci, “Malina Popivanova”, “Krste Misirkov” and “Risto Yurukov”. Secondary school education is organized in two secondary schools “Goso Vikentiev” which offers electro-machinery and transport vocation and gymnasium “Ljupcho Santov” that also provides vocational education. In addition, higher education is available through the dispersed studies. As a part of Shtip University, the Economics Department introduced two study departments for health and financial management. The Technology Faculty from Probishtip organizes dispersed studies through the department of textile engineering. The Faculty in Vinica, which operates under the Shtip University “Goce Delchev”, will be transferred in Kochani. The new Mechanical Engineering Faculty in Kochani will have a department for machinery production.

The municipality has a sufficient network of health care institutions. The town has one general hospital, an institution for health care, a health care center, and a polyclinic. In addition to these, there are 17 health care practices and 3 laboratories. Within these clinics, there are two internists and a gynecological practice. The city of Kocani has 15 dental practices and one of them is a dental laboratory. The municipality has 20 pharmacies, out of which three are in rural settlements. There are two sub kitchens, one public and one organized by a religious organization. Despite of the increasing need in the municipality for protection of elderly there are no public or private nursing homes. The network of social services in the community is consisted of a day center for people with special needs and a counseling center for HIV/AIDS. The municipality has two pensioner clubs.

There are several cultural institutions. There is a home of culture, a cinema and a library in the city of Kochani. Although there is no theater, the municipality organizes an annual amateur drama festival “May’s Theatre Festival”.

The Municipality of Kochani has a football stadium, 5 gyms and 12 sports fields, an open-air swimming pool and courts for mini golf.

The leading industries in the municipality are construction, agriculture, trade, and textile industry as well as production of automobile parts. Most of the economic entities are medium (1,385) and small (391) size commercial entities, and only 1% of economic enterprises employ over 150 people. Of the total number of registered companies, 1,900 are operational and 300 are out of business. However, it should be noted that this number varies. Most of the major economic facilities were closed in the transitional period.

3.2.9.1. Village Jastrebnik

Jastrebnik is located on the south slopes of Osogovo Mountains at the altitude of 950 meters. Based on its geographical position it is a mountainous village of scattered type with a low density. Due to rural urban migration, the village has 48 inhabitants that according to 2002 census live in 23 households and are of Macedonian nationality. There are no inhabitants in the age group 0-15 years. Mainly, inhabitants of Jastrebnik are 35 years and older. Out of the total population, 58% are males. The total count of dwelling objects is 34. It is interesting to mention that there is a Center for valorization of cultural inheritance, located at the old school building. The Centre was established with the assistance from the Italian Government and the city of Kochani.

3.2.9.2. Village Leshki

Leshki is located on Osogovo Mountains at the altitude of 897 m. The geographical configuration of the territory is mountainous. The village is on a 10 km distance from Kochani. The village had only 28 inhabitants, mainly elderly, on the last census in 2002. There are no inhabitances in the age group 0-15 years. Mainly, inhabitants of Leshki were 35 and older.

3.2.9.3. Village Trkanje

Trkanje is located in the lowlands of Kochani Valley at the altitude of 384 meters, on the north side of the regional road Shtip - Kochani. The village is 5 km from Kochani. Trkanje has 1,225 inhabitants, 389 households and 440 dwellings. The gender structure shows dominance of male population (650 males and 575 females). There are several economic entities on the territory of Trkanje. Local citizens are predominantly engaged in agriculture.

3.2.10. Municipality Gazi Baba

The municipality **Gazi Baba** is located in the northern part of Macedonia and on the East part of Skopje valley. The municipality covers an area of 92 km^2, at altitude of 173 meters. The municipality on the north borders with the municipalities of Butel and Chair, on the west borders with municipalities of Center and Aerodrom, on south with Petrovec, municipality Ilinden and on east with the municipalities of Arachinovo and Lipkovo. Most of its territory or 65% are located in the lowland and are arable land. Several hills such as park-forest “Gazi Baba” and the central part at the vicinity of Kamnik are located in the northern part of the municipality. In addition, on east, the municipality has a mountain section at Skopska Crna Gora. The municipality has 14 villages and rural settlements, and 7 urban settlements.

According to the 2002 census, the municipality has 72,222 inhabitants and according to the number of inhabitants it is one of the largest municipalities in city of Skopje and Macedonia, with an average population density of 1,046.7 inhabitants/km². From total population in the municipality 36,177 (50.1%) are males, and the remaining 36,177 (49.9%) are females. The majority of the population in the municipality is rural population 44,561, while urban population are 28,056 inhabitants. The ethnic structure of the population in the municipality Gazi Baba is as follows: 53,106 Macedonians (73.5%), Albanians 12,502 (17.5%), 2,082 Roma (2.88%), Turks 606 (0.84%), 236 Vlachs (0.32%), Serbs 2094 (2.89%), 710 Bosniaks (0.98%) and other 886 (1.23%). The average age of the population of the municipality is 32.9 years.

The educational structure of the municipality is as follows: 2,560 persons (3.6%) are without education, 6,283 (8.7%) are with incomplete education, 20,078 (27.8%) with elementary education, 37,411 (51, 8%) with secondary education, 1.589 (2.2%) are with higher education, 3.972 (5.5%) are with bachelors education, and 72 (0.1%) are with masters and PhDs. From the total population in the municipality, 19,626 are employed, of whom only 2% work with agriculture, 37% are employed in industry, 60% are employed in service industry, and for the remaining 1% belong to category of other.

The developmental potentials of the municipality reside in the fact that it has the largest industrial zone in Skopje and Macedonia, and one third of the GDP is produced on its territory. The pharmaceutical, metal and agriculture industry have the biggest number of employees. Also, these are the most dominant industries in the municipality. The municipality represents the most important corridor that connects Skopje with the international transport corridors 8 and 10, which is an excellent base for dynamic local and regional economic development. A significant part (10 km) from the Skopje ring road passes through the territory of the municipality.

Gazi Baba has 5,500 ha of agricultural land, with 1,900 ha that are in the ownership of legal entities, while individual farmers have around 3,650 ha. The land that is managed by legal entities produces mainly wheat and forage crops, while on the agricultural land in owneship of private individuals is planted with wheat and vegetable crops. Out of the total agricultural land used in the municipality, 90% is arable land, gardens and home gardens, and the rest is under pastures, orchards and vineyards. From the 1,555 ha of vegetables grown in Skopje, 33% are located in this municipality of Gazi Baba. Out of the planted vegetables (100 ha) are watermelons, (96 ha) are pepper, (73 ha) are potatoes, (45 ha) are tomatoes etc.

Primary education is organized in 11 primary schools in the following settlements: three in Madzari settlement “Vera Jocich”, “Krste Petkov Misirkov” and “Naum Naumovski-Borche”, two in the settlement of Cento - “Dane Krapcev” and “25th of May” and one in each settlement: Zhelezara, “Gligor Prlicev”, “Stiv Naumov” in Gazi Baba, as well as one in each of the villages “Krum Toshev” in Trubarevo, “Cyril and Methodius” in Stajkovci, “Naum Ohridski” in Bulachani, and “Njegosh” in Kolonija Idrizovo. These schools organize classes from first to ninth grade. The municipality has five secondary schools, which provide gymnasium and vocational education. The State Center for School Education and Rehabilitation “Partenija Zografski” provides education for students with special needs. Besides public school education, there is one private high school in the municipality. Four state and two private faculties are located in the municipality.

Health care services in the municipality are provided through the following health facilities: one Health home, 6 dispensaries, 6 ambulances, 1 polyclinic, 13 health care practices and 1 private hospital. The number of specialist clinics and pharmacies in the community has not been identified.

There are two state kindergartens for pre-school education, “Children delight” with four clones and the “25th of May” with five clones. The municipality has a private nursing home and a retirement

home. From the network of non-residential and institutional care, the municipality has: a Daycare center for children with special needs, a daycare center for street children, SOS Children's Village Macedonia, PI for Protection, Upbringing and Education of Children and Youth "Ranka Milanovic" Skopje. There is also an office of the Red Cross. In collaboration with ICSW, the municipality has opened two soup kitchens, one in the settlement of Madzari and one in settlement Hangar, Chento where 200 meals daily are distributed.

The cultural offer in the municipality of Gazi Baba consists of 10 archaeological sites, 14 churches, 2 mosques, a monastery, cinema and a theater. The existing libraries are part of educational institutions. The municipality lacks facilities such as museums and cultural centers.

The municipality of Gazi Baba has 10 playgrounds and 5 gyms. In addition, it has an indoor football court in the village of Stajkovci. A gym hall is located in the urban settlement of Avtokomanda, and in settlement of Hippodrome is one of the well-known recreational sports center. There are two football stadiums one in Zhelezara and one in the settlement Madzari. Playgrounds are located in the following settlements: two in Madzari, and one in Avtokomanda, Creshevo, Triangla, Trubarevo, Colonija, Ergele, Rashtak, Jurumleri and Vardarishte.

The data on businesses show that there are approximately 6,600 registered commercial entities located in the municipality of Gazi Baba, out of which operational are only 2,050, while out of business are 4,550 registered entities. From the total number 44 are large size enterprises. Significant industrial fields are metallurgy, pharmaceutical, food, and candy industry. In addition, it is important to mention that one of the biggest beverage factories "Skopska Pivara" is located in the municipality.

3.2.10.1. Village Rashtak

Rashtak is a mountainous village surrounded on the east side with vineyards and gardens, on the south side with arable land plated with crops, on the west side with vineyards and arable agricultural land where crops are grown, and the north with pastures and forests. The village covers a territory of 30 km^2. The village is of dense type. The river Rashtevska flows through the village. Rashtak has 367 inhabitants of whom 187 are males and 180 are females. Significant public objects are the village church and a primary school that organizes education from first to fifth grade. Apart from several small family farms and family owned businesses there is no significant industry in the village. The village is connected with the rehabilitated road with the Municipality of Butel and with the Skopje city road.

4. METHODOLOGY AND DATA

In APPENDIX 3 of this Report, Matrix of the main questions and sub questions is provided, presenting the indicators, required data, data source, short methodology description, and the person in charge.

This part details the proposed methodology aspects of doing the interviewing, review the qualitative and quantitative analysis used to document the socio-economic impact from the beneficiary point of view.

Based on the TOR, in the focus of this STUDY were the following four objectives:

1) Market Access – to what extent has the rehabilitated road improved, agriculture or other entrepreneur productivity or/and access to markets in nearby urban centers by farmers and other entrepreneurs:
   - Input Benefits
     - Travel Time Saving
     - Vehicle Operating Costs Savings
   - Output Benefits
     - Employment Benefits
     - Accessibilities and Social Inclusion Benefits
2) Human Capital – to what extent has the rehabilitated road, improved access to social services such as education and health facilities concentrated in urban areas or in neighboring village:
   - Education Benefits
   - Health Care Benefits
3) Road Safety – to what extent do household members believe road safety has improved along the road because of the rehabilitation.
   - Road Accidents Savings
   - Traffic Signalization
   - Road Safety Benefits
4) Land Value and New Opportunities
   - Land Value Savings
   - New Opportunity Benefits

4.1. Qualitative analysis

4.1.1. Structure of focus group discussions and in-depth interviews

For the purpose of this STUDY, the following six focus groups were defined: women entrepreneurs, young people, the elderly, farmers, unemployed, and employed individuals. The interviews provide the necessary data to perform the qualitative analysis, and to capture the non-monetized socio-economic impact effects on the previously listed **benefits**: *Employment, Accessibilities and Social Inclusion, Education, Health Care, Road Safety, and New Opportunity*. In APPENDIX 4, Customized Questionnaires used for these interviews are presented.

Two focus groups were selected in each municipality as required by the TOR. The selection was based on the specific socio-demographic structure of the villages. Each group consisted of 5 to 15 respondents. This component included frequent traveling and meeting with all notified stakeholders. PESR authorities previously confirm the list of stakeholders. In total there were 20 focus groups with 135 participants. Based on the gender structure, from the 135 participants in the focus groups, 122 (86.7%) are males and 18 (13.3%) are females.

Semi structured interviews were conducted with other stakeholders such as Municipal road and urban planning departments, bus and van drivers (transporters), and businesses that use the rehabilitated roads. The semi-structured interviews consists of questionnaires designed with open questions used as a framework of themes explored during the interviews. The semi-structured interviews allowed the interviewer to make an in-depth qualitative research of the stakeholders' benefits from the business point of view. In APPENDIX 5, the questionnaires used for the semi-structured interviews are presented. Experts interviews were conducted with the representatives from municipalities (total of 22 interviewees), representatives from carrier companies that offer services on the rehabilitated roads (14), and representatives from the business communities (20), total of 55 expert interviews in ten municipalities: Kicevo, Demir Hisar, Tetovo, Berovo, Vinica, Resen, Bitola, Struga, Kocani, and Gazi Baba.

Work plan for conducting the STUDY by Municipalities and Roads is provided in APPENDIX 6 of this Report.

4.2. Quantitative analysis

A scheme's Present Value of benefits is defined as the change in the discounted value of the users' benefits in the "After" and "Before" scenario (after and before the roads rehabilitation), called incremental benefits. Those benefits (**savings**) to which money calculation can be applied (*Travel Time, Vehicle Operating Costs, Reduction of Road Accidents, and Land Value savings*) were monetized using the present value equation:

$$PV = \sum_{t=0}^{T} Ct \times \frac{1}{(1+r)^t}$$

Equation 1 Present Value

where, *PV* is the present value of the stream of benefits from year *t* to year *T*, *Ct* is the benefit incurred in year *t, and r* is the discount rate. For the purpose of this STUDY, 5.5 % social discount rate is used according to the EU Guide for CBA for transport for Cohesion countries (p. 16 and p. 57). For the estimation of future values of benefits, the benefits were adjusted using an adjusted per capita growth rate of GDP (Macedonian average annual GDP real growth rate is 3.36% for the period 1998 – 2011 (State Statistical Office). For the adjustment - in the absence of local data – an elasticity between GDP and the money value of time savings of ε=0.7 was applied. In addition, according to HEATCO (p. s5) default inter-temporal elasticity to GDP per capita growth of 0.7 is recommended, with a sensitivity test at 1.0 (for all passenger travel purposes, work and non-work and for commercial goods traffic), which is in line with what is done in this STUDY. Thus, the adjusted GDP average annual growth rate used in this STUDY equals to 2.352%. Exchange rate of 1 EUR = 61.7 MKD is used when converting money.

The cash flow calculations were performed in real terms. According to the EU Guide for CBA (p. 16), the time horizon must be consistent with the economic life of the main assets. The reference time horizon (appraisal period) for this STUDY is defined to be 25 years (2014-2038). This is in line with the EU Guide for CBA, which recommends a reference time horizon of 25 years for roads projects (p. 37). The appropriate residual value is included in the accounts in the end year. Relative price changes were treated in a consistent way.

4.3. Methodological limitations and assumptions of the analysis

Since the "before and after" analysis was used to assess the socio-economic impact from the roads rehabilitation, this STUDY was subject to important caveats.

First, is the period. The 21 local roads subject to this analysis were not rehabilitated at the same time, but during 2008-2012. This means that the impact from the roads rehabilitation has different time framework for different municipality.

Second, the assessment is done only few years after the completion of the project (different for different section 1 to 5 years), which creates the problem of maybe not having enough time to determine all the effects and their entire sizes.

Third, although in most of the villages subject to this STUDY the road rehabilitation is the only significant infrastructure project realized, and at the same time, the most important one for the assessed impacts there could be other factors that moderately contributed as well. For example, the increased number of vehicle movements could be also a result from the increased people's motorization; decreased unemployment could be a result from government or municipality's policies that increase the economic activity of local citizens; etc. Thus, for the purpose of this study the assumption goes in line with the ceteris paribus principle i.e. the impacts were assessed as only the road conditions changed (roads rehabilitation) and all other factors were not changed (and thus not taken into consideration when making the analysis). This assumption (limitation) is justified by the explanation given in the beginning of this paragraph, and with the fact that all data received from the focus groups and other stakeholders were based on the question "what were the effects that the road rehabilitation has on …"

5. DETAILED ANALYSIS OF OBSERVATIONS FROM THE RESEARCH

5.1. Market Access

Improvements from the beneficiary point of view in aspect of Market Access were assessed by determining the productivity level and access to markets by different focus groups (as defined previously).

Productivity is measured as a ratio between the Outputs and Inputs, thus for the purpose of this STUDY comparative analysis of the Productivity in the "After" and "Before" scenario was made, in order to assess if the rehabilitated roads have increased the productivity.

5.1.1. Input Benefits

"Input" benefits were determined by calculating the Travel Time Savings and Vehicle Operating costs Savings.

5.1.1.1. Travel Time Savings

Travel Time Savings (TTS) often represent the most important element of a transport project benefits. Some European countries provide the evaluators with national estimates of the time value by purpose and sometimes by mode, in particular for passengers. In the absence of these reference estimates, it is possible to derive the values of time from the users' actual choices, or to re-adjust and to re-weight the estimates from other studies on the basis of income levels (EU Guide for CBA, p.79), which was done in this STUDY.

Detail calculation of the economic benefits associated with TTS is provided in APPENDIX 7 of this Report. The total user benefit from TTS is the sum of all time saving for all origin-destination movements and type of traffic (passenger and commercial goods). Total TTS for passenger traffic amount to 52 million EUR, while the total TTS for commercial goods traffic around 1.7 million EUR, or all together TTS of 53.7 million EUR for all local roads subject to this STUDY.

5.1.1.2. Vehicle Operating Costs Savings

Differences in the Vehicle Operating Costs (VOC) incurred by traffic using the road network after rehabilitation compared to the VOC incurred by traffic using the non rehabilitated roads are recorded among the benefits resulting from a road improvement (NESA Manual, 2013, p. 6-3-1).

The change in total VOC over all links depends on changes in the distance travelled by vehicles and on average link speeds. VOC in NESA Manual comprises six items: fuel, oil, tyres, maintenance, depreciation, and size of vehicle fleets. Only items which vary with the use of the vehicle are measured so, for example, vehicle excise duty, insurance and garaging are excluded from VOC.

Detail calculation of the economic benefits associated with VOC savings is provided in APPENDIX 9 of this Report. The total user benefit from VOCS is the sum of all vehicle operating costs savings (fuel consumption and non-fuel elements) for all origin-destination movements and type of traffic (passenger and commercial goods). Total VOCS from fuel consumption amount to 14.3 million EUR, while the VOCS from non-fuel elements is around 7.7 million EUR, or all together total VOCS equals 22 million EUR.

5.1.2. Output Benefits

"Output" benefits were determined by calculating the employment and accessibilities and social inclusion benefits from the roads rehabilitation.

5.1.2.1. Employment benefits

In order to calculate the employment benefits, the official unemployment data from the Macedonian Employment Agency were used and the data in the "After" and "Before" scenario were compared in order to determine the change in the unemployment rate. Since the 21 local roads subject to this STUDY were rehabilitated during the period 2008-2012, from the Macedonian Employment Agency unemployment data for December 31, 2007 and January 31, 2014 were asked (and were used as comparable). The percentage change in the total unemployment and additionally the percentage change in the women unemployment were analyzed. The relative percentage change in the unemployment rate was not measured since there is no statistical data on the number of people living in that specific local places and especially the work force (last official census in Macedonia per local place was in 2002).

Table 10 Employment Benefits

Region	Municipality	Local Places	Unemployed			Unemployed (women)		
			Dec. 2007	Jan. 2014	% change	Dec. 2007	Jan. 2014	% change
Mountain Region	Kichevo	Brzdani	39	16	-59.0%	18	6	-66.7%
		Drugovo	245	273	11.4%	112	137	22.3%
		Knezino	1	2	100.0%	0	0	no change
		Krusino	1	0	-100.0%	0	0	no change
	Demir Hisar	Zashle	5	3	-40.0%	1	0	-100.0%
		Kocishta	5	4	-20.0%	1	0	-100.0%
	Tetovo	Trebosh	285	201	-29.5%	121	74	-38.8%
	Berovo	Vladimirovo	179	97	-45.8%	73	52	-28.8%
		Rusinovo	535	353	-34.0%	197	159	-19.3%
	Vinica	Dragobrashte	67	49	-26.9%	18	19	5.6%
		Pekljani	81	52	-35.8%	26	17	-34.6%
Lowland Region	Resen	Dolna Bela Crkva	47	25	-46.8%	18	13	-27.8%
		Stenje	29	22	-24.1%	6	5	-16.7%
	Bitola	Poeshevo	44	26	-40.9%	14	10	-28.6%
		Dolno Orizari	350	257	-26.6%	163	124	-23.9%
		Karamani	85	60	-29.4%	28	28	0.0%
		Trn	31	21	-32.3%	8	7	-12.5%
	Struga	Veleshta	486	232	-52.3%	158	73	-53.8%
		Dolna Belica	149	90	-39.6%	44	24	-45.5%
		Misleshevo	170	147	-13.5%	60	64	6.7%
	Kochani	Jastrebnik	9	3	-66.7%	3	0	-100.0%
		Leshki	4	2	-50.0%	1	0	-100.0%
		Trkanje	253	171	-32.4%	86	56	-34.9%
	Gazi Baba	Rashtak	5	18	260.0%	3	10	233.3%
Weighted Average Change					**-44.7%**			**-52.8%**

(Source: Macedonian Agency for employment, Authors' own calculations and creation)

Based on the performed comparative analysis, decreased unemployment rate was determined in most of the selected local places both for the total unemployment and for women only (Table 10). Weighted average percentage change for total unemployment (all local places) is (- 44.7%), while the weighted average percentage change for women unemployment only (all local places) is even

higher (- 52.8%). This means that during this period (January 2008 – January 2014) women represent higher percentage of the new employees.

In order to capture the data on additional working engagements activity and economic opportunity of local population within the community the questionnaires provided in APPENDIX 4 and 5 were used. Based on the performed interviews concluded is that in most local places subject to this STUDY there are positive employment benefits related to road rehabilitations (below in details).

5.1.2.1.1. Municipality Kichevo (Krushino, Knezino, Drugovo, Brzdani)

The benefits from the roads rehabilitation in the local places in municipality of Kichevo are relatively small. Yet, one significant benefit is related to the tourist business development in Krushino and Knezino. The House of Art in Knezino invested in extension of the restaurant terrace. Several individuals from Krushino invested in greenhouses and beehives. Interviewees from Brzdani point out investments in beehives. Knezino's citizens gain additional income from harvesting chestnuts. The respondents from the Knezino's business community report on investments in orchards. In addition, there have been significant investments in weekend houses and residual dwellings in Knezino. Roads rehabilitation creates benefits to companies that have concession for timber exploitation. Interviewees from the business community in Drugovo emphasized the constructions of private dwelling houses. Interviewees from Brzdani mentioned similar investments in renovation of old residual houses in their community. Travel costs cutting in local goods stores as positive effects from the road rehabilitation were identified.

5.1.2.1.2. Municipality Demir Hisar (Dolenci, Pribilci)

Municipality authority' experts considered that good roads are preconditions for local economic development but not a key factor. Based on their opinion the road rehabilitation in Dolenci and Pribilci did not have significant effect on the local communities' economic development. New endorsed Law on Spatial and Urban Landscaping stopped all infrastructural investments. In Zashle (Pribilci), there are several renovated private houses after the road rehabilitation. Local citizens from Pribilci think that the farms opened prior to the road rehabilitation have already positive economic benefits. Road rehabilitation contributes to better agricultural product placement from the local community. Local citizens and outsiders are engaged in harvesting forest fruits and mushrooms and tobacco assembling seasonal activity. The focus group of pensioner and employed persons from Dolenci point out that the road rehabilitation did not instigated new businesses, but it had positive effects on the already existing limestone production plants.

5.1.2.1.3. Municipality Tetovo (Trebosh)

Rehabilitation on the section Tetovo – Trebosh has significant influence for business development in the village Trebosh. Construction of a biogas plant is the most significant investment identified. Already existing poultry farm, an economic capacity of vital interest for the community, made this investment. As pointed out by the youth focus group, there are new agricultural investments in greenhouses. Farmers from Trebosh noted that people from other communities, owners of arable land along the road, show interest in agricultural investments. Prior to the road rehabilitation there were sawmill and cement blocks factory established in the community. Respondents reported earnings from engagements other than wages, social transfers and rent. Interviewees stated that the road rehabilitation increase the engagement of seasonal workers from other communities in Trebosh and from Trebosh in other communities as well. According to their statements, road rehabilitation

significantly increases the land value, especially of parcels that have direct access to the rehabilitated road. Extension of the city margins of Tetovo towards the village Trebosh combined with the road rehabilitation, increase the construction activities i.e. increase the investments in new houses.

5.1.2.1.4. Municipality Berovo (Rusinovo, Vladimirovo)

The statistics show an evident employment growth for the citizens of Rusinovo and Vladimirovo. Roads rehabilitation in Rusinovo and Vladimirovo contribute to improvement of the Fungi flora business – established a purchasing post for forest fruits by a company from Radovish. It is important to emphasize the investment in sawmills in Rusinovo, after the road rehabilitation. This investment effectuated in employment of six people. The interviewees from Vladimirovo pointed out on some direct benefits from road rehabilitation on local restaurants. According to them, it enabled better approach to restaurants, thus contributed to an increase in the number of costumers. According to the interviewed carriers, engagement of seasonal workers from both communities increases for 10% after the road rehabilitation. Seasonal work is related mainly with harvesting forest fruits, mushrooms and herbs as well as cultivating agricultural products such as plums and potatoes. Local citizens gain additional income from production of plum brandy.

5.1.2.1.5. Municipality Vinica (Pekljani, Dragobrashte, Maala Mirmarci)

Road rehabilitation was the driving force for economic development of Pekljani according to the interviewed municipality authorities. The main industrial investment after the road rehabilitation is the sawmill plant. In addition, constructed are few industrial halls and orchards for raising apples and grapes. Pekljani had a tradition of growing orchards with wild cherries, and the road rehabilitation improved the placement outside the community. There are several companies opened prior to the rehabilitated road. The most significant is the pig farm, with approximately 5,000 pigs, located on Pekljani's entrance. The local businessperson pointed out that the road rehabilitation influenced his decision to keep his furniture production business in the community and to make additional investments. Road rehabilitation makes the community companies more attractive for outside business community. As a smaller scattered mountainous village, Dragobrashte (and Maala Mirmarci) has fewer investments, mainly in agriculture and private housing. There is a small improvement in the arable land cultivation. Local citizens believe that the road rehabilitation instigated people who originate from this village, and now live in Vinica and Kochani, to start working on their fields. New-planted vineyards and few small-scale farms are the results from the road rehabilitation. According to the carriers workers daily migration from Dragobrashte to the nearby city of Vinica is increased. Finally, the road rehabilitation increases the land value.

5.1.2.1.6. Municipality Resen (Dolna Bela Crkva, Stenje)

Dolna Bela Crkva and Stenje are predominantly apple growing agricultural communities. Preservation of apples' quality, during transport from the orchards to warehouses and their placement on market, is one of the key economic benefits produces by the road rehabilitation. Intact apples reach higher value on the market. Based on the focus group's opinion, no employment was initiated from the road rehabilitation in Dolna Bela Crkva. According to the acquired information, in the village of Dolna Bela Crkva, citizens, especially women, work as seasonal workers in the process of packing apples. In addition, some members from households that possess smaller size apple orchards, during harvest are engage as seasonal workers. These engagements offer an

important supplement to their household income. During harvesting season, the community engages seasonal workers from other communities, including workers from Albania. Nonetheless, all interviewees share the opinion that there is no direct connection between the seasonal work engagement and the road rehabilitation. The road rehabilitation in Stenje contributed to several private investments related to construction of weekend houses. According to the entrepreneurs' opinion, the biggest benefits are for the small shops lined up on the rehabilitated road. Focus group from Stenje pointed out that opening of the textile factory increase the employment. Fishing provides additional income to households, although not legally allowed, since the lake has its concessioner. Finally, it is important to emphasize the new hydro meteorological institute, build in Stenje, after the road rehabilitation.

5.1.2.1.7. Municipality Bitola (Dolno Orizari, Karamani, Trn, Poeshevo)

Municipality authorities and carriers from Bitola share the opinion that the rehabilitated road has positive effects on economic development in Poeshevo. This village is located near the vicinity of former plant "Bitolateks", now transformed into a complex of industrial plants. This industrial site has a cardboard plant, a sugar factory, and a foreign investment in new textile facility. From carriers' point of view, the road rehabilitation has positive impact reflected in fuel and vehicle maintenance costs reduction, and thus increases local businesses revenues. They, also, consider that a faster and more confortable transport provide better opportunities for product placement. Focus group respondents are positive on the road rehabilitation impact on seasonal workers engagement in the community. In Dolno Orizari and Karamani, milk production is a highly developed business. These are mostly family owned businesses where women play an important role as entrepreneurs. The rehabilitated road provide better access to dairy purchasing Centre, thus creates positive economic benefits for the families involved in this business. In the village Trn, road rehabilitation initiated investment in production of mineral water and CO^2 gas. This factory employs mainly local citizens. Road rehabilitation in Dolno Orizari, Trn and Karamani, facilitates local citizens employment in the nearby factory for frozen dairy products "Cermat". Prior to the road rehabilitation new factory for production of cement byproducts was established in Dolno Orizari, taking into account the future benefits created with the road rehabilitation.

5.1.2.1.8. Municipality Struga (Misleshevo, Velesta, Dolna Belica)

The research shows most positive economic impact from roads rehabilitation in municipality of Struga, where the number of newly established economic capacities is significantly higher than in the others. The rehabilitated road Veleshta – Dolna Belica had positive economic impact on all commuting local places. The focus group' interviewees emphasized the following established economic capacities after the road rehabilitation: base for asphalt, cement factory, warehouse, briquettes plant, and several new restaurants. In addition, respondents consider that the enlargement of the stone quarry, established prior to the road rehabilitation, is a significant economic opportunity for the entire community. The rehabilitated road in Misleshevo initiated opening of a new agricultural products factory, a warehouse, mechanic shop, textile factory, and a shop for agricultural mechanization. Apart from the new employment opportunities derived from the above-mentioned investments, because of the road rehabilitation, local citizens from Misleshevo have opportunities for additional income from renting rooms during summer season.

5.1.2.1.9. Municipality Kochani (dam Gradche, Jastrebnik, Trkanje)

The rehabilitation of the road Kochani - dam Gratche has a positive economic impact on the touristic and hospitality enterprises established along the dam. Road rehabilitation initiated an investment by a prosperous local businessperson in buying the existing Hotel. The new owner has developed an investment plan for upgrading the touristic and hospitality business. The owner believes that the improved hotel management, will at least double the number of employees. Road rehabilitation has positive effect on seasonal workers engagement by the touristic and hospitality enterprises established along the road. The site offers opportunities for developing fishing and hunting tourism as well. There has been an investment in construction and opening of a new fish farm. Some of the local citizens' investments are in utilization of nature given possibility for honey production. There have been a numerous beehives lined along the road. Considering that this road primarily connects the city of Kochani with one of its most favorable local recreational Center, there are some construction investments in local weekend houses. Village Jastrebnik is also experiencing the positive effects from the road rehabilitation, even though the village is in an urgent need of an additional road construction (from dam Gradche to the village) to fully enjoy the benefits. There has been one investment in a small family owned caw farm, modest investments in renovation of private homes, and some enlargements in the size of arable land. Community re-settlers made most of these sporadic investments. Following the road rehabilitation in the village of Trkanje there have been several investments, among which as most significant is the opening of a new furniture factory "Yumis". The factory has approximately thirty employees out of which half are from Trkanje, and mostly young people. This is very important having in mind the process of youth migration in foreign countries in the past 15 years. Prior to the road rehabilitation there was an operating sawmills. There is a significant engagement of seasonal workers during the harvesting from neighboring communities Ceshinovo and Kochani experiencing benefits from the road rehabilitation. From the interview with the businesspersons in Trkanje, concluded is that on average they enlarge their businesses by 30% after the road rehabilitation.

5.1.2.1.10. Municipality Gazi Baba (Rashtak)

The focus group with young people from Rashtak and experts from the municipality authorities state that the road rehabilitation did not have tremendous direct effects on community's economic development. There are no new economic capacities established after the rehabilitation. Nonetheless, indirectly the road rehabilitation attracts investments related to old houses renovation and building new ones. In addition, the positive economic effects are identified in possibility for faster, cheaper and more confortable placement of agricultural products on city's green markets. Business focus group reported 70% costs and time saving. Improved market placement refers to all products that originate from the community. The municipality authorities pointed out the engagement of seasonal workers for cleaning the road from the access grass and branches as well as the waste dumped along the road.

Except for the case of Rashtak (Municipality of Gazi Baba), roads rehabilitation has biggest effects on employment opportunities in communities that gravitate toward more densely populated cities.

5.1.2.2. Accessibilities and social inclusion benefits

According to the Study of the Socio-Economic Impacts of road condition on low volume roads (2004), regarding this objective two items were tested: Community accessibility (access to local services) and Comparative accessibility (distribution of accessibility impacts by people group and location).

According to the previous, the questionnaires provided in APPENDIX 4 and 5 capture the impact that the rehabilitated roads provide for each focus group in terms of access to local services, network coverage, and other social inclusion benefits.

5.1.2.2.1. Community accessibility

Without exceptions, the roads rehabilitation facilitate and improved access to local services such as health care, social, and educational institutions, economic capacities, municipality authorities, markets, etc. In some communities such as Trsino established are new institutions (new kindergarten and ambulance). This kindergarten accommodates only children from Trsino (Municipality of Vinica), whereas the ambulance provides services to residents from surrounding villages as well (Dragobrashte, Maala Mirmarci). Another case is the mobile kindergarten that provides services once a week for the children of Poeshevo (Municipality of Bitola).

Road rehabilitation on the section Kochani – dam Gratche enabled organization of more social and cultural events. Road rehabilitation on the sections A3 – Trkanje (Municipality of Kochani) and Resen – Dolna Bela Crkva (Municipality of Resen), provide public transportation for the pupils to/from their schools from/to their villages, service that was not able before. During bad weather conditions – snow, rain, and mud and dust on the road, kids were forced to travel by foot to the regional road since the buses were not entering the village as a result of the bad road conditions. Several bus lines per day service those communities after the road rehabilitation. Pensioners positively evaluate the opening of the pensioners club after the road rehabilitation in Trkanje (Municipality of Kochani) to whom this club means a lot for their socialization.

Citizens of Rusinovo (Municipality of Berovo) point out that the healthcare services are more frequent after the road rehabilitation. Without any exception, rehabilitated roads in all communities decrease the time needed for the local citizens to reach healthcare service (emergency healthcare vehicles, walk-in clinics, patronage services, and mobile medical teams).

Rehabilitated section Tetovo - Trebosh, not even used before the rehabilitation substantially decreases the number of accidents evident on the road used as substitution before the rehabilitation. In addition, this section enable youth from Trebosh to use the playgrounds that this section connects with the village Trebosh.

An obstacle of providing the local stores with food supplies due to bad road conditions was overcame with the road rehabilitation in Dolna Bela Crkva (Municipality of Resen). In many local places like Misleshevo (Municipality of Struga), Stenje (Municipality of Resen), and Trkanje (Municipality of Kochani), there is still non-asphalted roads that connects the economic capacities, and thus the merchandise is transferred on hands or other non-standard means of transportation (see next section for network coverage – comparative accessibility).

Road rehabilitation of all sections subject to this STUDY substantially increase the number of people (both youth and elderly) attending extracurricular activities (learning languages, sport clubs, dance clubs, folklore sections, etc.). Local citizens are filling more confortable allowing their kids to visit these extracurricular activities after the road rehabilitation.

5.1.2.2.2. Comparative accessibility

Based on the performed interviews and data received from the municipality authorities and focus groups it is concluded that rehabilitated roads significantly improved the network coverage in all local places, but there is still local roads (network) need to be rehabilitated or built in almost all

local places subject to this STUDY. In Table 11, the current situation (asphalted and non-asphalted roads) in all local places is presented.

Table 11 Network Coverage (asphalted and non-asphalted roads)

Region	Municipality	Local Places	Roads in local places (in km)	
			Asphalt	No Asphalt
Mountain Region	Kichevo	Brzdani	4.5	0.6
		Drugovo	2.5	2.0
		Knezino	3.3	0.8
		Krusino	2.3	0.0
	Demir Hisar	Dolenci (Zashle)	0.9	0.5
		Pribilci (Kocishta)	2.0	1.2
	Tetovo	Trebosh	1.4	2.6
	Berovo	Vladimirovo	4.5	0.9
		Rusinovo	5.4	2.3
	Vinica	Dragobrashte	1.1	2.8
		Pekljani	2.8	1.5
Lowland Region	Resen	Dolna Bela Crkva	1.4	0.4
		Stenje	1.1	0.5
	Bitola	Poeshevo	4.0	1.5
		Dolno Orizari	2.5	7.0
		Karamani	2.0	2.0
		Trn	2.0	2.0
	Struga	Veleshta	8.0	12.0
		Dolna Belica	4.5	2.0
		Misleshevo	10.0	3.6
	Kochani	Dam Gradce	4.8	1.0
		Trkanje	3.0	1.5
	Gazi Baba	Rashtak	15.4	2.1
TOTAL			**89.4**	**50.8**

(Source: Municipality authorities and focus groups' data, Authors own' calculation and creation)

The 21 roads rehabilitated under this STUDY are in total length of 44.87 km or 32% from the entire network of 140.2 km. Table 11 calculations show that together with the existing network, 89.4 km or 63.76% are rehabilitated or built. On-site visits shows that those non-asphalted 36.24% are also from great importance to all local citizens, and thus the recommendation is not to stop with the rehabilitation but to continue and to finish with the rest 50.8 kilometers in this 21 local places. This will provide the minimum accessibility to all people who live and visit these communities. Road associated infrastructure (water and sewage system, lighting poles, etc.) in most of the researched communities either is partially or does not exist at all. This prevents future expansion and development of these villages and kindles existing residents' emigration. If these essential living conditions are not provided in near future, on short run, it may further encourage youth emigration from these villages, and on long run, it may jeopardize even the existence of these villages.

In Stenje those non-asphalted 500 meters connects the main street with the touristic capacities (motel and beaches on the lake). Current condition of this non-asphalted road (dust, mad, and big wholes) is below any standards not just for a touristic place but for any other place. Construction of these 500 meters will enable future touristic development of this place. The municipality authorities invested in new water supply system. Focus group participants have emphasized the importance of building roads that lead to the village graveyards, the police station, and the road that connects them with the village of Konjsko. In addition to this, an entrepreneur woman point out that there is no asphalt to their farm.

The local road infrastructure in the researched communities in Bitola is dissatisfying. This is mainly due to the non-adopted rural urbanization plans (this is also the case in most of the researched local places). According to the municipality authorities, no additional investments exist in terms of water

or sewage infrastructure in researched communities. These villages in Bitola (Dolno Orizari, Karamani, and Trn) receive water through individual wells, whereas the fecal wastewaters are collected in individual septic tanks. Municipality authorities provided information about a grant from the EBRD funds for connecting these local communities to the city water supply system but for now, they do not have adequate information about the implementation dynamics. In addition, the asphalt coverage of local streets in these communities is very low or does not exist. People in this places are forced to carry their children with their cars every day to the main street (or their schools) in order to take bus, because the mud and dust roads makes the walk very difficult. Asphalted is only the main street that connects these villages (Dolno Orizari, Karamani, and Trn). In Poeshevo, another village from this municipality needs at least 50 meters of asphalt to connect with the local Church.

Apart from the rehabilitated roads, in many of the researched communities there is a need for additional infrastructural investments. Villages of scattered type, in accordance to their layout, require greater infrastructural investments. According to municipality plans, there was an investment in construction of a new water supply system in Rashtak. In additional to this, the community needs new water reservoir, an investment in sewage system, and pavement of streets in length of 2.14 km.

In Misleshevo, the non-asphalted 500 meters road prevents loading and unloading of tracks directly from/to the local textile factory. This causes additional expenses for tractors and people engagement in order to transport the goods 500 meters away from/to the factory. In Veleshta, people even start to build the local streets by themselves in despair from the current situation.

The municipality authorities from Kochani had additional investments in a new water and sewage system in village Trkanje. Non-urbanized mountainous villages of Leshki and Jastrebnik connects dam Gratche with only a dirt road.

Interviewees from all researched communities show great concern for the rehabilitated roads preservation. In many of these communities, trucks carry more than the permitted load for this kind of roads and thus cause damages on the rehabilitated roads (especially in the Mountain region). For several communities like Misleshevo, Poeshevo, Dolno Orizari, Karamani, Trn, and Stenje, road quality maintenance depends on drainage system construction. Finally, some respondents from Poeshevo, Dolna Bela Crkva, Stenje and Mislehevo expressed dissatisfaction with the way the road rehabilitation was performed in regards to the road quality, thickness and leveling.

5.2. Human Capital

In this part was determined to what extent has the rehabilitated road, improved access to social services such as education (education benefits) and health care facilities concentrated in urban areas or in neighboring village (health care benefits).

5.2.1. Education Benefits

For this task, first, the access to educational facilities by pupils enrolled in preschool, primary and secondary education using the rehabilitated roads subject to this STUDY was analyzed. Second, literacy level among pupils was analyzed, where the number of pupils involved in extracurricular activities also using the rehabilitated roads subject to this STUDY was analyzed. Last in this segment of educational benefits, analyzed was the lifelong literacy level i.e. the involvement of local citizens in lifelong learning processes that are part of their professional development.

5.2.1.1. Access to educational facilities

Municipality authorities, provide free transportation for pupils to whom the primary and secondary schools are not available in their local places. Based on this obligation, in the local places subject to this STUDY, 1,587 pupils are experiencing the positive benefits from the roads rehabilitation. Pupils that attend primary and secondary education in neighboring communities are using the rehabilitated roads on a daily bases during the entire school year, which gave the roads rehabilitation even great importance.

In Table 12, the number of pupils enrolled in primary and secondary education using the rehabilitated roads subject to this STUDY is presented. For the task, the carriers' data obtained during the interviews were used, using the questionnaires provided in APPENDIX 5. The table refers to all pupils that commute through the rehabilitated roads, regardless if they originate from the local community or are from neighboring communities, in order to attend certain level of education. Pupils from Rashtak do not use the rehabilitated road for transportation. There are no pupils that require school transportation from Jastrebnik, Leshki, Knezino, Krushino, and Dolenci.

Table 12 Pupils enrolled in primary and secondary education using the rehabilitated roads

Region	Municipality	Local Places	Primary School			Secondary School	TOTAL
			1 to 5 grade	6 to 9 grade	1 to 9 grade		
Mountain Region	Kichevo	Brzdani			4	8	12
		Drugovo				168	168
		Knezino					0
		Krushino					0
	Demir Hisar	Dolenci (Zashle)				2[3]	2
		Pribilci (Kochishta)			8	7	15
	Tetovo	Trebosh				400[4]	400
	Berovo	Vladimirovo		21		17	38
		Rusinovo				65	65
	Vinica	Dragobrashte				6	6
		Pekljani		12		13	25
Lowland Region	Resen	Dolna Bela Crkva		4		4	8
		Stenje	13[5]	26[6]		10[7]	49
	Bitola	Poeshevo		11		9	20
		Dolno Orizari				116	116
		Karamani		9		24	33
		Trn	4	6		10	20
	Struga	Veleshta		25[8]	34[9]	239	298
		Dolna Belica				52	52
		Misleshevo			70	105	175
	Kochani	Jastrebnik					0
		Leshki					0
		Trkanje		55		30	85
	Gazi Baba	Rashtak					0
TOTAL			**17**	**169**	**116**	**1,285**	**1,587**

(Source: Carriers, Authors' own creation and calculation)

[3] Pupils from surrounding village
[4] Pupils that commute via the rehabilitated road in Trebos, including the ones from Palatica
[5] Pupils from the locality of Carina that attend primary school from 1 to 5 grade in the regional school in Stenje
[6] 20 pupils from Carina and 6 pupils from Stenje
[7] 4 pupils from Stenje and 6 pupils from Carina
[8] Pupils that attend the school in Veleshta but live in Dobovljane, neighboring village where primary school education is available only from first to fifth grade
[9] Pupils that live in Veleshta but use organized transport because they live on a distance longer than 2 km

The researched communities are no different from other rural areas in Macedonia in providing access to organized preschool education. Prior to roads rehabilitation, the only available kindergarten was in Rusinovo. After the roads rehabilitation, children from the villages of Poeshevo and Trsino can use the services of the newly opened kindergarten in their communities (mobile one in Poeshevo). The preschool education benefits in near future will be also available to citizens from Dolno Orizari, where a new kindergarten is in a process of construction. From the researched communities, primary education (from 1 to 9 grade) is provided in communities of Drugovo, Rusinovo, Dragobrashte, Dolno Orizari, Veleshta, Dolna Belica, Misleshevo and Trebosh. Whereas, primary education (from 1 to 5 grade) is organized in: Brzdani, Dolenci, Vladimirovo, Pekljani, Poeshevo, Karamani, Trkanje, and Rashtak. After the road rehabilitation, closed are the primary schools in Trn and Pribilci.

Improved transport quality and faster transportation are some of the biggest pupils benefits realized with the roads rehabilitation. Faster transportation assumes more time for learning, bedtime, and extracurricular activities. In the case of some communities like Trkanje (Municipality of Kochani), Dolna Bela Crkva (Municipality of Resen), and Trn (Municipality of Bitola), roads rehabilitation enabled pupils' public transportation to/from their schools from/to their villages, service not available before. Before the roads rehabilitation, pupils went on foot from their homes to the main road sometimes even 2 km, under bad weather conditions (snow, rain, extreme heat, mud and dust).

5.2.1.2. Extracurricular educational activities

Second, in order to assess the literacy level among pupils, two analyses were performed: pupils involved in extracurricular educational activities over enrolled pupils, and the quantity and quality of the organized extracurricular educational activities. For this purpose, carriers' data related to organized extracurricular educational events were used, using the questionnaires provided in APPENDIX 5. In Table 13, findings related to pupils involved in extracurricular educational activities are presented.

Table 13 Pupils involved in extracurricular educational activities using the rehabilitated roads

Region	Municipality	Local Place	Primary School	Secondary School	TOTAL	Extracuricular activities	% partcipation
Mountain Region	Kichevo	Brzdani	4	8	12	4	33%
		Drugovo	240	168	408	50	12%
		Knezino	0	0	0	0	n/a
		Krusino	0	0	0	0	n/a
	Demir Hisar	Dolenci (Zashle)	0	2	2	0	0%
		Pribilci (Kocishta)	8	7	15	5	33%
	Tetovo	Trebosh	411	400	811	50	6%
	Berovo	Vladimirovo	43	17	60	15	25%
		Rusinovo	146	65	211	20	9%
	Vinica	Dragobrashte	66	6	72	30	42%
		Pekljani	27	13	40	3	8%
Lowland Region	Resen	Dolna Bela Crkva	4	4	8	4	50%
		Stenje	39	10	49	3	6%
	Bitola	Poeshevo	30	9	39	15	38%
		Dolno Orizari	147	116	263	50	19%
		Karamani	9	24	33	10	30%
		Trn	10	10	20	4	20%
	Struga	Veleshta	381	239	620	50	8%
		Dolna Belica	69	52	121	40	33%
		Misleshevo	200	105	305	50	16%
	Kochani	Jastrebnik	0	0	0	0	n/a
		Leshki	0	0	0	0	n/a
		Trkanje	131	30	161	60	37%
	Gazi Baba	Rashtak	15	12	27	5	19%
TOTAL					**3,277**	**468**	**14%**

(Source: Carriers' data, Authors' own creation and calculation)

Generally, pupils from local places subject to this STUDY are mainly involved in language classes, predominantly learning English language, and folklore sections. From sports activities, mostly they are members of football clubs. Nonetheless, there are children that train basketball (Trkanje), boxing (Trebosh), karate (Pekljani), and folklore sections (Stenje). For most of the interviewees, there is a positive correlation between the number of pupils visiting extracurricular educational activities and the roads rehabilitation. Municipality Centers, mainly the urban cities offer most of the extracurricular activities. Nonetheless, in several of the researched local places there are privately organized language schools. For example in village Trkanje, some of the children that attend foreign language classes are living in nearby villages, whereas some of the children (approximately 20) from Trkanje attend language schools in Kochani. In addition, there is a language school in Karamani visited by children from Trn apart from the local children.

5.2.1.3. Lifelong learning processes

Last in this segment of educational benefits, the involvement of local citizens in lifelong learning processes that are part of their professional development was analyzed, for which the previously mentioned sources and data were used also. Roads rehabilitation led to the organization of few events that can be put down in this group: educational events by the Ministry of agriculture and IPARD Funds in Municipality of Vinica (v. Pekljani and v. Dragobrashte); Project "With education against family violence" by Centre for Social Affairs and Ministry of Internal Affairs (7 workshops) in Municipality of Bitola (v. Dolno Orizari); Art Colony, Amateur drama festival, and Kochani - city of culture organized on dam Gradche in Municipality of Kochani; Courses for farmers entrepreneurs, women entrepreneurs, basic English, IT skills organized in Municipality of Gazi Baba (v. Rashtak).

5.2.2. Health Care Benefits

Comparative analysis in the “After” and “Before” scenario was made in order to determine the accessibility of focus groups to health care facilities/services. For this purpose, questionnaires provided in APPENDIX 4 and 5 were used to capture the focus groups’ point of view. Based on the findings, effects can be divided in two groups: facilitated transport from/to the closest city medical facilities and emergency assistance vehicles (faster and more comfortable transport); and enabled service, which was not the case before (new ambulance and pharmacy, or mobile medical teams). In Table 14, findings related to the Health Care Benefits are presented.

Overall, based on the findings from the conducted focus groups’ interviews, the roads rehabilitation improved the access to health care services in all local places subject to this STUDY. In most cases, local citizens are using the rehabilitated roads to access the nearest medical institutions in or outside their communities. Road rehabilitation provides people with the appropriate health assistance, which means timely receiving the necessary assistance (emergency healthcare vehicles, mobile medical teams) and quality transport of patients especially for those whose conditions require meticulous care in transport, which was not the case before.

Village Drugovo, Trebos, Veleshta, Misleshevo, Rusinovo, Trkanje, and Dolno Orizari provided ambulance services to their citizens prior to roads rehabilitation. Apart from general practice, the ambulance in Misleshevo offers dental services as well. The ambulance in Trkanje offers services to residents of surrounding communities as well. After the road rehabilitation, a new ambulance was open in Trsino (Dragobrashte). Local citizens from Stenje are hoping that they will have their ambulance opened soon. Citizens from Karamani noted interrupted construction of an ambulance in

their village two years ago. This ambulance was a donation from a Swedish organization but for some reasons the donor stopped the construction process.

It is important to emphasize the benefit from the road rehabilitation in Misleshevo in offering better access to the regional center for dialysis in Struga.

Provided are mobile doctor services in all communities with no rural ambulance due to the new Government project "Rural Doctor". This service is provided in Brzdani once a month, in Poeshevo and Misleshevo once a week, and for citizens of Kochishta (Pribilci) twice a week. Only, the respondents from Knezino pointed that they have not received this service. Local citizens from Rashtak have especially benefited from the road rehabilitation. Using the rehabilitated road they save a lot of time because due to the damages, the road was not even used before, instead they use another one which doubles the time (30 minutes instead of 15 minutes) to the nearest health care service in city of Skopje.

Table 14 Health Care Benefits

Municipality	Local Place	Ambulance	Paramedics	Mobile medical teams	Pharmacy	Patronage service
Kichevo	Brzdani	Closed	√ Faster	√ once a month	X	X
	Drugovo	√	√	X	X	√
	Knezino	X	√	X	X	X
	Krusino	X	√	X	X	X
Demir Hisar	Dolenci (Zashle)	Closed	√	√	X	√
	Pribilci (Kochista)	X	√	√	√	X
Tetovo	Trebosh	Closed	√, Faster	√	X	X
Berovo	Vladimirovo	X	√	√	X	√
	Rusinovo	√	√ Faster	√	X	√
Vinica	Dragobrashte	New ambulance in Trsino	√ New	√	X	
	Pekljani	√	√ Faster	√	X	
Resen	Dolna Bela Crkva	Closed	√ Faster	√ once a week	X	√
	Stenje	X	√	√	X	√
Bitola	Poeshevo	X	√ Faster	√ once a week	√,	√
	Dolno Orizari	√	√	X	√	√
	Karamani	In construction stopped 2years ago	√	√	√	√
	Trn	X	√	X	√	√
Struga	Veleshta	√,	√	X	√	√
	Dolna Belica	X	√	√	X	√
	Misleshevo	Ambulance and dental practice	√ Faster	√ once a week	X	√
Kochani	Jastrebnik	X	X	√	X	X
	Leshki	X	X	√	X	X
	Trkanje	√	√ Faster	X	√	√
Gazi Baba	Rashtak	X	√ Faster	√	X	√

Legend: Available √; Unavailable = X

(Source: Focus groups' data, Authors own' creation)

5.3. Road Safety

Road safety involves traffic participants' behavior (respect) under the road traffic rules, including the traffic participants' correlation, and the road traffic system' rules and road signs.

In this part, first, the savings from reduction of road accidents were calculated. Then, on-site control to assess the road safety (traffic signalization and road conditions) was made. Last, analyzed is to what extent household members believe road safety has improved along the road because of the rehabilitation using the questionnaires given in APPENDIX 4 and 5, the road safety from the focus groups' point of view was captured.

5.3.1. Road Accidents Savings

For this part, first, Ministry of internal affairs official data was used for the number and structure of road accidents (fatalities, severe injuries, slight injuries, damages only) per section for the period 2005-2013. Then the absolute difference for the period before (2005-2008), and after the roads rehabilitation (2010-2013) was calculated. Estimated values for casualties avoided for 2014 were calculated, and then for the entire time horizon (2014-2038). Last, based on the calculated absolute differences in the number and structure of road accidents (fatalities, severe injuries, slight injuries, damages only), and the estimated values for casualties avoided the total Road Accidents Savings (RAS) were calculated.

Detail calculation of the economic benefits associated with RAS savings is provided in APPENDIX 10 of this Report.

The total user benefit from RAS is the sum of all road accidents savings from all type of accidents (fatalities, severe injuries, slight injuries, and damages only). Total RAS from Fatalities amount to (- 9.6 million EUR) which means that the number of fatalities on all roads together after the roads rehabilitation is increased. This can be explained with the absence of any traffic signalization (both horizontal and vertical) and other road safety elements (in details described in the next part of this Report), and the increased average vehicle speed due to the roads improvement from the rehabilitation at the same time. Total RAS from Severe Injuries are around 39.4 million EUR, RAS from Slight Injuries 21.8 million EUR, and RAS from damages around 0.2 million EUR, or all together RAS of 51.8 million EUR for all local roads subject to this STUDY.

5.3.2. Traffic signalization and road conditions

Besides off-site collected data, i.e. obtained official statistical records, an on-site data collection and evaluation was made related to the traffic safety improvements on the rehabilitated sections, such as horizontal and vertical traffic signalization and other implemented safety measures.

Identifying the existing vertical signalization involves checking the place where is a set (appropriate place) according to the prescribed By-Laws (Traffic By-Laws, "Official Gazette of Republic of Macedonia" No 47/10, 31/11, 74/11, and 117/12). The vertical signalization is defined as a set of specially coded labels designed for road users, which in relation to the traffic area are located in the vertical plane. Traffic signs should be placed on the right side of the road beside the road, in the direction of movement of vehicles, and in a way that does not impede the movement of vehicles and pedestrians.

The horizontal signalization is defined as a set of specially molding geometric elements (lines, shapes and fields) and inscription, combination of which form label that define the transport regime. The construction of horizontal signalization plan should involve insight into the minimum and

maximum values of the elements of the plan and profile of the road: longitude of the route, the radius of horizontal and vertical curves, width of shoulders, etc.

Signalization need in time and continuous to advice, to alarm and guiding the traffic participants. At any time should clearly and unequivocal indicate to the users of the system on which part of the network traffic can or should move as they come to the desired goal, which maneuvers has to perform to their movement be effective and safe for all participants in the traffic. Installation of traffic signs were analyzed from two aspects: traffic conditions for setting of signs and instructions for installing traffic signs – chosen location.

The horizontal and vertical signalization should be mutually synchronized (in both directions), and clearly and unambiguously informed the traffic participants for the transport regime. In Table 21, findings related to the traffic signalization and rehabilitated roads conditions are presented.

Table 21 Traffic Signalization and Roads Conditions

ROADS		Horizontal signalization	Vertical signalization	Width of the road	Road shoulder
		Yes/No	Yes/No	Meters	Meters
1	Kichevo (A2) - Motel Krushino	No	No	5.0	2 x 0.75
2	Motel Krushino - v. Knezino	No	No	4.5	2 x 0.75
3	For Drugovo (A2 – Walk-in Clinic)	No	No	4.0	2 x 0.50
4	R-1305 - v. Brzdani (A2 - Walk-in Clinic)	No	No	3.5	0.50
5	R-1305 - v. Kochista	No	No	4.0	2 x 0.75
6	R-1305 - v. Zashle	No	No	7.5	2 x 0.50
7	Tetovo - v. Trebosh	Yes	No	6.6	No
8	R-1302 Gjerdovi Vodenici - v. Rusinovo	No	No	4.0	2 x 0.75
9	v. Rusinovo - v. Vladimirovo	No	No	4.0	2 x 0.50
10	St. Spas - v. Pekljani	No	No	4.5	2 x 0.90
11	v. Dragobrashte - maala Mirmarci	No	No	4.0	2 x 1.00
12	Resen - v. Dolna Bela Crkva	No	No	3.0	2 x 1.00
13	Resen - v. Stenje	No	No	5.0	2 x 0.50
14	Bitola - v. Poeshevo	No	No	3.0	2 x 1.00
15	R-1311 v. Dolno Orizari - v. Karamani - v. Trn	No	No	5.2	2 x 0.50
16	A2 - v. Misleshevo	No	No	6.5	2 x 0.50
17	v. Dolna Belica - v. Veleshta	No	No	3.0	2 x 0.50
18	v. Misleshevo – A2	No	No	3.7	No
19	A3 - v. Trkanje	No	No	6.0	2 x 0.70
20	Kochani - dam Gradche	No	No	4.5	2 x 0.50
21	Butel – Rashtak	No	No	3.7	2 x 0.70

(Source: Authors own' on-site data, creation and calculation)

In APPENDIX 12, Traffic Signalization, the collected on-site pictures from the rehabilitated roads are provided. Based on the performed on-site analyzes, the following conclusions are presented for each section:

(1) Road Kichevo – Motel Krushino is in category of local roads from mountain region, for mixed traffic in two ways vehicles moving. Rehabilitated are 2.35 km from the section. Road width is 5 meters. From one side have a shoulder width of 0.5 meters, and from the other side gutter for drainage also with a width of 0.5 m. Besides the gutter for drainage, there is no berm, no protection from rockslide for the inclination, and protected area has high and low plants (Picture A, B, and F). Required horizontal and vertical signalization does not exist, except on the beginning of the road (500 meters) where horizontal signalization - split line exist (Picture A, and B). Vertical signalization is set on the beginning and end of the road (Picture D, and E) in the form of non-standard board, which incorporates more standard traffic signs and driver information for the road. This makes very difficult for drivers to read all the signs at any speed.

Transport equipment on the road, concerning protective enclosure is not set, and at some place is necessary.

(2) Road Motel Krushino – v. Knezino is in category of local roads from mountain region, for mixed traffic in two ways vehicles moving. Rehabilitated is 1.6 km from the section. Road width is 4.5 meters, and shoulder 0.75 meters from both sides (Picture C, and D). Traffic signalization does not exist but is necessary. There is only one traffic-sign – touristic sign (Picture B). The road extensions for cross passing of vehicles required by the By-Law on technical elements of construction and reconstruction of public roads, "Official Gazette of Republic of Macedonia" No. 110/09, 163/09, 26/10, 136/10, 94/11, 146/11 (hereinafter: The By-Law on technical elements) does not exist. After the rehabilitated road of 1.6 km, next section of the road is now under construction (Picture C).

(3) Road Drugovo (A2) – Walk-in Clinic is in category of local roads from mountain region, for mixed traffic in two ways vehicles moving. Rehabilitated is 0.65 km from the section. Road width is 4 meters, and shoulder 0.5 meters from both sides. In direction to Drugovo, road sewing is on the right side made as open ground channel. There are no road extensions for passing between vehicles required by the By-Law on technical elements of construction and reconstruction of public roads. Traffic signalization and equipment does not exist on the road. On the end of the section (before the ambulance), road is crossing with another road in four crack symmetric junction which is not regulated with traffic signalization, and thus minimize road users safety (pedestrians, cyclists, motor vehicles) (Picture A).

(4) Road v. Brzdani (A2) - Walk-in Clinic is in category of local roads from mountain region, for mixed traffic in two ways vehicles moving. Rehabilitated is 1.5 km from the section. Road width is 3.5 meters, and shoulder 0.5 meters from bout sides. Road sewing is from concrete (Picture C, and F). Beside the concrete channel, there is no berm, no protection from rockslide for the inclination, and protected area has high and low plants. There are no road extensions for passing between vehicles required by the By-Law on technical elements of construction and reconstruction of public roads. Traffic signalization and equipment does not exist on the road. The protective enclosure is not set, and at some points is necessary.

(5) Road R-1305 - v. Kochista is in category of local roads from mountain region, for mixed traffic in two ways vehicles moving. Rehabilitated is 1 km from this section. Road width is 4 meters, and shoulder 0.75 meters from both sides. There are no road extensions for passing between vehicles required by the By-Law on technical elements of construction and reconstruction of public roads. Traffic signalization and equipment does not exist on the road. In this section, there is a bridge with protective fence, but it is not marked with traffic signalization (Picture A). This local road on the connection with the regional road R1305 form junction with three tentacles, and there is no traffic signalization. From the crossroads in the village Pribilci (Picture B) to the village (Picture C), security level is low, because there is no traffic signalization (Picture D).

(6) Road R-1305 - v. Zashle is in category of local roads from mountain region, for mixed traffic in two ways vehicles moving. Rehabilitated is 0.50 km from this section. Road width is 3.5 meters. At the beginning, the roadway width is 7.5 meters, and after 100 meters, the width tightens on 4 meters with a shoulder of 0.5 meters from both sides (Picture E, and F). Traffic signalization and equipment does not exist on the road. This road on the connection with the regional road R1305 form junction with three tentacles, and there is no traffic signalization. Road participants' safety is very low (Picture A, and B). There is only one old and damaged traffic sign "STOP" (Picture A, and B). After 110 meters from the junction, two traffic signs exist "speed determination" and "prohibition of traffic for vehicles that exceed specified axle

load" which are not in accordance with the By-Law for traffic signs and signaling equipment on the road ("Official Gazette of Republic of Macedonia" No. 47/10 31/11, 74/11, 117/12) (hereinafter: The By-Law for traffic signs and signaling equipment on the road) (Picture C).

(7) Road Tetovo – Trebosh is in category of local roads from mountain region, for mixed traffic in two ways vehicles moving. Rehabilitated is 1.45 km from this section. Road width is 6.6 meters. Along the road, there are no shoulders, but only edges. Drainage is resolved by discharging the water from the edges into a channel (Picture E). In this section there is a bridge with protective fence, but without any traffic signalization and equipment (Picture C, and D), which is the case with the entire section. The horizontal signalization – separation line (width of the line is 0.10 meters and raster 2+2) which is not in accordance with the By-Law for traffic signs and signaling equipment on the road (Picture A). At the end of the road, there is a junction with three tentacles, without traffic signalization, and thus significantly decreases traffic participants' safety level (Picture B, and F). On the intersection tree, traffic signs are not properly set (Picture B).

(8) Road R-1302 Gjerdovi Vodenici – v. Rushinovo is in category of local roads from mountain region, for mixed traffic in two ways vehicles moving. Rehabilitated is 1.9 km from this section. Road width is 4 meters, and shoulder 0.75 meters from both sides (Picture C). Road extensions for passing between vehicles required by the By-Law on technical elements of construction and reconstruction of public roads do not exist. In this section, there is a bridge with protective fence, but without any traffic signalization and equipment (Picture E). There is repulsive protective fence only on some parts of the section but quite damaged. The protective fence needs replacement and it is necessary for the entire section (Picture D). Traffic signalization and equipment does not exist on this section. This local road on the connection with the regional road R1302 form junction with three tentacles, and there is no traffic signalization. Road participants' safety level is very low (Picture A, and B).

(9) Road v. Rusinovo – v. Vladimirovo is in category of local roads from mountain region, for mixed traffic in two ways vehicles moving. Rehabilitated is 3.5 km from this section. Road width is 4 meters, and shoulder 0.5 meters from both sides. At the beginning of the rehabilitated road in v. Rusinovo, there are edges that form footpath from both sides of the road (Picture E, and F). There is bridge with protective fence, but without any traffic signalization and equipment, and thus the road participants safety level is very low (Picture A). Road extensions for passing between vehicles required by the By-Law on technical elements of construction and reconstruction of public roads do not exist. Road purity is not maintained, the road is quite dirty with mud and other impurities, because this section goes through the area with increased traffic intensity of agricultural work vehicles (Picture B, C, and D). Traffic signalization and equipment does not exist on this section.

(10) Road St. Spas - v. Pekljani is in category of local roads from mountain region, for mixed traffic in two ways vehicles moving. Rehabilitated is 2.8 km from this section. Road width is 4.5 meters, and shoulders 0.9 meters from both sides (Picture A, and B). Traffic signalization and equipment does not exist on this section.

(11) Road Dragobrashte - maala Mirmarci is in category of local roads from mountain region, for mixed traffic in two ways vehicles moving. Rehabilitated is 1.2 km from this section. Road width is 4 meters, and shoulders 1 meter from both sides (Picture A, and B). Traffic signalization and equipment does not exist on this section. The intersection between this local road and the main road route form intersection with three tentacles, without traffic signalization, and thus provide low level of safety for road participants (Picture C).

(12) Road Resen - v. Dolna Bela Crkva is in category of local roads from lowland region, for mixed traffic in two ways vehicles moving. Rehabilitated is 1.5 km from this section. Road width is 3 meters, and shoulder 1 meter from both sides (Picture A). For the sewing, there is concrete channel from the right side towards to v. Dolna Bela Crkva (Picture A, B, and C). Road extensions for passing between vehicles required by the By-Law on technical elements of construction and reconstruction of public roads do not exist. Traffic signalization and equipment does not exist on this section. The intersection between this local road and the main road route form intersection with three tentacles, without traffic signalization, and thus provide low level of safety for road participants (Picture C). On the connection with the regional road only the traffic sign "STOP", exist (Picture F).

(13) Road Resen - v. Stenje is in category of local roads from lowland region, for mixed traffic in two ways vehicles moving. This road is in village Stenje. Rehabilitated is 1.17 km from this section. Road width is 5 meters, and shoulders 0.5 meters from both sides (Picture A, and B). Two bridges located on this section, are not rehabilitated together with the road, do not have protective fence, traffic signalization and equipment (Picture C, D, E, F, G, and H). Traffic signalization and equipment does not exist on this section.

(14) Road Bitola - v. Poeshevo is in category of local roads from lowland region, for mixed traffic in two ways vehicles moving. Rehabilitated is 3.85 km from this section. Road width is 3 meters, and shoulders 1 meter from both sides (Picture A, and C). Road extensions for passing between vehicles required by the By-Law on technical elements of construction and reconstruction of public roads do not exist. Road purity in v. Poeshevo is not maintained in length of 600 meters. Road is quite dirty with mud and other impurities, because this section goes through the area with increased traffic intensity of agricultural work vehicles (Picture D, and F). Traffic signalization and equipment does not exist on this section.

(15) Road R-1311 – v. Dolno Orizari - v. Karamani - v. Trn is in category of local roads from lowland region, for mixed traffic in two ways vehicles moving. Rehabilitated is 6.5 km from this section. At the beginning (at the manufactory for milk IMB), the road width is 5.2 meters, and shoulders 0.5 meters from both sides (Picture A, and B). The bridge is not rehabilitated together with the road, with old protective fence, and without traffic signalization and equipment (Picture C, and D). Further, the road passes through village Dolno Orizari where the road width is 4.2 meters, shoulder on the right side of 1 meter, and sidewalk on the left side of the road (Picture E). After the school in v. Dolno Orizari, the road narrows to 3.2 meters, and on both side have a shoulders of 0.6 meters (Picture F). Between v. Dolno Orizari and v. Trn the bridge was not rehabilitated together with the road, unsafe, and without traffic signalization and equipment (Picture G, and H). Traffic signalization and equipment does not exist on this section.

(16) Road A2 - v. Misleshevo is in category of local roads from lowland region, for mixed traffic in two ways vehicles moving. Rehabilitated is 1.4 km from this section. Road width is 6.5 meters, and shoulders 0.5 meters from both sides (Picture A, B, and C). The road pass through the v. Misleshevo and there are no pedestrian crossings. Traffic signalization and equipment does not exist on this section. Two traffic signs are fitted as one ("required direction" and "STOP") which is not in accordance with the By-Law for traffic signs and signalization equipment on the road (Picture E, and F). On the connection with the state road A3, the intersection is without traffic signalization, and thus provides very low level of traffic safety for all traffic participants, especially because the state road has large traffic intensity.

(17) Road v. Dolna Belica - v. Veleshta is in category of local roads from lowland region, for mixed traffic in two ways vehicles moving. PESR reported 2.35 km rehabilitated road, but only 0.45

km are rehabilitated with only one centimetre asphalt. Those 2.35 km were rehabilitated before 10 years. Road width is 3 meters, and shoulders 0.5 meters from both sides. Road extensions for passing between vehicles required by the By-Law on technical elements of construction and reconstruction of public roads do not exist. Traffic signalization and equipment does not exist on this section.

(18) Road v. Misleshevo – A2 is in category of local roads from lowland region, for mixed traffic in two ways vehicles moving. Rehabilitated is 0.75 km from this section. Road width is 3.7 meters. The road pass through the v. Misleshevo and there are no pedestrian crossings. On the connection with the state road A2, the intersection is without traffic signalization, and thus provides very low level of traffic safety for all traffic participants, especially because the state road has large traffic intensity. Traffic signalization and equipment does not exist on this section.

(19) Road A3 - v. Trkanje is in category of local roads from lowland region, for mixed traffic in two ways vehicles moving. Rehabilitated is 1.15 km from this section. Road width is 5 meters, and shoulders 0.7 meters from both sides (Picture C). Road width narrows to 3.5 meters in the last 200 – 250 meters (Picture F). The bridge on this section is without protective fence, and without traffic signalization, which provide very low level of safety for traffic participants especially in night conditions (Picture D, and E). Traffic signalization and equipment does not exist on this section. On the connection with the state road A2, the intersection is without traffic signalization, and thus provides very low level of traffic safety for all traffic participants, especially because the state road has large traffic intensity (Picture A, and B).

(20) Road Kochani - dam Gradche is in category of local roads from mountain region, for mixed traffic in two ways vehicles moving. Rehabilitated is 4.8 km from this section. Road width is 4.5 meters. From one side the road have a shoulder with a width of 0.5 meters, and from the other side gutter for drainage in a width of 0.5 meters. Besides the gutter for drainage, there is no berm, no protection from rockslide for the inclination, and protected area has high and low plants (Picture A). There is no proper traffic signalization for the faults on the road (Picture B). The two bridges on this section are without protective fence, and without traffic signalization, which provide very low level of safety for traffic participants especially in night conditions (Picture C, D, and E). Traffic signalization and equipment does not exist on this section. On the beginning of the road there is a traffic sign “prohibition of traffic for trucks“ that is damaged and placed at an inappropriate position, which is not in accordance with the By-Law for traffic signs and signalization equipment on the road (Picture F). Since the road is located in mountain region, there is a need for a protective fence on some parts of the road.

(21) Road Butel – Rastak is in category of local roads from lowland region, for mixed traffic in two ways vehicles moving. Rehabilitated is 3 km from this section. Road width is 3.65 meters, and shoulders 0.7 meters from both sides. Road extensions for passing between vehicles required by the By-Law on technical elements of construction and reconstruction of public roads exist. Traffic signalization and equipment does not exist on this section.

5.3.3. Road Safety Benefits

With the questionnaires provided in APPENDIX 4 and 5, determined is to what extent municipality authorities, focus groups, carriers, and businesspersons believe road safety has improved along the road. Their opinion on how they estimate the security of the road before and after the rehabilitation was received, for which five gradations were offered: 1) not secure at all, 2) somewhat secure 3)

average secure 4) very secure 5) exceptionally secure. Based on the received answers, findings are presented in Table 22.

Table 22 Road Safety Benefits by Focus Groups

Municipality		ROADS	Municipality authorities		Focus groups		Carriers		Businesspersons	
			Before	After	Before	After	Before	After	Before	After
Kichevo	1	Kichevo (A2) - Motel Krushino	2	4	2	4	2	3	1	4
	2	Motel Krushino - v. Knezino	2	4	2	4	2	3	1	4
	3	For Drugovo (A2 – Walk-in Clinic)	2	4	1	2	2	4	1	3
	4	R-1305 - v. Brzdani (A2 - Walk-in Clinic)	1	3	1	3	1	3	1	2
Demir Hisar	5	R-1305 - v. Kochista	2	4	1	3			1	3
	6	R-1305 - v. Zashle	3	4	3	2				
Tetovo	7	Tetovo – v. Trebosh	1	4	2	4	1	4	2	3
Berovo	8	R-1302 Gjerdovi Vodenici - v. Rusinovo	3	3	1	3	2	3	3	3
	9	v. Rusinovo - v. Vladimirovo	3	3		3	2	3	2	3
Vinica	10	St. Spas - v. Pekljani	2	4	1	3	3	5	1	3
	11	v. Dragobrashte - maala Mirmarci	2	4	2	3	2	4	2	3
Resen	12	Resen - v. Dolna Bela Crkva	3	4	4	3	2	3	4	3
	13	Resen - v. Stenje	2	4	2	3	1	4	2	3
Bitola	14	Bitola - v. Poeshevo	2	2	2	3	3	4		
	15	R-1311 v. Dolno Orizari - v. Karamani - v. Trn	2	2	1	1				
Struga	16	A2 - v. Misleshevo	1	4	1	3	3	4	1	3
	17	v. Dolna Belica - v. Veleshta	2	3	1	3	2	3	2	3
	18	v. Misleshevo – A2 ("Eurotel")	1	4	1	3	3	4	1	3
Kochani	19	A3 - v. Trkanje	4	5	1	1	3	4	1	1
	20	Kochani - dam Gradche	2	4	3	3	4	3	2	3
Gazi Baba	21	Butel – v. Rashtak	1	5	1	3	1	3	1	3

(Source: Municipality authorities, Focus Groups, Carriers, and Businesspersons' data, Authors' own creation)

From the obtained data, all interviewees think that roads rehabilitation improved traffic participants' safety. The responds from focus groups and experts interviews indicate on the positive impact that the roads rehabilitation has on their safety. Yet, interviewees point out on several aspects, which despite improvement, due to rehabilitation, have deteriorating influence on roads safety. Most prevalent is the identified problem with insufficient width of the roads. Except for the road in Trebosh, all other communities reported this problem. However, roads narrowness, based on geographic location and community specifics, has different effects on safety. For instance, the road narrowness is a serious problem for the people in Dolno Orizari, Karamani, Trn, and Poeshevo. These roads are located in lowlands of Pelagonija and therefore are built on embankments that are supposed to protect them from damages caused by overflowing and erosions instigated by underground waters. Nonetheless, the roads narrowness combined with lower elevation of the margins is causing reduction of road safety, especially when two larger vehicles are diverging. The problem of vehicles diverging was identified in the communities of Veleshta, Stenje, and Vladimirovo. It is interesting to note that in Rusinovo the rehabilitated road was shrunk for nearly 50 centimeters, whereas in the case of dam Gratche, even though the rehabilitated road was widen at some points, it is still not wide enough for easy passing of vehicles. Finally, the layout of roads in Poeshevo, Dolno Orizari, Karamani, and Trn, prevents the transformation of nearby arable parcels into industrial parcels.

The interviewees from Rashtak, Knezino, Dolna Bela Crkva, Brzdani and dam Gratche made complaints on the problem of incompletion of the rehabilitated roads with mounting of road shoulders. According to them, this has significant effects on road safety. The problem is especially evident in the mountainous roads of Brzdani, dam Gratche and Rashak.

The interviewees from Poeshevo, Dolno Orizari, Karamani, Trn, Stenje, Rashtak, and Veleshta brought in correlation the irregular maintenance of the rehabilitated roads and the road safety. They noted that the roads need cleaning from dry grass, dump garbage and construction waste, and overgrowing branches that vegetated along their sides and contribute to reduction of visibility. These, according to respondents, make the narrow roads even smaller.

In all of the researched communities, local residents indicate on the absence of horizontal and vertical signalization. The experts from the municipality of Resen noted that this is a shortfall of all local road rehabilitation projects. The interviewees from Poeshevo, Dolno Orizari, Knezino, Dolenci, Dragobrashte, Pribilci and dam Gratche highlight the need of a speed limit sign. Respondents from Brzdani, Poeshevo, Dolno Orizari, dam Gratche, and Trkanje, point a sign for dangerous curve. According to local citizens from Dolenci and Pribilci, the rehabilitated roads need weight limit signs, because trucks transporting firewood using this road transport more than 30 tones, and the road can stands for only 12 tones (this is the case in all mountain-rehabilitated roads). This can destroyed the rehabilitated mountain roads again very soon if something is not changed. Moreover, in Dolenci, there is a sign for weight limit, but the focus group point out that nobody respects it. A pedestrian crossing is a sign very much needed in communities that are close to recreational centers such as dam Gratche, Misleshevo and Stenje, or those where educational, healthcare, and other facilities are directly on the road and many people are crossing by.

Need for road sign that there is a bridge and 90-degree curve was point out by the respondents from Trkanje (five cars fell into the river after the road rehabilitation). For the citizens of Misleshevo very significant is the stop sign needed at the conjunction with the main road. Finally, some villages like Vladimirovo, Pekljani, Rashtak, and Poeshevo do not even have a community sign on the main road to point out on the entrance of the village.

Some of the rehabilitated roads have critical points that influence on their safety. According to the interviewed transport workers, 90-degree sharp curve in Poeshevo gets critically dangerous under reduced visibility caused by fog. For the residents of Dolna Bela Crkva most critical point is on the conjunction of the rehabilitated road with the regional road. According to them the conjunction is narrow and with reduced visibility. Critical point in Misleshevo is its conjunction with the regional road also. According to all respondents from Misleshevo, the improvement of safety at these points requires either placement of proper road signalization that includes establishment of traffic light or construction of underpasses or overpasses. Interviewees from Rashtak point out several aspects such as sharp curves and steep slopes that make the road, under certain weather circumstances, unsafe.

The municipality authorities from Demir Hisar specify one critical point on the rehabilitated road in Pribilci where the road narrows right before passing on the bridge. The municipal authorities addressed the problem with the contractor but no immediate actions were undertaken. According to local authorities from Vinica, some problematic curves were straightened and some steep slopes with low visibility were lowered with the road rehabilitation. There is a curve in Rusinovo that makes the road unsafe under snow conditions. According to respondents from Vladimirovo, on a particular curve, on the rehabilitated road, the accidents trend is one in four years. In addition, the rehabilitated road on dam Gratche has many sharp curves that lower its safety. Low visibility on some curves on the rehabilitated road in Veleshta reduces the road safety. People in Pekljani identify the sharp curve near the pig farm as a black spot. This is especially, critical spot during wintertime. According to local authorities, this sharp curve needed to be straightening up but such intervention required building supporting walls that would have caused additional expenses on the project. The local authorities from Tetovo, point out on one critical curve on the road to Trebosh, nonetheless consider that the curve is with a good visibility.

According to respondents, there is an evident lack of pedestrian sidewalk in most of the rehabilitated roads. Partially, a sidewalk exists in the central part of Dolno Orizari. Lack of sidewalks on the recreational destination like dam Gratche, the shopping center in Tetovo (Trebosh), or popular local beaches (Stenje), makes the rehabilitated roads unsafe places. It is interesting to note the solution given by local residents from Stenje for overcoming of this problem. They suggest closing one of the two parallel roads during summer season. Apart from sidewalk, the interviewees from Trkanje consider that lack of pedestrian crossing especially near the local school jeopardize the road safety. Interviewees from Misleshevo and Trebosh consider that the road is dangerous for pedestrians and bikers, and apart from sidewalks is in need of light posts.

Another problem related to safety of the rehabilitated roads is the practice of fast and reckless driving. Respondents from Stenje, Rusinovo, Pribilci, Trkanje, Poeshevo, Dolno Orizari, Misleshevo and Trebosh expressed concerns with this evident problem. In order to overcome the problem respondents from some communities suggested installation of speed limit bumpers. According to them now maybe the road is faster, but without road signalization and equipment it is actually becoming more dangerous.

5.4. Land Value and new opportunities

In this part, analyzed was to what extent has the rehabilitated road increase the land value. With the help from the focus groups, using the questionnaires provided in APPENDIX 4 and 5, the new opportunities that arise from the roads rehabilitation were determined.

5.4.1. Land Value Savings

For this task, the average price differences in the “After” and “Before” scenario were calculated. Then they were monetized using the Macedonian Agency for real estate cadaster data for the land size (squared meters) of all local places affected by the road rehabilitation subject to this STUDY. Distinction was made between the urban and non-urban (agriculture) land when assessing the influence that roads rehabilitation has on the land value. By multiplying the price difference with the land sizes (increase of the land value for 10% in average both for urban and agriculture land) the LVS for all local places subject to this STUDY were calculated.

Detail calculation of the economic benefits associated with LVS is provided in APPENDIX 11 of this Report. The total user benefit from LVS is the sum of all LVS (from urban and agriculture land). Total LVS from urban land amount to 51.7 million EUR, while the total LVS from agriculture land 67.8 million EUR, or all together LVS of around 120 million EUR for all local places subject to this STUDY.

5.4.2. New Opportunities

New opportunities that arise from the road rehabilitation were determined using the questionnaires provided in APPENDIX 4 and 5. The social cohesion indicator “things to do” and the level of self-reported enthusiasm are the measures for these opportunities. Distinction was made between the opportunities for each focus group, and the opportunities that are interrelated for different focus groups.

The youth focus group’ interviewees from Rashtak see an employment opportunity in reestablishment of weaving folk costumes, a tradition old craft that was practiced in the community for centuries. They suggest that popular local picnic place might be used for placement of weaved

traditional folk costumes and ornaments. In addition, they find potentials in developing monastery tourism. According to the interviewed municipality authorities, there are plans for several investments in Rastak in the next five to seven years. One is the closed sewerage system for fecal wastewaters with several cleansing stations, connected to the main sewage system. Second, is an investment in knowledge and skills enhancement of local farmers and women, and third is an investment in construction of an ethno house with several guest rooms. The ethno house should combine the natural resources, pleasant climate, and agricultural products from the community.

The municipality authorities from Bitola plans to build a wholesale market that will enable better placement of agricultural products from Poeshevo and neighboring communities. This will decrease transport costs and make agricultural product more competitive on the market. In order to prevent migration from Dolno Orizari, the municipality authorities from Bitola will invest in new kindergarten.

According to the city plans of Tetovo, an economic development zone is near Trebosh and local citizens see this as an opportunity for their investments and employment. An interviewed carrier from Kochani noted the possibility for a new small size hydroelectric power plant at dam Gratche. Foreign investment for exploitation of chestnut timber is point out as an opportunity from the interviewed businessperson from Knezino.

Possibilities for tourism development exist in the villages of Brzdani, Knezino, Krushino, dam Gratche, and Misleshevo. The business community from Knezino sets hopes on an investment in a sports and recreational Centre as well as investments in agriculture. In addition to effects on tourism, youth focus group in Misleshevo, notes an increase in visits made by locals that work and live abroad. Rehabilitated roads were the needed impulse for rejuvenation of Brzdani, Rashtak, Stenje, and Dolenci. Their local citizens expect that the elderly (mainly pensioners) will be attracted to go back to the places of origin. Consequently, this will initiate renovations of old houses, investment in new dwellings and weekend houses. The biggest investment expectations in Stenje are the coast editing and building of a new touristic complex that will answer to the increased touristic demand of this local place. It is valuable to mention that municipality authorities in Kichevo are planning a new settlement in Drugovo.

Roads rehabilitation' main benefits, as identified from most of the focus group interviews, are the improved communications among communities, and quality of living.

Municipality authorities from Bitola consider that roads rehabilitation prevent rural-urban migration, and contribute to better product placement. Representatives from Bitola, Struga, and Stenje identify faster approach to the desired destination, and more comfortable transport of people and goods, as important benefits from roads rehabilitation. The resettlement of retired persons was identified as a key benefit from roads rehabilitation in Brzdani, Krushino, Knezino, and Dolenci. According to respondents from Brzdani, road rehabilitation contributed to village revitalization. The rehabilitated roads in Leshki, Trebosh, and Dragobrashte, increase the use of arable land by owners who live outside these communities. The key benefits for participants in the focus group in Rusinovo are the time saving and more comfortable transportation. Improved communication between villages (Vladimirovo - Rusinovo, and Dolna Belica - Veleshta), and better connection with the regional roads are identified as the key benefit by the respondents from Vladimirovo and Belica. Carriers that provide transport services for the communities in Misleshevo and Veleshta consider savings in time and expenses, as well as improved quality of life, as key benefit for the communities. Interviewees from Stenje consider the increase in private construction investments, as a positive benefit from the road rehabilitation that will have positive effects on tourism. Municipality authorities from Demir Hisar consider that key benefit from roads rehabilitation is the time saving for local citizens that acquire some service from the municipality. Apart from faster

communication with Kichevo, according to participants from the focus group in Drugovo, the quality of living connected with the elimination of mud on the street is a key benefit from the road rehabilitation. Finally, apart from savings on fuel and faster transportation, farmers from Trebosh, consider that increase in the land value is one of the key benefits from road rehabilitation.

6. SUMMARY OF PRINCIPLE RESULTS OF THE ASSESSMENT AND RECOMMENDATIONS

In this part, the summary of principle results of the assessment and recommendations for Local Roads planning and rehabilitation programs are presented, including any suggestions for current similar investment programs.

The objectives of this STUDY was to assess from the beneficiary point of view wellbeing and welfare accruing to households using local roads that are being rehabilitated with the RLRPSR.

The study focuses on:

1) Market Access – to what extent has the rehabilitated road improved, agriculture or other entrepreneur productivity or/and access to markets in nearby urban centers by farmers and other entrepreneurs;
2) Human Capital – to what extent has the rehabilitated road, improved access to social services such as education and health facilities concentrated in urban areas or in neighboring village;
3) Road Safety – to what extent do household members believe road safety has improved along the road because of the rehabilitation.
4) Increased land value or revealed new opportunity for the communities with rehabilitated local roads.

The pilot study analyzes 21 municipal roads in 10 randomly selected municipalities with completely rehabilitated local roads. From the 10 selected municipalities 5 municipalities are in the mountain regions and 5 in the lowland regions, all rehabilitated under the RLRPSP.

As for the **first objective, Market Access**, roads rehabilitation improved significantly agriculture and entrepreneur **productivity**, and **access to markets** in nearby urban centers by farmers and other entrepreneurs. Productivity is measured as a ratio between the Outputs and Inputs, thus for the purpose of this STUDY comparative analysis of the Productivity in the "After" and "Before" scenario was made, in order to assess if the rehabilitated roads have increased the productivity.

"Input" benefits were determined by calculating the travel time saving (TTS) and vehicle operating costs savings (VOCS). The total user benefit from TTS is the sum of all time saving for all origin-destination movements and type of traffic (passenger and commercial goods). Total TTS for passenger traffic amount to 52 million EUR, while the total TTS for commercial goods traffic around 1.7 million EUR, or all together TTS of 53.7 million EUR for all local roads subject to this STUDY. The total user benefit from VOS is the sum of all vehicle operating costs savings (fuel consumption and non-fuel elements) for all origin-destination movements and type of traffic (passenger and commercial goods). Total VOS from fuel consumption amount to 14.3 million EUR, while the VOS from non-fuel elements is around 7.7 million EUR, or all together total VOS equals 22 million EUR.

"Output" benefits were determined by calculating the employment, and accessibilities and social inclusion benefits from the roads rehabilitation. Based on the performed comparative analysis decreased unemployment rate was detected in most of the selected local places both for the total unemployment and for women only. Weighted average percentage change for total unemployment (all local places) is (- 44.7%), while the weighted average percentage change for only women unemployment (all local places) is even higher (- 52.8%). This means that during this period (January 2008 – January 2014) women represent higher percentage of the new employees. For the second "Output" – Accessibility and social inclusion benefits, Community accessibility (access to local services) and Comparative accessibility (distribution of accessibility impacts by people group and location) were tested. For the community accessibility, without exceptions, the roads

rehabilitation facilitate and improved access to local services such as health care, social, and educational institutions, economic capacities, municipality authorities, markets, etc. New institutions are established (kindergarten, and ambulance), organized are more social and cultural events, public transportation was provided for pupils to/from their schools from/to their villages - service that was not able before, and opened are new pensioners clubs. In addition, healthcare services are more frequent, time needed for the healthcare service to reach local citizens is decreased (emergency healthcare vehicles, walk-in clinics, patronage services, and mobile medical teams); decreased are the number of accidents. Roads rehabilitation enabled access to playgrounds, and enabled food supplies for local stores, which was not the case before due to the bad road conditions. It also increased number of pupils that attend extracurricular educational activities (learning languages, sport clubs, dance clubs, folklore sections, etc.), and local citizens are filling more confortable allowing their kids to visit these extracurricular activities after the road rehabilitation. For the comparative accessibility, rehabilitated roads significantly improved the network coverage in all local places, but there is still local roads (network) need to be rehabilitated or built in almost all local places subject to this STUDY. The 21 roads rehabilitated under this STUDY are in total length of 44.87 km or 32% from the entire network of 140.2 km. Together with the existing network, 89.4 km or 63.76% are rehabilitated or built. On-site visits shows that those non-asphalted 36.24% are also from great importance to all local citizens, and thus the recommendation is not to stop with the rehabilitation but to continue and to finish with the rest 50.8 kilometers in this 21 local places. This will provide the minimum accessibility to all people who live and visit these communities. Road associated infrastructure (water and sewage system, lighting poles, etc.) in most of the researched communities either is partially or does not exist at all. This prevents future expansion and development of these villages and fosters immigration of the existing residents. If these essential living conditions are not available in near future, there is a real treat that only elderly people will be living in these villages, and on long run to stop exist.

From the “Input” and “Output” analyses, it is concluded that the roads rehabilitation increased the productivity through decreased “Input” costs (travel time saving of 53.7 million EUR, and vehicle operating costs savings of 22 million EUR). To increased productivity, contribute the increased “Output” benefits (decreased unemployment rate for 44.7%, and facilitated and improved access to local services, establishment of new ones, and increased network coverage to 63.76% from 31.76%).

As for the **second objective, Human Capital**, determined was to what extent has the rehabilitated road, improved access to social services such as education (education benefits), and health care facilities concentrated in urban areas or in neighboring village (health care benefits). For this task, first, the access to educational facilities by pupils enrolled in primary and secondary education using the rehabilitated roads subject to this STUDY was analyzed. Improved transport quality and faster transportation are some of the biggest pupils benefits realized with the roads rehabilitation (1587 pupils are experiencing the positive benefits). Faster transportation assumes more time for learning, bedtime, and extracurricular activities. In the case of some communities, roads rehabilitation enabled pupils’ public transportation to/from their schools from/to their villages, service not available before. Before the roads rehabilitation, pupils went on foot from their homes to the main road sometimes even 2 km, under bad weather conditions (snow, rain, extreme heat, mud and dust). Second, in the part of education, literacy level among pupils was analyzed, where the number of pupils involved in extracurricular activities also using the rehabilitated roads subject to this STUDY was analyzed. Generally, pupils are mainly involved in language classes, predominantly learning English language, and folklore sections. From sports activities, mostly they are members of football clubs. Nonetheless, there are children that train basketball, boxing, karate, and folklore sections. For most of the interviewees, there is a positive correlation between the

number of pupils visiting extracurricular educational activities and the roads rehabilitation. Municipality Centers, mainly the urban cities offer most of the extracurricular activities. Last in this segment of educational benefits, the involvement of local citizens in lifelong learning processes that are part of their professional development was analyzed. Roads rehabilitation led to the organization of few events that can be put down in this group: educational events by the Ministry of agriculture and IPARD Funds, project "With education against family violence", art colony, Amateur drama festival, courses for farmers entrepreneurs, women entrepreneurs, basic English, and IT skills.

Comparative analysis was made in the "After" and "Before" scenario to determine the accessibility of focus groups to health care facilities/services. Based on the findings the effects can be divided in two groups: facilitated transport from/to the closest city medical facilities and emergency assistance vehicles (faster and more confortable transport); and enabled service, which was not the case before (new ambulance and pharmacy, or mobile medical teams). Overall, the roads rehabilitation improved the access to health care services in all local places subject to this STUDY. In most cases, local citizens are using the rehabilitated roads to access the nearest medical institutions in or outside their communities. Road rehabilitation provides people with the appropriate health assistance, which means timely receiving the necessary assistance (emergency healthcare vehicles, mobile medical teams) and quality transport of patients especially for those whose conditions require meticulous care in transport. Some communities are providing ambulance services to their citizens even prior to roads rehabilitation, in some new ambulance was established, and in some communities, where there is no rural ambulance - mobile doctor service is available.

As for the **third objective, Road Safety** involves traffic participants' behavior (respect) under the road traffic rules, including the traffic participants' correlation, and the road traffic system' rules and road signs. In this part, first, the savings from reduction of road accidents were calculated. Then, to assess the road safety (traffic signalization and road conditions) on-site control was made. Last, it was analyzed to what extent household members believe road safety has improved along the road because of the rehabilitation. The total user benefit from Road Accidents Savings is the sum of all road accidents savings from all type of accidents (fatalities, severe injuries, slight injuries, and damages only). Total RAS from Fatalities amount to (-9.6 million EUR) which means that increased number of fatalities on all roads together after the roads rehabilitation was determined. This can be explained with the absence of any traffic signalization (both horizontal and vertical) and other road safety elements, and the increased average vehicle speed due to the roads improvement from the rehabilitation at the same time. Total RAS from Severe Injuries are around 39.4 million EUR, RAS from Slight Injuries 21.8 million EUR, and RAS from damages around 0.2 million EUR, or all together RAS of 51.8 million EUR for all local roads subject to this STUDY.

On-site data collection and evaluation related to the traffic safety improvements on the rehabilitated sections were made, such as horizontal and vertical traffic signalization, road conditions, and other implemented safety measures. It can be concluded that in almost all sections horizontal and vertical traffic signalization and equipment does not exist (or is very old and damaged) that is not in accordance with the By-Law for traffic signs and signaling equipment on the road ("Official Gazette of Republic of Macedonia" No. 47/10 31/11, 74/11, 117/12). Road width is narrow 3 to 5 meters and there are no road extensions for passing between vehicles required by the By-Law on technical elements of construction and reconstruction of public roads ("Official Gazette of Republic of Macedonia" No. 110/09, 163/09, 26/10, 136/10, 94/11, 146/11). On those that needed, there is no pedestrian crossings, no sidewalks, no berm, no sewing, no protection from rockslide for the inclination; protected area has high and low plants, no protection fence on the bridges, no rehabilitated bridges together with the roads, all of which substantially decrease road participants' safety level.

For the Road Safety Benefits part, it was determined to what extent municipality authorities, focus groups, carriers, and businesspersons believe road safety has improved along the road. Actually, their opinion was received on how they estimate the security of the road before and after the rehabilitation. From the obtained data, it can be concluded that all interviewees think that roads rehabilitation improved traffic participants' safety. The responds from focus groups and experts interviews indicate on the positive impact that the roads rehabilitation has on their safety. Yet, interviewees point out on several aspects, which despite improvement, due to rehabilitation, have deteriorating influence on roads safety. Most prevalent is the identified problem with insufficient width of the roads. Then, incomplete rehabilitated roads with mounting of road shoulders, irregular maintenance of the rehabilitated roads (roads need cleaning from dry grass, dump garbage and construction waste, and overgrowing branches that vegetated along their sides and contribute to reduction of visibility), and absence of horizontal and vertical traffic signalization, are point out as problems that negatively effects roads safety. Interviewees also report dangerous curves or black spots not removed with the rehabilitation, no respect for the weight limit signs by transport workers that damages the newly rehabilitated roads, absence of pedestrian crossings and sidewalks. They put an accent on the not signalized and with reduced visibility conjunctions with the regional roads (traffic light or construction of underpasses or overpasses), and fast and reckless driving because traffic signs for limiting speed (or other traffic equipment like bumpers) does not exist.

As for the **fourth objective, Land Value and New Opportunities**, in this part, it was analyzed to what extent has the rehabilitated road increase the land value. In addition, the new opportunities that arise from the rehabilitated roads were determined. The total user benefits from Land Value Savings (LVS) is the sum of all LVS (increase of the land value for 10% in average both for urban and agriculture land). Total LVS from urban land amount to 51.7 million EUR, while the total LVS from agriculture land 67.8 million EUR, or all together LVS of around 120 million EUR for all local places subject to this STUDY.

We determined the new opportunities that arise from the road rehabilitation through the social cohesion indicator "things to do" and the level of self-reported enthusiasm. Distinction was made between the opportunities for each focus group, and the opportunities that are interrelated for different focus groups. From the obtained on-site data interviewees consider that the road rehabilitation creates employment opportunity such as reestablishment of weaving folk costumes, arrangement of picnic places, development of monastery and other kind of tourism, building of ethno houses, building of sports and recreational Centers, agriculture investments, etc. For this purpose, they point out the need for water and fecal system, investment in knowledge and skills enhancement of local farmers and women, agricultural products quality improvement, etc. Some communities point out the need for building of wholesale market that will enable better placement of agricultural products, which will decrease transport costs and make agricultural product more competitive on the market. In order to prevent migration communities need investments in new kindergarten, primary and secondary schools, and other social and educational facilities. Some of them see the building of the economic development zone next to their communities, as an economic opportunity for investments and employment of local citizens. Rehabilitated roads were the needed impulse for rejuvenation of some communities. Their local citizens expect that this will increase resettlement, mainly by pensioners that originate from these places. Consequently, the resettlement will initiate renovations of old houses, investment in new dwellings and weekend houses.

Roads rehabilitation' main benefits, as it was identified from most of the focus group interviews, are the improved communications among communities and quality of living. In addition, prevention of rural-urban migration, better product placement, faster approach to the desired destination, and more comfortable transport of people and goods, are also some of the important roads rehabilitation' benefits.

7. LIST OF REFERENCES

By-Law for traffic signs and signaling equipment on the road ("Official Gazette of Republic of Macedonia" No. 47/10 31/11, 74/11, 117/12)

By-Law on technical elements of construction and reconstruction of public roads ("Official Gazette of Republic of Macedonia" No. 110/09, 163/09, 26/10, 136/10, 94/11, 146/11)

Economic Commission for Europe (2003) Set of guidelines for socio-economic cost benefit analysis of transport infrastructure project appraisal, Available on-line at www.unece.org

European Commission (2008) Guide to cost-benefit analysis of investment projects, Available on-line at http://ec.europa.eu/regional_policy/sources/docgener/guides/cost/guide2008_en.pdf

HEATCO (2006) Developing Harmonized European Approaches for Transport Costing and Project Assessment, Deliverable 4: Economic values for key impacts valued in the Stated Preference surveys, Available on-line at http://heatco.ier.uni-stuttgart.de/HEATCO_D4.pdf

HEATCO (2006) Developing Harmonized European Approaches for Transport Costing and Project Assessment, Deliverable 5: Proposal for harmonized Guidelines, Available on-line at http://heatco.ier.uni-stuttgart.de/HEATCO_D5.pdf

Litman, T. (2013) Generated Traffic and Induced Travel - Implications for Transport Planning. *Victoria Transport Policy Institute*, Available on-line at http://www.vtpi.org/gentraf.pdf

Maibach *et al.*, (2008) Handbook on estimation of external costs in the transport sector Internalization Measures and Policies for All external Cost of Transport (IMPACT), Available on-line at

http://ec.europa.eu/transport/themes/sustainable/doc/2008_costs_handbook.pdf

OECD (2002) Impact of Transport Infrastructure Investment on Regional Development, Available on-line at http://www.internationaltransportforum.org/pub/pdf/02RTRinvestE.pdf

Project Appraisal Document on a proposed loan to Republic of Macedonia for Regional and Local Roads Program Support Project (World Bank Official Document: Report No: 42200-MK)

Terms of Reference (2013) Socio-economic Impact Assessment of the Local Roads Rehabilitated under the Regional and Local Roads Program Support Project (ANNEX 1 of this Report)

Transport Scotland (2013) Design Manual for economic assessment of road schemes in Scotland (NESA Manual), Available on-line at http://www.sias.com/2013/TS/200507NesaManual.pdf

World Bank (2005) Framework for the economic evaluation of transport projects, Transport Note TRN 5, Available on-line at http://go.worldbank.org/ME49C4XOH0

World Bank (2005) Valuation of time saving, Transport Note TRN 15, Available on-line at http://go.worldbank.org/ME49C4XOH0

World Bank (2005) Valuation of accident reduction, Transport Note TRN 16, Available on-line at http://go.worldbank.org/ME49C4XOH0

World Bank (2005) Low volume rural roads, Transport Note TRN 21, Available on-line at http://go.worldbank.org/ME49C4XOH0

8. APPENDICES

8.1. APPENDIX 1 List of Municipalities and Local Roads and their precise location

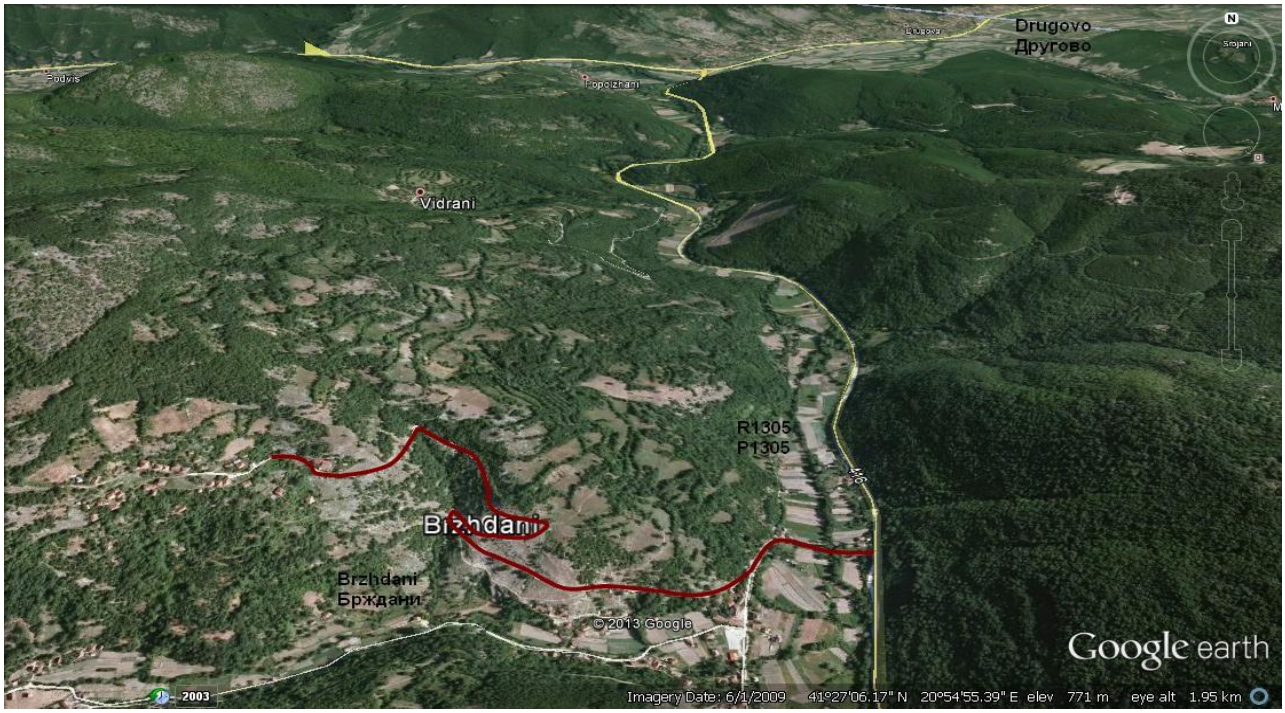
REGION	MUNICIPALITY	ROADS		LENGTH (Km)
Mountain Region	Kichevo	1	Kichevo (A2) - Motel Krushino	2.35
		2	Motel Krushino - v. Knezino	1.60
		3	For Drugovo (A2 – Walk-in Clinic)	0.65
		4	R-1305 - v. Brzdani (A2 - Walk-in Clinic)	1.50
	Demir Hisar	5	R-1305 - v. Kochista	1.00
		6	R-1305 - v. Zashle	0.50
	Tetovo	7	Tetovo – Trebosh	1.45
	Berovo	8	R-1302 Gjerdovi Vodenici - v. Rusinovo	1.90
		9	v. Rusinovo - v. Vladimirovo	3.50
	Vinica	10	St. Spas - v. Peklani	2.80
		11	v. Dragobrashte - maala Mirmarci	1.15
Lowland Region	Resen	12	Resen - v. Dolna Bela Crkva	1.50
		13	Resen - v. Stenje	1.17
	Bitola	14	Bitola - v. Poeshevo	3.85
		15	R-1311 v. Dolno Orizari - v. Karamani - v. Trn	6.50
	Struga	16	A2 - v. Misleshevo	1.40
		17	v. Dolna Belica - v. Veleshta	2.35
		18	v. Misleshevo – A2 ("Eurotel")	0.75
	Kochani	19	A3 - v. Trkanje	1.15
		20	Kochani - dam Gradche	4.80
	Gazi Baba	21	Butel - Rashtak	3.00

8.1.1. Municipality Kichevo

1. Kichevo (A2) - Motel Krushino (2.35 km)
2. Motel Krushino - v. Knezino (1.60 km)

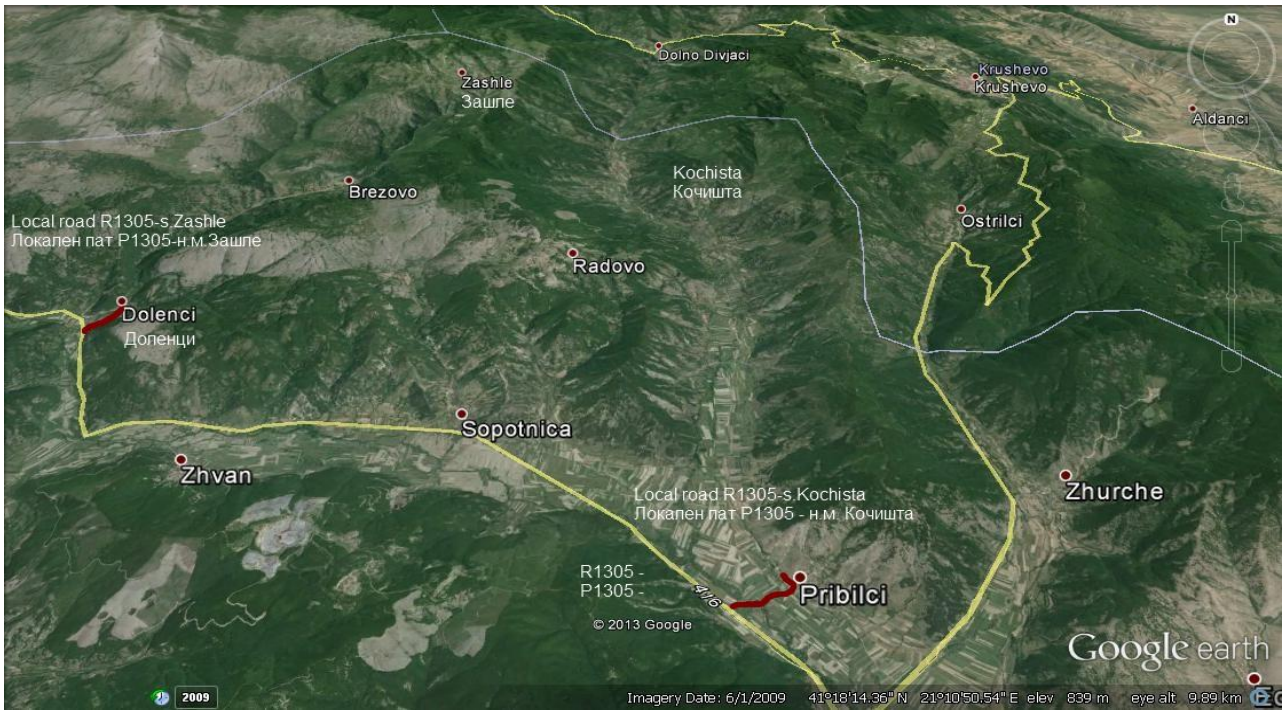
3. For Drugovo (A2 – Walk-in Clinic) (0.65 km)

4. R-1305 - v. Brzdani (A2 - Walk-in Clinic) (1.5 km)



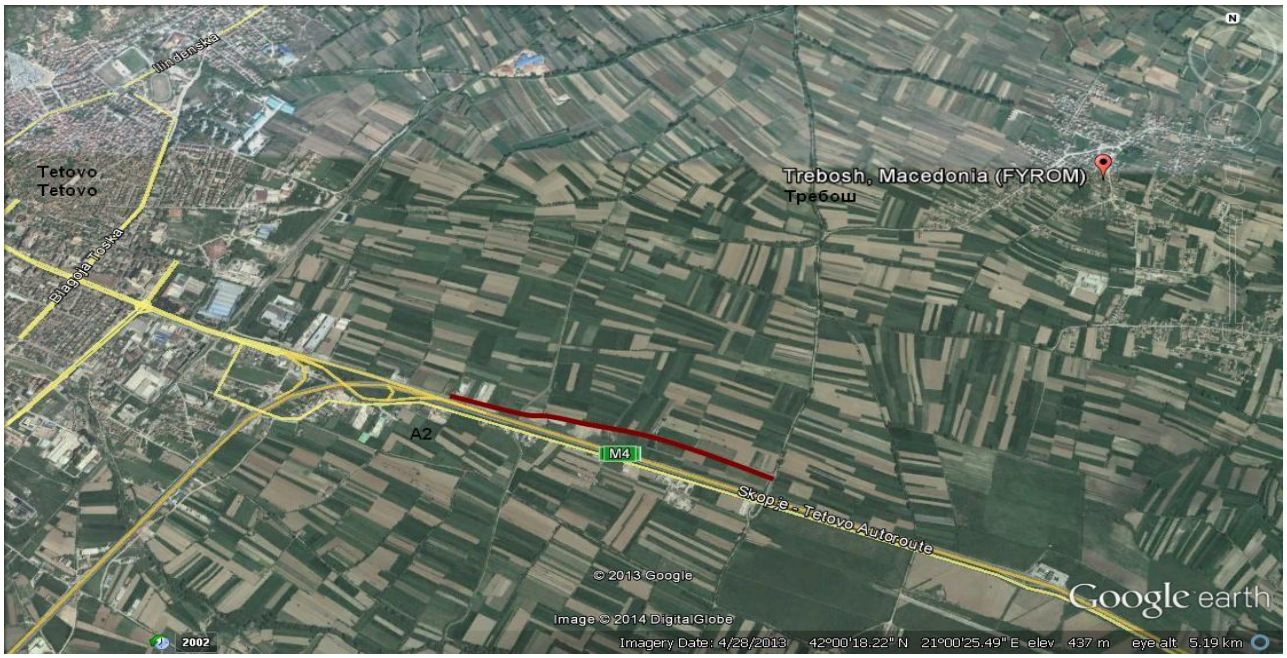
8.1.2. Municipality Demir Hisar

5. R-1305 - v. Kochista (1.0 km)
6. R-1305 - v. Zashle (0.5 km)



8.1.3. Municipality Tetovo

7. Tetovo – Trebosh (1.45 km)

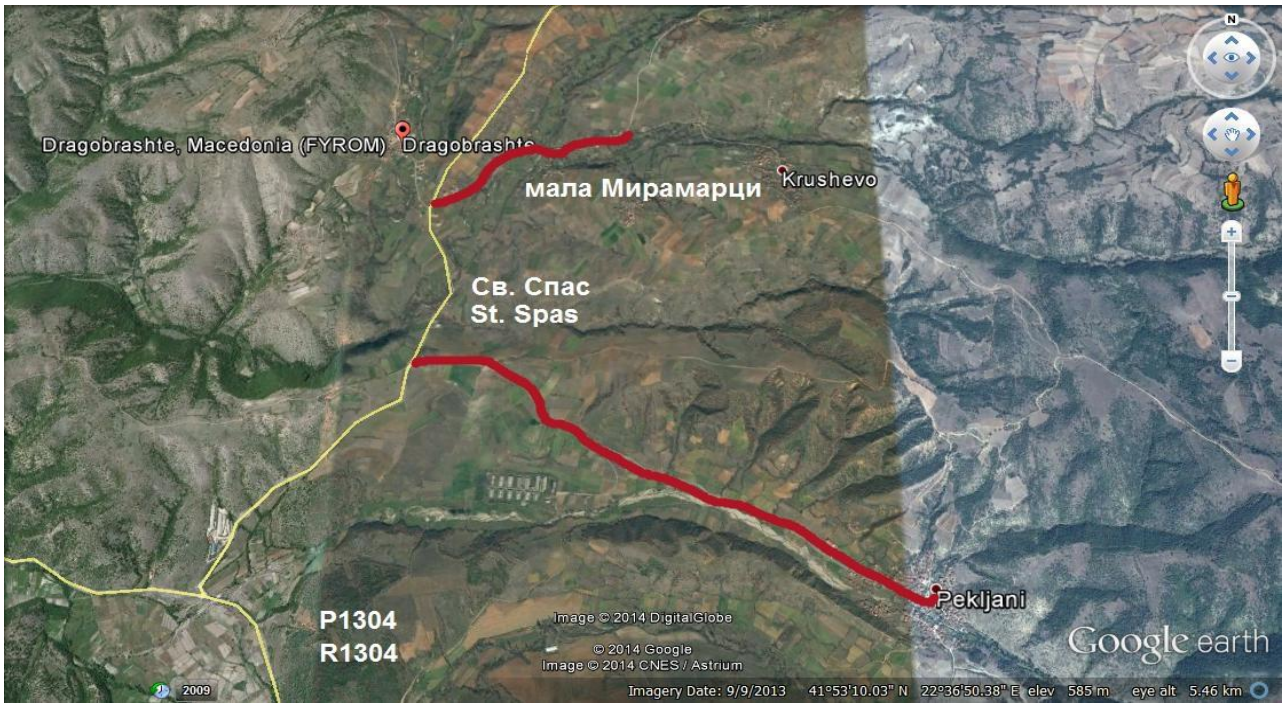


8.1.4. Municipality Berovo

8. R-1302 Gjerdovi Vodenici - v. Rusinovo (1.9 km)
9. v. Rusinovo - v. Vladimirovo (3.5 km)

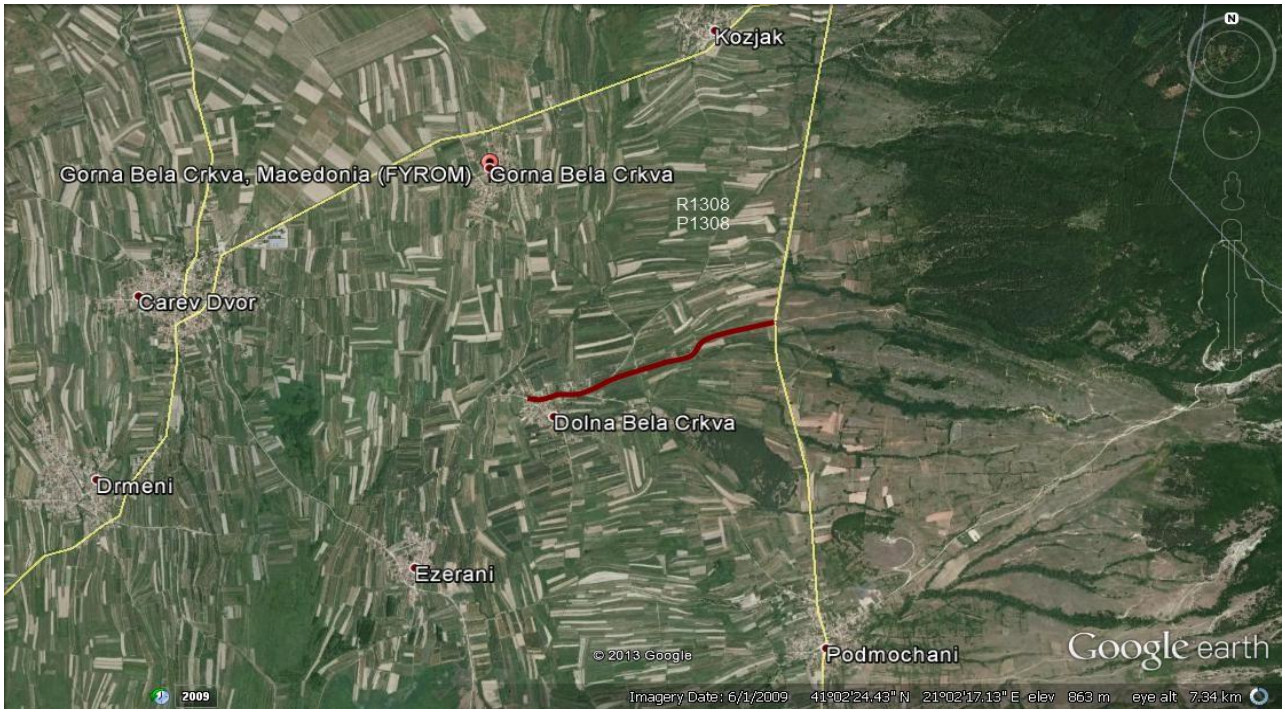
8.1.5. Municipality Vinica

10. St. Spas - v. Peklani (2.8 km)
11. v. Dragobrashte - maala Mirmarci (1.15 km)



8.1.6. Municipality Resen

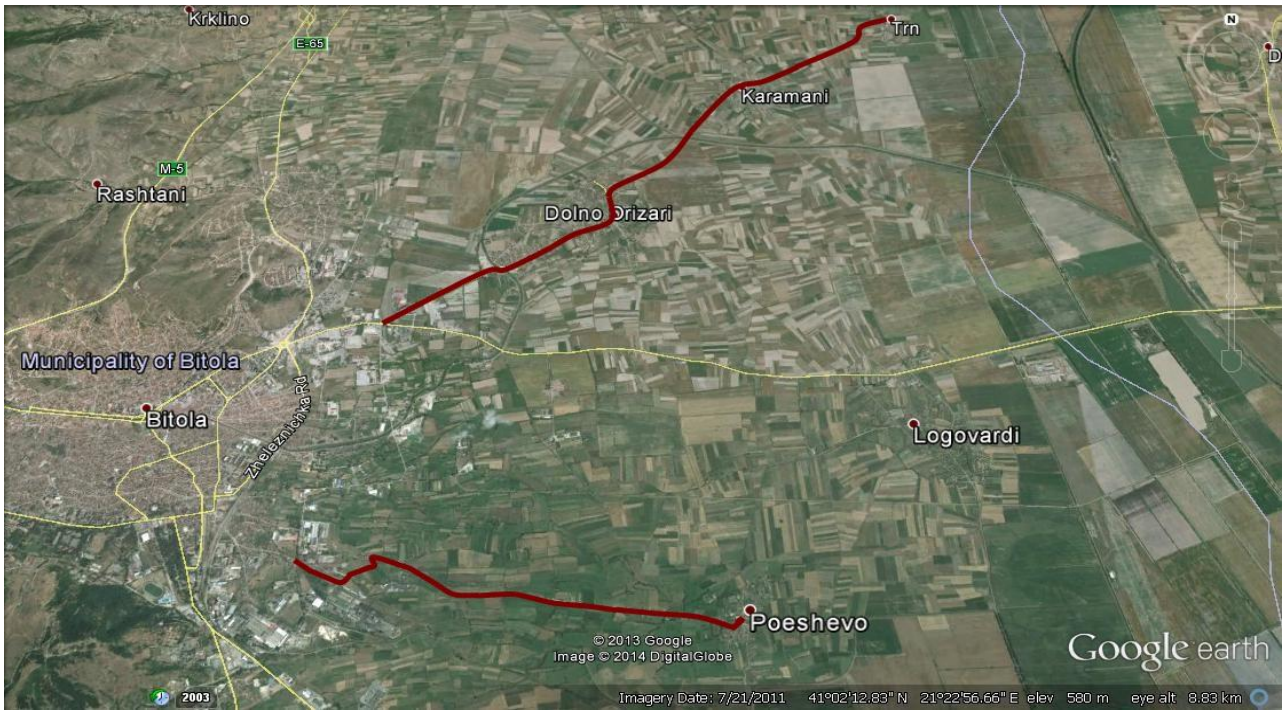
12. Resen - v. Dolna Bela Crkva (1.5 km)



13. Resen - v. Stenje (1.17 km)

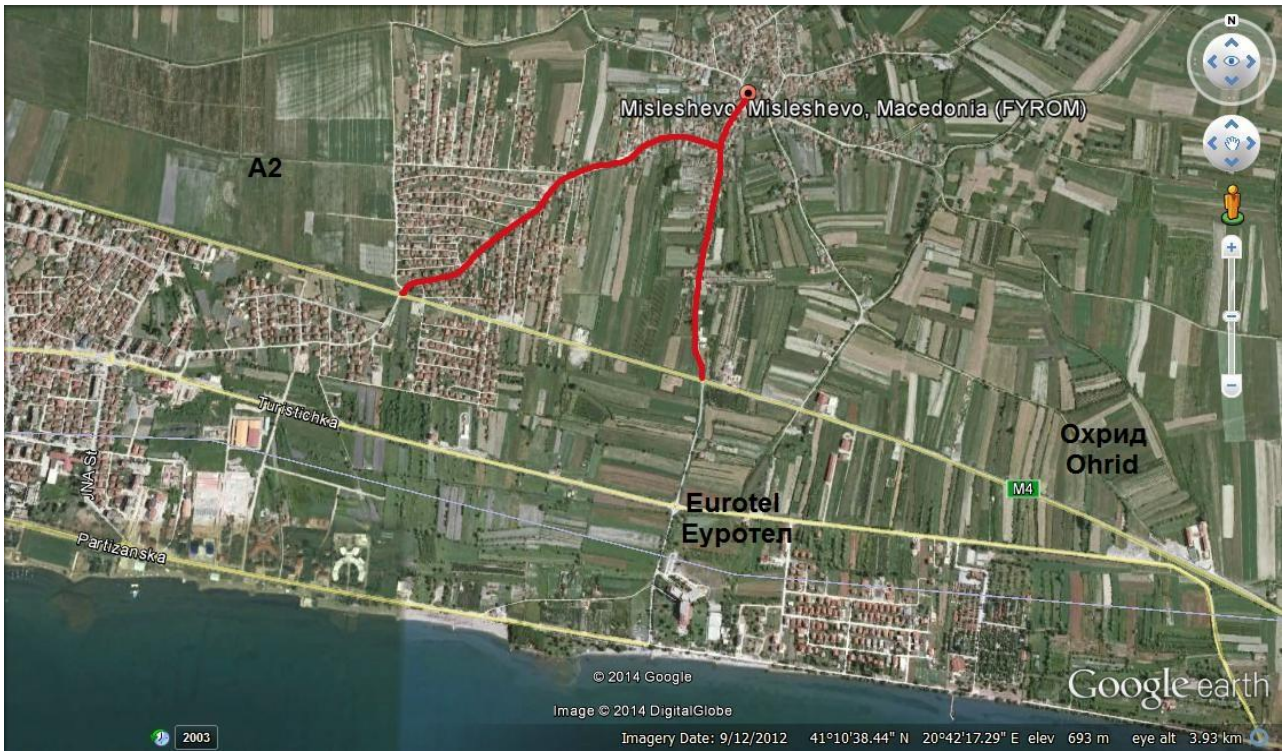
8.1.7. Municipality Bitola

14. Bitola - v. Poeshevo (3.85 km)
15. R-1311 v. Dolno Orizari - v. Karamani - v. Trn (6.5 km)

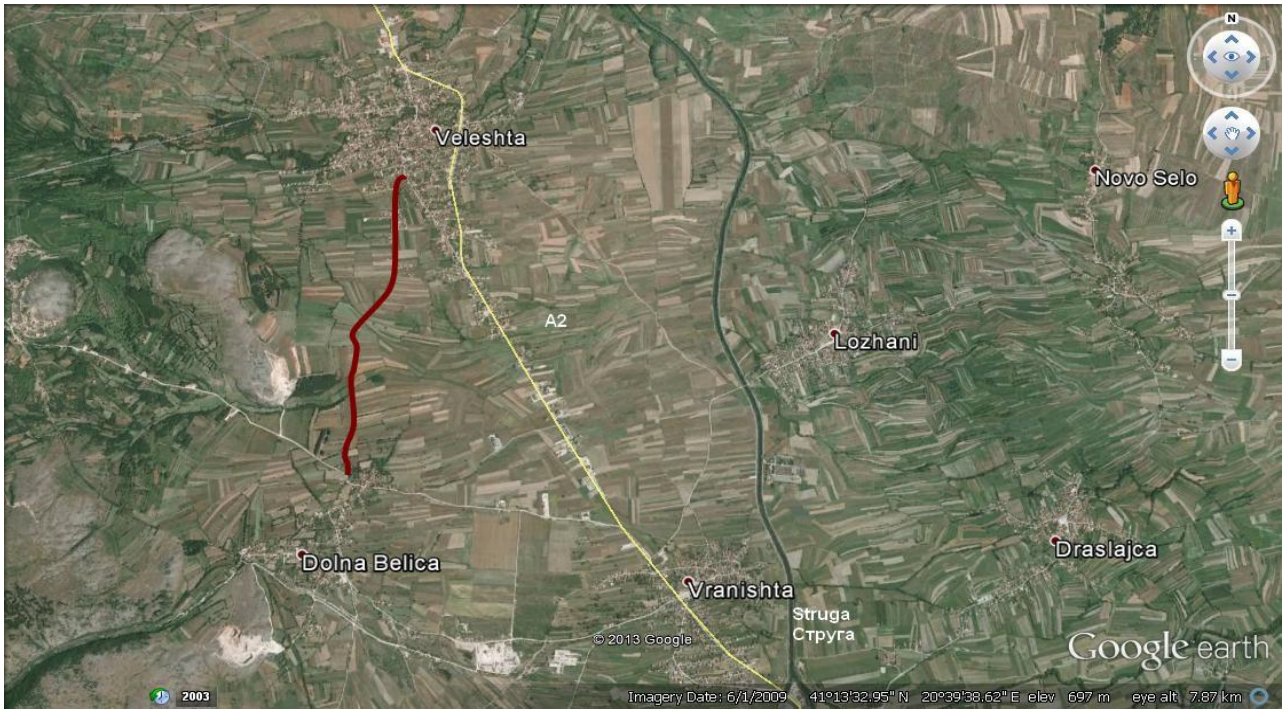


8.1.8. Municipality Struga

16. A2 - v. Misleshevo (1.4 km)
18. v. Misleshevo – A2 ("Eurotel") (0.75 km)



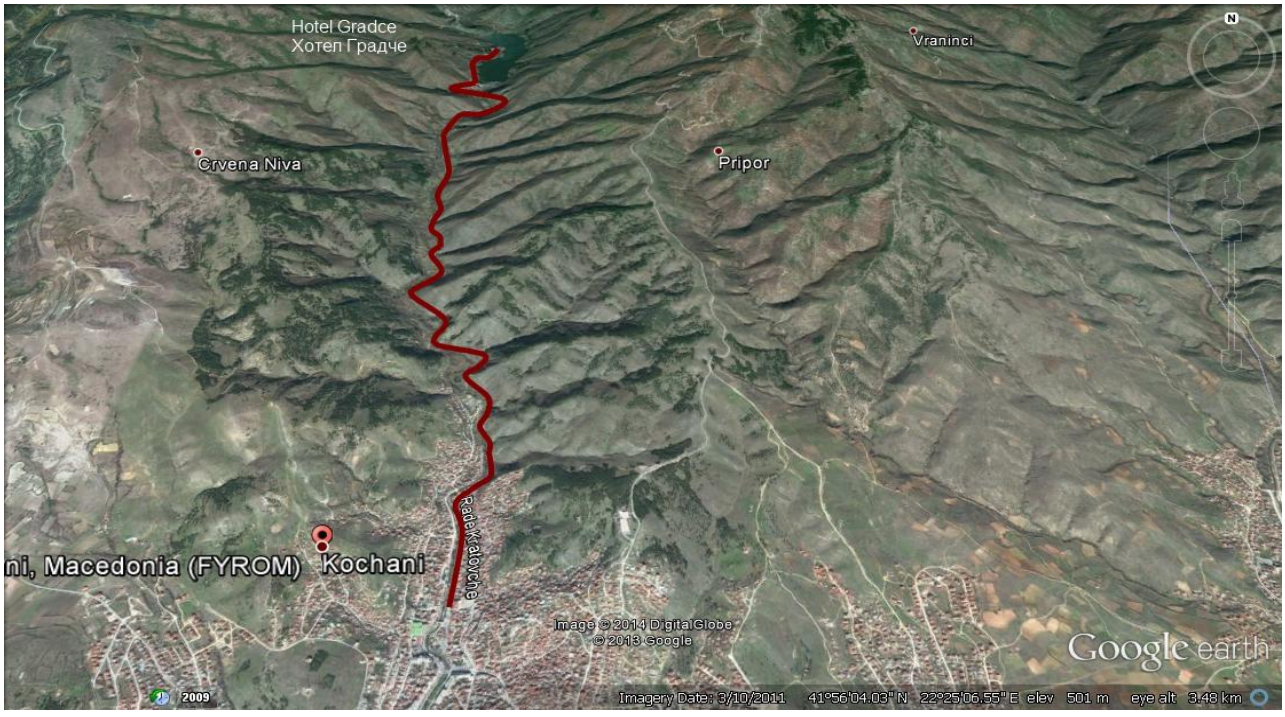
17. v. Dolna Belica - v. Veleshta (2.35 km)



8.1.9. Municipality Kochani

19. A3 - v. Trkanje (1.15 km)

20. Kochani - dam Gradche (4.8 km)



8.1.10. Municipality Gazi Baba

21. Butel – Rashtak (3.0 km)

8.2. APPENDIX 2 Team composition and Level of effort

Dimche Lazarevski, Ph. D. in Economics (Team Leader)

Assistant professor at University American College Skopje, Faculty of Economics where he is teaching group of subject in the field of investment, financial and portfolio management and financial markets and institutions. He is Certified Investment Advisor and Expert Trainee for entrepreneurship and human resources development. He has participated in important feasibility studies working as transport economist on financial and economic cost-benefit analysis. He has long list of published scientific papers in the field of investment, financial and portfolio management.

Svetlana Trbojevic, Ph. D. in Social Sciences (Social Specialist)

Assistant Professor employed at the Institute of Social Work and Social Policy, Faculty of Philosophy, University of Ss. Cyril and Methodius. She is an expert in the field social work and social policy with a special experience in mapping communities, poverty and social inclusion. In addition, she has been actively included in developing action plans for several local self-governments. Her research interests include social work with groups and communities, non-governmental sector, multiculturalism, and spiritual social work. She has published number of scientific articles and conducted individual and joint studies on different social issues.

Andon Petrovski, B. Sc. Tr. Eng., M. Sc. Candidate in Traffic & Transportation (Traffic Engineer/Specialist)

Andon Petrovski is a traffic engineer with experience in planning and analytical assignments related to road sector in Macedonia. His studies included in the detailed traffic design, or detailed traffic behavior in many places all around the Country. These references also are related to different range of roads, including mountainous and flat areas, national and local roads, as well as city traffic. He possesses extensive knowledge related to traffic data, relevant authorities and statistics, and use of computer assessment tolls.

Joined by two junior staffs:

Vesna Ickovska, B. Env. Sc.,

Environmental expert who gathered the experience in many EIA components of the analyses related to roads, and other associated infrastructure projects. She is familiar with relevant legislation, as well as necessary structure of the project outcomes.

Vladimir Tomovski, B. Sc. in Economics,

M.Sc. candidate will assist the Team Leader and other senior experts. Special component for which he will be responsible is presentation of project outcomes by use of adequate software tools.

The expected Level of effort (LOE) for Team Leader is 4 months; LOE for the Traffic Engineer is 1 month, and for the Social Specialist is 3 months.

8.3. APPENDIX 3 Main questions and sub-questions matrix

Objective	Sub-objective	Indicators	Required data	Data Source	Method	Person in Charge
Market Access						
	Time Value Savings	Money Value	Traffic demand Link speed Time Value	Focus Groups PESR or Consultant HEATCO	Questionnaire/ Rule of a half	Dimche Lazarevski Andon Petrovski
	Vehicle Operating Costs Savings	Money Value	Fuel costs Non-fuel costs	NESA Manual	See part 3.1.1.2	Dimche Lazarevski Andon Petrovski
	Employment Benefits	Unemployment rate / Economic opportunities	Unemployed people before and after road rehabilitation / Arising economic opportunities	Employment Agency or State Statistical Office /Focus Groups	Comparative analysis / Questionnaires	Dimche Lazarevski Svetlana Trbojevic
	Accessibilities and Social Inclusion Benefits	Access to services / Network coverage	Access level Network Coverage	Focus Groups Municipality Authority or PESR	Comparative analysis / Questionnaires	Dimche Lazarevski Svetlana Trbojevic
Human Capital						
	Education Benefits	Access to education facilities / Literacy to Enrolment / Lifelong learning literacy	Enrolled pupils in primary and secondary education using the rehabilitated roads / Pupils involved in extracurricular educational activities and enrolled pupils/ Lifelong learning activities	Ministry of education State Statistical Office, Municipality Authorities, NGOs, LERs, Focus Groups	Comparative analysis / Questionnaires	Dimche Lazarevski Svetlana Trbojevic
	Health Care Benefits	Access to health services	Health services data	Focus Groups	Comparative analysis / Questionnaires	Dimche Lazarevski Svetlana Trbojevic
Road Safety						
	Reduction of Road Accidents Savings	Number of accidents/ Money value	Accidents Accidents value	Ministry of internal affairs HEATCO	Comparative analysis and monetization	Dimche Lazarevski Andon Petrovski
	Traffic Signalization	Safety level	On-site data	Consultant	Horizontal and vertical traffic signalization control	Andon Petrovski
	Road Safety Benefits	Safety level	Safety believe	Focus Groups	Questionnaires	Svetlana Trbojevic
Land Value and New Opportunity						
	Land Value Savings	Money Value	Price differences Area of influence Value of square metre	Municipality Authorities Agency for real estate cadaster	Comparative analysis and monetization	Dimche Lazarevski Andon Petrovski
	New Opportunity Benefits	Things to do / Self-reported enthusiasm	New acctivities Expectations	Focus Groups	Questionnaires	Svetlana Trbojevic

8.4. APPENDIX 4 Customized questionnaires

8.4.1. Focus group 1: Women entrepreneurs

1. Based on your opinion has the road rehabilitation improved local citizens' communication with other communities?
2. Could you estimate the travel time saving achieved with the road rehabilitation?
3. Do you consider that you have experience some travel costs savings after the road rehabilitation?
4. Based on your personal experience can you point out the institutions that become more accessible after the road rehabilitation?
5. Could you elaborate on the benefits that woman more particular women entrepreneurs have from the rehabilitated road?
6. In what way did the road rehabilitation contributed to increase opportunities for economic development of the community?
7. Provide examples of how the road rehabilitation contributed to attracting investments in the community or nearby communities.
8. In what way has the road rehabilitation contributed to improvement of local businesses, and more particularly your business?
9. Provide examples of how the road rehabilitation increased opportunities for your products placement.
10. Provide examples on how the road rehabilitation contributes to better employment and greater economic activity of local population.
11. Because of the road rehabilitation are there new jobs opening in the local community. If yes, name them.
12. Do you have any income that you or members of your households earn from sources that do not include salary, social transfers or rents?
13. Besides the possibility for full-time employment, has the road rehabilitation increased the opportunities for engagement of seasonal workers in the community.
14. Besides the possibility for full time employment, has the road rehabilitation increased the daily or weekly migration and contributed to increased opportunities for engagement of seasonal workers from the community in nearby communities?
15. Has the road rehabilitation contributed to establishment of a state or private institution, e.g. educational, health or social institution?
16. How do you estimate the road infrastructure in your local community?
17. Is there pavements on all streets or only the major streets are paved?
18. Based on your opinion do you consider that the reconstructed road improved the accessibility of local citizens to educational institutions?
19. How did the road rehabilitation contributed to accessibility of the local population to educational institutions such as kindergartens, elementary and secondary schools, universities, please give us some examples?

20. How did the road rehabilitation enable better access to playgrounds or recreational centers or picking areas?
21. Has the road rehabilitation contributed to an increase in the number of enrolled students in regular education?
22. Has the road rehabilitation contributed to an increase in the number of enrolled students in extracurricular educational activities such as language schools, sport clubs or folk sections?
23. Based on your observation has the road rehabilitation improved pupils' transportation or enabled organization of transport for pupils to educational centers?
24. Based on your observation has the road rehabilitation increased the possibilities of local citizens to access social institutions such as the Municipality centers for social work and in what way?
25. Based on your experience do you consider that the road rehabilitation improved access to postal and banking services?
26. Do you think that the road rehabilitation increased the possibilities of local citizens to access health care institutions such as pharmacist, walk-in clinics, policlinics and hospitals, and in what way?
27. To what extend the rehabilitated road contributes the better reaching out of health services to the community such as emergency care vehicles, patronage services, and the possibility for mobile medical teams that offer services for local citizens.
28. Based on your opinion how you would estimate the security of the road before and after the rehabilitation: a) not secure at all, b) somewhat secure c) average secure d) very secure e) exceptionally secure.
29. Are there any aspects that reduce its safety such as black spots, reduced visibility at certain parts or road slopes that under certain weather conditions make the road unsafe?
30. Based on your estimates has road rehabilitation contributed to reduction of the trend of accidences before the rehabilitation?
31. According to your estimates has the road rehabilitation contributed to the increase in value of the properties (houses, business objects).
32. Has there been a change in the value of the land after the rehabilitation of the road?
33. According to your opinion, has there been an increase in the agricultural investments in the community as well as the surrounding neighborhoods?
34. According to you, has there been an increase in the construction investments in the community as well as the surrounding neighborhoods?
35. Could you estimate the effects that the rehabilitation road can have in the near future?
36. Generally, do you consider that the road rehabilitation has contributed to the increase in the number of community visitors?
37. Based on your opinion what is the community key benefit from the road rehabilitation?

8.4.2. Focus group 2: Young people

1. Based on your opinion has the road rehabilitation improved local citizens' communication with other communities?
2. Could you estimate the travel time saving achieved with the road rehabilitation?
3. Do you consider that you have experience some travel costs savings after the rehabilitation of the road?
4. How do you estimate the road infrastructure in your local community?
5. Is there pavements on all streets or only the major streets are paved?
6. Based on your personal experience can you point out the institutions that become more accessible after the road rehabilitation?
7. Could you elaborate on the benefits that young people have from the rehabilitated road?
8. Has the road rehabilitation contributed to reduction or retention of migration of young people from the community and how?
9. Name some social or cultural activities organized for young people after the road rehabilitation.
10. Has the road rehabilitation increased sport activities organized for young people?
11. In what way has the road rehabilitation contributed to an increase of opportunities for community economic development?
12. Provide examples of how the road rehabilitation contributed to attracting investments in the community or nearby communities.
13. In what way has the road rehabilitation contributed to improvement of local businesses?
14. Provide examples on how the road rehabilitation contributes to better employment of young people and greater economic activity of local population.
15. Do you have any income that you or members of your households earn from sources that do not include salary, social transfers or rents?
16. Because of the road rehabilitation are there new jobs opening targeting young people in the local community. If yes, name them.
17. Besides the possibility for full-time employment, has the road rehabilitation increased the opportunities for engagement of seasonal workers in the community.
18. Besides the possibility for full time employment, has the road rehabilitation increased the daily or weekly migration and contributed to increased opportunities for engagement of seasonal workers from the community in nearby communities?
19. Has the road rehabilitation contributed to establishment of a state or private institution, e.g. educational, health or social institution?
20. Based on your opinion do you consider that the road rehabilitation improved the accessibility of local citizens to educational institutions?
21. How did the road rehabilitation contributed to accessibility of the local population to educational institutions such as kindergartens, elementary and secondary schools, universities, please give us some examples?

22. How did the road rehabilitation enable better access to playgrounds or recreational centers or picking areas?
23. Has the road rehabilitation contributed to an increase in the number of enrolled students in regular education?
24. Has the road rehabilitation contributed to an increase in the number of enrolled students in extracurricular educational activities such as language schools, sport clubs or folk sections?
25. Based on your observation has the road rehabilitation improved pupils' transportation or enabled organization of transport for pupils to educational centers?
26. Based on your observation has the road rehabilitation increased the possibilities of local citizens to access social institutions such as the Municipality centers for social work and in what way?
27. Based on your experience do you consider that the road rehabilitation improved access to postal and banking services?
28. Do you think that the road rehabilitation increased the possibilities of local citizens to access health care institutions such as pharmacist, walk-in clinics, policlinics and hospitals, and in what way?
29. To what extend the rehabilitated road contributes the better reaching out of health services to the community such as emergency care vehicles, patronage services, and the possibility for mobile medical teams that offer services for local citizens.
30. Based on your opinion how you would estimate the security of the road before and after the rehabilitation: a) not secure at all, b) somewhat secure c) average secure d) very secure e) exceptionally secure.
31. Are there any aspects that reduce its safety such as black spots, reduced visibility at certain parts or road slopes that under certain weather conditions make the road unsafe?
32. Based on your estimates has road rehabilitation contributed to reduction of the trend of accidences before the rehabilitation?
33. According to your estimates has the reconstructed road contributed to the increase in value of the properties (houses, business objects).
34. Has there been a change in the value of the land after the rehabilitation of the road?
35. According to your opinion, has there been an increase in the agricultural investments in the community as well as the surrounding neighborhoods?
36. According to you, has there been an increase in the construction investments in the community as well as the surrounding neighborhoods?
37. Could you estimate the effects that the road rehabilitation can have in the near future?
38. Generally, do you consider that the road rehabilitation has contributed to the increase in the number of community visitors?
39. Based on your opinion what is the community key benefit from the road rehabilitation?

8.4.3. Focus group 3: Elderly

1. Based on your opinion has the road rehabilitation improved local citizens' communication with other communities?
2. Could you estimate the travel time saving achieved on the road rehabilitation?
3. Do you consider that you have experience some travel costs savings after the road rehabilitation.
4. Could you elaborate on the benefits that elderly people have from the road rehabilitation?
5. How do you estimate the road infrastructure in your local community?
6. Is there pavements on all streets or only the major streets are paved?
7. Has the road rehabilitation contributed to returning of pensioners that originate from the community?
8. Have there been new services for elderly people provided directly or indirectly because of the road rehabilitation e.g. daycare centers, pensioners clubs, home assistance?
9. Name some social, cultural or sports activities organized for elderly people after the road rehabilitation?
10. Based on your personal experience can you point out the institutions that become more accessible after the road rehabilitation?
11. In what way did the road rehabilitation contributed to increase opportunities for economic development of the community?
12. Provide examples of how the road rehabilitation contributed to attracting investments in the community or nearby communities.
13. In what way did the road rehabilitation contribute to improvement of local businesses?
14. Provide examples on how the road rehabilitation contributes to better employment and greater economic activity of local population.
15. Because of the road rehabilitation are there new jobs opening in the local community. If yes, name them.
16. Besides the possibility for full-time employment, has the road rehabilitation increased the opportunities for engagement of seasonal workers in the community.
17. Besides the possibility for full-time employment, has the road rehabilitation increased the daily or weekly migration and contributed to increased opportunities for engagement of seasonal workers from the community in nearby communities?
18. Do you have any income that you or members of your households earn from sources that do not include salary, social transfers or rents?
19. Has the road rehabilitation contributed to establishment of a state or private institution, e.g. educational, health or social institution?
20. Based on your opinion, do you consider that the road rehabilitation improved the accessibility of local citizens to educational institutions?

21. How did the road rehabilitation contributed to accessibility of the local population to educational institutions such as kindergartens, elementary and secondary schools, universities, please give us some examples?
22. How did the road rehabilitation enable better access to playgrounds or recreational centers or picking areas?
23. Has the road rehabilitation contributed to an increase in the number of enrolled students in regular education?
24. Has the road rehabilitation contributed to an increase in the number of enrolled students in extracurricular educational activities such as language schools, sport clubs or folk sections?
25. Based on your observation has the road rehabilitation improved pupils' transportation or enabled organization of transport for pupils to educational centers?
26. Based on your observation has the road rehabilitation increased the possibilities of local citizens to access social institutions such as the Municipal centers for social work and in what way?
27. Based on your experience do you consider that the road rehabilitation improved access to postal and banking services?
28. Do you think that the road rehabilitation increased the possibilities of local citizens to access health care institutions such as pharmacist, walk-in clinics, policlinics and hospitals, and in what way?
29. To what extend the rehabilitated road contributes the better reaching out of health services to the community such as emergency care vehicles, patronage services, and the possibility for mobile medical teams that offer services for local citizens.
30. Based on your opinion, how would you estimate the security of the road before and after the rehabilitation: a) not secure at all, b) somewhat secure c) average secure d) very secure e) exceptionally secure.
31. Are there any aspects that reduce its safety such as black spots, reduced visibility at certain parts or road slopes that under certain weather conditions make the road unsafe?
32. Based on your estimates has road rehabilitation contributed to reduction of the trend of accidences before the rehabilitation?
33. According to your estimates has the reconstructed road contributed to the increase in value of the properties (houses, business objects).
34. Has there been a change in the value of the land after the rehabilitation of the road?
35. According to your opinion, has there been an increase in the agricultural investments in the community as well as the surrounding neighborhoods?
36. According to you, has there been an increase in the construction investments in the community as well as the surrounding neighborhoods?
37. Could you estimate the effects that the road rehabilitation can have in the near future?
38. Generally, do you consider that the road rehabilitation has contributed to the increase in the number of community visitors?
39. Based on your opinion what is the community key benefit from the road rehabilitation?

8.4.4. Focus group 4: Farmers

1. Based on your opinion has the road rehabilitation improved local citizens' communication with other communities?
2. Could you estimate the travel time saving based on the road rehabilitation?
3. Do you consider that you have experience some travel costs savings after the road rehabilitation.
4. Based on your personal experience can you point out the institutions that become more accessible after the road rehabilitation?
5. How do you estimate the road infrastructure in your local community?
6. Is there pavements on all streets or only the major streets are paved?
7. Could you elaborate on the benefits that farmers have from the rehabilitated road?
8. Do you think that there has been an increase in the size of the arable land in the local community because of the road rehabilitation?
9. Did the road rehabilitation increase the number of people that are engaged in livestock?
10. Has there been an increase in the size of arable land under green houses and is that increase because of the road rehabilitation?
11. In what way did the road rehabilitation contributed to increase opportunities for economic development of the community?
12. Provide examples of how the road rehabilitation contributed to attracting investments in the community or nearby communities.
13. In what way did the road rehabilitation contribute to improvement of local businesses and in more particular your farming business?
14. Provide examples of how the road rehabilitation increased opportunities for your agricultural products placement.
15. Provide examples on how the road rehabilitation contributes to better employment and greater economic activity of local population.
16. Because of the road rehabilitation are there new jobs opening in the local community. If yes, name them.
17. Besides the possibility for full-time employment, has the road rehabilitation increased the opportunities for engagement of seasonal workers in the community.
18. Do you have any income that you or members of your households earn from sources that do not include salary, social transfers or rents?
19. Besides the possibility for full-time employment, has the road rehabilitation increased the daily or weekly migration and contributed to increased opportunities for engagement of seasonal workers from the community in nearby communities?
20. Has the road rehabilitation contributed to establishment of a state or private institution, e.g. educational, health or social institution?
21. Based on your opinion do you consider that the road rehabilitation improved the accessibility of local citizens to educational institutions?

22. How did the road rehabilitation contributed to accessibility of the local population to educational institutions such as kindergartens, elementary and secondary schools, universities, please give us some examples?
23. How did the road rehabilitation enable better access to playgrounds or recreational centers or picking areas?
24. Has the road rehabilitation contributed to an increase in the number of enrolled students in regular education?
25. Has the road rehabilitation contributed to an increase in the number of enrolled students in extracurricular educational activities such as language schools, sport clubs or folk sections?
26. Based on your observation has the road rehabilitation improved pupils' transportation or enabled organization of transport for pupils to educational centers?
27. Based on your observation has the road rehabilitation increased the possibilities of local citizens to access social institutions such as the Municipal centers for social work and in what way?
28. Based on your experience do you consider that the road rehabilitation improved access to postal and banking services?
29. Do you think that the road rehabilitation increased the possibilities of local citizens to access health care institutions such as pharmacist, walk-in clinics, policlinics and hospitals, and in what way?
30. To what extend the rehabilitated road contributes the better reaching out of health services to the community such as emergency care vehicles, patronage services, and the possibility for mobile medical teams that offer services for local citizens.
31. Based on your opinion how you would estimate the security of the road before and after the rehabilitation: a) not secure at all, b) somewhat secure c) average secure d) very secure e) exceptionally secure.
32. Are there any aspects that reduce its safety such as black spots, reduced visibility at certain parts or road slopes that under certain weather conditions make the road unsafe?
33. Based on your estimates has road rehabilitation contributed to reduction of the trend of accidences before the rehabilitation?
34. According to your estimates has the reconstructed road contributed to the increase in value of the properties (houses, business objects).
35. Has there been a change in the value of the land after the road rehabilitation?
36. According to your opinion, has there been an increase in the agricultural investments in the community as well as the surrounding neighborhoods?
37. According to you, has there been an increase in the construction investments in the community as well as the surrounding neighborhoods?
38. Could you estimate the effects that the road rehabilitation can have in the near future?
39. Generally, do you consider that the reconstructed road has contributed to the increase in the number of community visitors?
40. Based on your opinion what is the community key benefit from the road rehabilitation?

8.4.5. Focus group 5: Unemployed individuals

1. Based on your opinion has the road rehabilitation improved local citizens' communication with other communities?
2. Could you estimate the travel time saving achieved with the road rehabilitation?
3. Do you consider that you have experience some travel costs savings after the road rehabilitation.
4. How do you estimate the road infrastructure in your local community?
5. Is there pavements on all streets or only the major streets are paved?
6. Based on your personal experience can you point out the institutions that become more accessible after the road rehabilitation?
7. In what way did the road rehabilitation contributed to increase opportunities for economic development of the community?
8. Provide examples of how the road rehabilitation contributed to attracting investments in the community or nearby communities.
9. In what way did the road rehabilitation contribute to improvement of local businesses?
10. Do you have any income that you or members of your households earn from sources that do not include salary, social transfers or rents?
11. Provide examples of how the road rehabilitation increased opportunities for placement of products produced in the community.
12. Has the local population been engaged as a labor force for the road rehabilitation? For how long period and how many persons have been engaged?
13. Has the local population "benefited" from the road rehabilitation' contractor with additional service distributed during the road rehabilitation.
14. Provide examples on how the road rehabilitation contributes to better employment and greater economic activity of local population.
15. Because of the road rehabilitation are there new jobs opening in the local community. If yes, name them.
16. Did you have more opportunities for employment after the road rehabilitation?
17. Besides the possibility for full-time employment, has the road rehabilitation increased the opportunities for engagement of seasonal workers in the community.
18. Besides the possibility for full-time employment, has the road rehabilitation increased the daily or weekly migration and contributed to increased opportunities for engagement of seasonal workers from the community in nearby communities?
19. Has the road rehabilitation contributed to establishment of a state or private institution, e.g. educational, health or social institution?
20. Based on your opinion do you consider that the road rehabilitation improved the accessibility of local citizens to educational institutions?

21. How did the road rehabilitation contributed to accessibility of the local population to educational institutions such as kindergartens, elementary and secondary schools, universities, please give us some examples?
22. How did the road rehabilitation enable better access to playgrounds or recreational centers or picking areas?
23. Has the road rehabilitation contributed to an increase in the number of enrolled students in regular education?
24. Has the road rehabilitation contributed to an increase in the number of enrolled students in extracurricular educational activities such as language schools, sport clubs or folk sections?
25. Based on your observation has the road rehabilitation improved pupils' transportation or enabled organization of transport for pupils to educational centers?
26. Based on your observation has the road rehabilitation increased the possibilities of local citizens to access social institutions such as the Municipal centers for social work and in what way?
27. Based on your experience do you consider that the road rehabilitation improved access to postal and banking services?
28. Do you think that the road rehabilitation increased the possibilities of local citizens to access health care institutions such as pharmacist, walk-in clinics, policlinics and hospitals, and in what way?
29. To what extend the road rehabilitation contributes the better reaching out of health services to the community such as emergency care vehicles, patronage services, and the possibility for mobile medical teams that offer services for local citizens.
30. Based on your opinion how you would estimate the security of the road before and after the rehabilitation: a) not secure at all, b) somewhat secure c) average secure d) very secure e) exceptionally secure.
31. Are there any aspects that reduce its safety such as black spots, reduced visibility at certain parts or road slopes that under certain weather conditions make the road unsafe?
32. Based on your estimates has road rehabilitation contributed to reduction of the trend of accidences before the rehabilitation?
33. According to your estimates has the reconstructed road contributed to the increase in value of the properties (houses, business objects).
34. Has there been a change in the value of the land after the road rehabilitation?
35. According to your opinion, has there been an increase in the agricultural investments in the community as well as the surrounding neighborhoods?
36. According to you, has there been an increase in the construction investments in the community as well as the surrounding neighborhoods?
37. Could you estimate the effects that the road rehabilitation can have in the near future?
38. Generally, do you consider that the road rehabilitation has contributed to the increase in the number of community visitors?
39. Based on your opinion what is the community key benefit from the road rehabilitation?

8.4.6. Focus group 6: Employed individuals

1. Based on your opinion has the road rehabilitation improved local citizens' communication with other communities?
2. Could you estimate the travel time saving achieved with the road rehabilitation?
3. Do you consider that you have experience some travel costs savings after the road rehabilitation?
4. How do you estimate the road infrastructure in your local community?
5. Is there pavements on all streets or only the major streets are paved?
6. Based on your personal experience can you point out the institutions that become more accessible after the road rehabilitation?
7. In what way did the rehabilitation of the road contributed to increase opportunities for economic development of the community?
8. Provide examples of how the road rehabilitation contributed to attracting investments in the community or nearby communities.
9. In what way did the road rehabilitation contribute to improvement of local businesses and in more particular your business?
10. Provide examples of how the road rehabilitation increased opportunities for your products placement.
11. Provide examples on how the road rehabilitation contributes to better employment and greater economic activity of local population
12. Because of the road rehabilitation are there new jobs opening in the local community. If yes, name them.
13. Besides the possibility for full-time employment, has the road rehabilitation increased the opportunities for engagement of seasonal workers in the community.
14. Besides the possibility for full-time employment, has the road rehabilitation increased the daily or weekly migration and contributed to increased opportunities for engagement of seasonal workers from the community in nearby communities?
15. Has the road rehabilitation contributed to establishment of a state or private institution, e.g. educational, health or social institution?
16. Based on your opinion do you consider that the road rehabilitation improved the accessibility of local citizens to educational institutions?
17. How did the road rehabilitation contributed to accessibility of the local population to educational institutions such as kindergartens, elementary and secondary schools, universities, please give us some examples?
18. How did the road rehabilitation enable better access to playgrounds or recreational centers or picking areas?
19. Has the road rehabilitation contributed to an increase in the number of enrolled students in regular education?
20. Has the road rehabilitation contributed to an increase in the number of enrolled students in extracurricular educational activities such as language schools, sport clubs or folk sections?

21. Based on your observation has the road rehabilitation improved pupils' transportation or enabled organization of transport for pupils to educational centers?
22. Based on your observation has the road rehabilitation increased the possibilities of local citizens to access social institutions such as the Municipal centers for social work and in what way?
23. Based on your experience do you consider that the road rehabilitation improved access to postal and banking services?
24. Do you think that the road rehabilitation increased the possibilities of local citizens to access health care institutions such as pharmacist, walk-in clinics, policlinics and hospitals, and in what way?
25. To what extend the rehabilitated road contributes the better reaching out of health services to the community such as emergency care vehicles, patronage services, and the possibility for mobile medical teams that offer services for local citizens.
26. Based on your opinion how you would estimate the security of the road before and after the rehabilitation: a) not secure at all, b) somewhat secure c) average secure d) very secure e) exceptionally secure.
27. Are there any aspects that reduce its safety such as black spots, reduced visibility at certain parts or road slopes that under certain weather conditions make the road unsafe?
28. Based on your estimates has road rehabilitation contributed to reduction of the trend of accidences before the rehabilitation?
29. According to your estimates has the road rehabilitation contributed to the increase in value of the properties (houses, business objects).
30. Has there been a change in the value of the land after the rehabilitation of the road?
31. According to your opinion, has there been an increase in the agricultural investments in the community as well as the surrounding neighborhoods?
32. According to you, has there been an increase in the construction investments in the community as well as the surrounding neighborhoods?
33. Could you estimate the effects that the reconstructed road can have in the near future?
34. Generally, do you consider that the reconstructed road has contributed to the increase in the number of community visitors?
35. Based on your opinion what is the community key benefit from the road rehabilitation?

8.5. APPENDIX 5 Semi-Structured questionnaires

8.5.1. Municipality authorities

1. Based on your opinion in what way the road rehabilitation improved local citizens' communication with other communities.
2. Could you estimate the travel time saving achieved with the road rehabilitation?
3. Could you estimate the travel costs savings gained by the local population based on the road rehabilitation.
4. How do you estimate the road infrastructure in your local community?
5. Is there pavements on all streets or only the major streets are paved?
6. Is there any improvement in services delivered by the municipality authosrities because of the road rehabilitation?
7. Has there been other investment in the infrastructure of the communities connected with the rehabilitated road?
8. Have the local authorities provided new communal hygiene services or improved the existing such as provision of new vehicles for garbage collection because of the road rehabilitation?
9. Could you identify savings of the local government budget based on reduced costs for servicing the road after the rehabilitation?
10. Could you identify savings of the local government budget based on reduced cost for maintenance of municipal vehicles that were covering the communities connected with the rehabilitated road?
11. Based on your opinion how you would estimate the security of the road before and after the road rehabilitation: a) not secure at all, b) somewhat secure c) average secure d) very secure e) exceptionally secure.
12. Are there any aspects that reduce its safety such as black spots, reduced visibility at certain parts or road slopes that under certain weather conditions make the road unsafe?
13. How would you estimate the distribution of road signalization after the road rehabilitation?
14. Is there any road signs you as a driver consider is missing on the rehabilitated road?
15. What services become more available to local citizens because of the road rehabilitation?
16. Have there been any new sport or cultural events organized within the community after the road rehabilitation?
17. Could you elaborate on the benefits that woman, particular women entrepreneurs have from the rehabilitated road?
18. In what way did the rehabilitation of the road contributed to increase opportunities for economic development of the community?
19. Provide examples of how the road rehabilitation contributed to attracting investments in the community or nearby communities.
20. In what way has the road rehabilitation contributed to improvement of local businesses?

21. Provide examples of how the road rehabilitation increased opportunities for products placement.
22. Is there any success business stories directly or indirectly connected to the road rehabilitation?
23. Provide examples on how the road rehabilitation contributes to better employment and economic activity of local population.
24. Has the local population been engaged as a labor force for the road rehabilitation? For how long period and how many persons have been engaged?
25. Has the local population "benefited" from the road rehabilitation' contractor with additional service distributed during the road rehabilitation.
26. Because of the road rehabilitation are there new jobs opening in the local community. If yes, name them.
27. Besides the possibility for full-time employment, has the road rehabilitation increased the opportunities for engagement of seasonal workers in the community.
28. Besides the possibility for full-time employment, has the road rehabilitation increased the daily or weekly migration and contributed to increased opportunities for engagement of seasonal workers from the community in nearby communities?
29. Has the road rehabilitation contributed to establishment of a state or private institution, e.g. educational, health or social institution?
30. Based on your opinion do you consider that the reconstructed road improved the accessibility of local citizens to educational institutions?
31. How did the road rehabilitation contributed to accessibility of the local population to educational institutions such as kindergartens, elementary and secondary schools, universities, please give us some examples?
32. How did the road rehabilitation enable better access to playgrounds or recreational centers or picking areas?
33. Has the road rehabilitation contributed to an increase in the number of enrolled students in regular education?
34. Has the road rehabilitation contributed to an increase in the number of enrolled students in extracurricular educational activities such as language schools, sport clubs or folk sections?
35. Could you identify savings based on the road rehabilitation in regards of organized transport for pupils to educational centers?
36. Based on your observation has the road rehabilitation increased the possibilities of local citizens to access social institutions such as the Municipal centers for social work and in what way?
37. In what ways has the road rehabilitation contributed to improvement of access to postal and banking services?
38. In what ways has the road rehabilitation increased the possibilities of local citizens to access health care institutions such as pharmacist, walk-in clinics, policlinics and hospitals, and in what way?

39. To what extend the rehabilitated road contributes the better reaching out of health services to the community such as emergency care vehicles, patronage services, and the possibility for mobile medical teams that offer services for local citizens.
40. According to your estimates has the road rehabilitation contributed to the increase in value of the properties (houses, business objects).
41. Has there been a change in the value of the land after the rehabilitation of the road?
42. According to your opinion, has there been an increase in the agricultural investments in the community as well as the surrounding neighborhoods?
43. According to you, has there been an increase in the construction investments in the community as well as the surrounding neighborhoods?
44. Could you estimate the effects that the road rehabilitation can have in the near future?
45. Generally, do you consider that the road rehabilitation has contributed to the increase in the number of community visitors?
46. Based on your opinion what is the community key benefit from the road rehabilitation?

8.5.2. Bus and Van drivers (transporters)

1. Based on your opinion in what way the road rehabilitation improved local citizens' communication with other communities.
2. As a transporter, what is your estimate on travel time saving achieved with the road rehabilitation?
3. Could you estimate the travel costs savings gained by transporters with the road rehabilitation?
4. Could you estimate the saving transporters have on maintenance of operating vehicles?
5. How do you estimate the road infrastructure in your local community?
6. Is there pavements on all streets or only the major streets are paved?
7. Has there been an increase in the number of operating transporters after the road rehabilitation?
8. Has there been an increase in the frequency of the community services vehicles after the road rehabilitation?
9. Is there any improvement in transport services delivered after the road rehabilitation?
10. Has there been other investment in the infrastructure of the communities connected with the road rehabilitation?
11. Based on your opinion how you would estimate the security of the road before and after the rehabilitation: a) not secure at all, b) somewhat secure c) average secure d) very secure e) exceptionally secure.
12. Are there any aspects that reduce the road safety such as black spots, reduced visibility at certain parts or road slopes that under certain weather conditions make the road unsafe?
13. How would you estimate the distribution of road signalization after the road rehabilitation?

14. Is there any road signs you as a driver consider is missing on the rehabilitated road?
15. What services become more available to local citizens because of the road rehabilitation?
16. As a transport worker, could you estimate the difference in the number of passengers/tons of goods before and after the road rehabilitation?
17. Have there been any changes in the number of visitors of the communities after the road rehabilitation?
18. Have there been any new sport or cultural events organized within the community after the road rehabilitation?
19. In what way did the road rehabilitation contributed to increase opportunities for economic development of the community?
20. Provide examples of how the road rehabilitation contributed to attracting investments in the community or nearby communities.
21. In what way has the road rehabilitation contributed to improvement of local businesses?
22. Provide examples of how the road rehabilitation increased opportunities for products placement.
23. Is there any success business stories directly or indirectly connected to the road rehabilitation?
24. Provide examples on how the road rehabilitation contributes to better employment and economic activity of local population.
25. Because of the road rehabilitation are there new jobs opening in the local community. If yes, name them.
26. Besides the possibility for full-time employment, has the road rehabilitation increased the opportunities for engagement of seasonal workers in the community.
27. Besides the possibility for full-time employment, has the road rehabilitation increased the daily or weekly migration and contributed to increased opportunities for engagement of seasonal workers from the community in nearby communities?
28. Has the road rehabilitation contributed to establishment of a state or private institution, e.g. educational, health or social institution?
29. Based on your opinion do you consider that the reconstructed road improved the accessibility of local citizens to educational institutions?
30. How did the road rehabilitation contributed to accessibility of the local population to educational institutions such as kindergartens, elementary and secondary schools, universities, please give us some examples?
31. How did the road rehabilitation enable better access to playgrounds or recreational centers or picking areas?
32. Has the road rehabilitation contributed to an increase in the number of enrolled students in regular education?
33. Has the road rehabilitation contributed to an increase in the number of enrolled students in extracurricular educational activities such as language schools, sport clubs or folk sections?

34. Could you identify savings based on the road rehabilitation in regards of organized transport for pupils to educational centers?
35. Have you as a transport worker benefited from organized transport of pupils to educational centers?
36. Based on your observation has the road rehabilitation increased the possibilities of local citizens to access social institutions such as the Municipal centers for social work and in what way?
37. In what ways has the road rehabilitation contributed to improvement of access to postal and banking services?
38. In what ways has the road rehabilitation increased the possibilities of local citizens to access health care institutions such as pharmacist, walk-in clinics, policlinics and hospitals, and in what way?
39. To what extend the rehabilitated road contributes the better reaching out of health services to the community such as emergency care vehicles, patronage services, and the possibility for mobile medical teams that offer services for local citizens.
40. Are you aware of some organized social, sports or cultural events for local citizens after the road rehabilitation, name some?
41. According to your estimates has the reconstructed road contributed to an increase in value of the properties (houses, business objects).
42. Has there been a change in the value of the land after the rehabilitation of the road?
43. According to your opinion, has there been an increase in the agricultural investments in the community as well as the surrounding neighborhoods?
44. According to you, has there been an increase in the construction investments in the community as well as the surrounding neighborhoods?
45. Could you estimate the effects that the road rehabilitation can have in the near future?
46. Based on your opinion what is the community key benefit from the road rehabilitation?

8.5.3. Businesses

1. Based on your opinion has the road rehabilitation improved local citizens' communication with other communities?
2. Could you estimate the travel time saving achieved with the road rehabilitation?
3. Do you consider that you have experience some travel costs savings after the road rehabilitation.
4. How do you estimate the road infrastructure in your local community?
5. Is there pavements on all streets or only the major streets are paved?
6. Based on your personal experience can you point out the institutions that become more accessible after the road rehabilitation?
7. In what way did the road rehabilitation contributed to increase opportunities for economic development of the community?

8. Provide examples of how the road rehabilitation contributed to attracting investments in the community or nearby communities.
9. In what way has the road rehabilitation contributed to improvement of local businesses, and more particularly your business?
10. Provide examples of how the road rehabilitation increased opportunities for your products placement.
11. Did the road rehabilitation improve your business contracts?
12. In your opinion, what business sector benefited the most from the road rehabilitation?
13. Provide examples on how the road rehabilitation contributes to employment and greater economic activity of local population.
14. Because of the road rehabilitation are there new jobs opening targeting young people in the local community. If yes, name them.
15. Besides the possibility for full-time employment, has the road rehabilitation increased the opportunities for engagement of seasonal workers in the community.
16. Besides the possibility for full-time employment, has the road rehabilitation increased the daily or weekly migration and contributed to increased opportunities for engagement of seasonal workers from the community in nearby communities?
17. Has the road rehabilitation contributed to establishment of a state or private institution, e.g. educational, health or social institution?
18. Based on your opinion do you consider that the road rehabilitation improved the accessibility of local citizens to educational institutions?
19. How did the road rehabilitation contributed to accessibility of the local population to educational institutions such as kindergartens, elementary and secondary schools, universities, please give us some examples?
20. How did the road rehabilitation enable better access to playgrounds or recreational centers or picking areas?
21. Has the road rehabilitation contributed to an increase in the number of enrolled students in regular education?
22. Has the road rehabilitation contributed to an increase in the number of enrolled students in extracurricular educational activities such as language schools, sport clubs or folk sections?
23. Based on your observation has the road rehabilitation improved pupils' transportation or enabled organization of transport for pupils to educational centers?
24. Based on your observation has the road rehabilitation increased the possibilities of local citizens to access social institutions such as the Municipal centers for social work and in what way?
25. Based on your experience do you consider that the road rehabilitation improved access to postal and banking services?
26. Do you think that the road rehabilitation increased the possibilities of local citizens to access health care institutions such as pharmacist, walk-in clinics, policlinics and hospitals, and in what way?

27. To what extend the rehabilitated road contributes the better reaching out of health services to the community such as emergency care vehicles, patronage services, and the possibility for mobile medical teams that offer services for local citizens.
28. Based on your opinion how you would estimate the security of the road before and after the rehabilitation: a) not secure at all, b) somewhat secure c) average secure d) very secure e) exceptionally secure.
29. Are there any aspects that reduce its safety such as black spots, reduced visibility at certain parts or road slopes that under certain weather conditions make the road unsafe?
30. Based on your estimates has road rehabilitation contributed to reduction of the trend of accidences before the rehabilitation?
31. How would you estimate the distribution of road signalization after the road rehabilitation?
32. Is there any road signs you as a driver consider is missing on the rehabilitated road?
33. According to your estimates has the road rehabilitation contributed to the increase in value of the properties (houses, business objects).
34. Has there been a change in the value of the land after the road rehabilitation?
35. According to your opinion, has there been an increase in the agricultural investments in the community as well as the surrounding neighborhoods?
36. According to you, has there been an increase in the construction investments in the community as well as the surrounding neighborhoods?
37. Could you estimate the effects that the road rehabilitation can have in the near future?
38. Generally, do you consider that the road rehabilitation has contributed to the increase in the number of community visitors?
39. Based on your opinion what is the community key benefit from the road rehabilitation?

8.6. APPENDIX 6 WORK PLAN

8.6.1. Work plan for conducting the STUDY by Municipalities and Roads

REGION	MUNICIPALITY	ROADS		WEEKS*									
				1	2	3	4	5	6	7	8	9	10
Mountain Region	Kichevo	1	Kichevo (A2) - Motel Krushino										
		2	Motel Krushino - v. Knezino										
		3	For Drugovo (A2 – Walk-in Clinic)										
		4	R-1305 - v. Brzdani (A2 - Walk-in Clinic)										
	Demir Hisar	5	R-1305 - v. Kochista										
		6	R-1305 - v. Zashle										
	Tetovo	7	Tetovo – Trebosh										
	Berovo	8	R-1302 Gjerdovi Vodenici - v. Rusinovo										
		9	v. Rusinovo - v. Vladimirovo										
	Vinica	10	St. Spas - v. Peklani										
		11	v. Dragobrashte - maala Mirmarci										
Lowland Region	Resen	12	Resen - v. Dolna Bela Crkva										
		13	Resen - v. Stenje										
	Bitola	14	Bitola - v. Poeshevo										
		15	R-1311 v. Dolno Orizari - v. Karamani - v. Trn										
	Struga	16	A2 - v. Misleshevo										
		17	v. Dolna Belica - v. Veleshta										
		18	v. Misleshevo - A2 (“Eurotel”)										
	Kochani	19	A3 - v. Trkanje										
		20	Kochani - Dam Gradche										
	Gazi Baba	21	Butel – Rashtak										

*Upon the Inception Report acceptance by PESR, and subject to eventual organizational changes

8.6.2. Work plan by Focus Groups

REGION	MUNICIPALITY	FOCUS GROUPS					
		Women entrepreneurs	Young People	Elderly	Farmers	Unemployed	Employed
Mountain Region	Kichevo						
	Demir Hisar						
	Tetovo						
	Berovo						
	Vinica						
Lowland Region	Resen						
	Bitola						
	Struga						
	Kochani						
	Gazi Baba						

8.7. APPENDIX 7 Travel Time Savings detail calculation

The calculation of the economic benefits associated with TTS is very straightforward. In essence it is the product of the five items of data (HEATCO, p.78):

(i) **Demand** - the number of passengers/vehicles/goods traffic making a particular origin destination trip in the Scenario "Do Minimum" (D0) (in this STUDY "Before" scenario) and in the Scenario "Do Something" (D1) (in this STUDY "After" scenario);

(ii) **Time saving** – the time saving experienced by the users making that particular origin-destination trip (T0-T1); and

(iii) **VTTS** – the value of the travel time saving (for that segment of traffic)

The TTS element of the consumer surplus for that origin-destination trip is calculated using the Rule of a half:

½(D0+D1)*(T0-T1)*VTTS

Equation 2 Rule of a Half

The total user benefit from TTS is the sum of all time saving for all origin-destination movements.

The transport demand forecast, necessary for this task, was estimated based on the rehabilitated local roads traffic flows captured with the questionnaires provided in APPENDIX 8 of this Report, and the default data obtained from the relevant literature.

User classes by vehicle category and journey purpose are given in Table 5/2/5 from the NESA Manual, and the relationship between vehicle categories and user classes together with the subdivision of car trips by working and non-working time is illustrated in Picture 5/2/4 in NESA Manual. The default user class proportions for local roads were used: 86% cars, 13% goods vehicles, and 1% buses (NESA Manual, 2013, Table 5/2/6). In order to determine the number of passengers Table 6/2/1 from NESA Manual (Vehicles occupancy) was used from where the data for passenger per trip for all 15 vehicle categories provided in Table 5/2/5 were obtained. PESR data for the average vehicle speed by vehicle category in the "After" and "Before" case scenario were used.

Time saving was calculated as a difference between the ratio (road length in kilometers, and average kilometers per hour, provided by PESR) in the "After" and "Before" case scenario, and then the total time saving as a sum of the savings per travel purpose (trip) - work passenger trips, non-work passenger trips, and freight trips was calculated. These calculations were confirmed with the performed interviews.

Estimated VTTS values for different travel purposes were obtained from Table 0.3, 0.4, 0.5 in HEATCO Deliverable 5. Those factor prices for 2002 (Austria) are adjusted for the national level of wages in Macedonia (ratio of 6.07471), and then using the adjusted GDP rate of 2.352% (explained previously) the VTTS values for 2014 were calculated, and then for the entire time horizon (2014-2038) both for passengers and commercial goods traffic.

In Table 1, all previously mentioned forecasting variables used for creation of the traffic forecast demand, and calculations of the benefits to which money calculations can be applied are provided.

Table 1 Traffic Forecasting Variables

Table 5/2/5/ NESA			Table 5/2/6 NESA	Picture 5/2/4 NESA	Table 6/2/1 NESA	PESR		Table 0.3, 0.4, 0.5 Heatco Deliverable 5 (estimated VTTS Macedonia) 2014 Prices		
Trip Matrix User Classes			Default User Class Proportions by Network Classification	Relationship between Vehicle Cathegory and User Classes	Vehicle Occupancy	Vehicle Speed		Work trips	Non-work trips	Freight trips
User Class	Vehicle Cathegory	Journey Purpose	Rural Local	Working and Non-working Time	Passengers per trip	In km per hour		Per passenger per hour	Per passenger per hour	Per freight tonne per hour
						D0	D1			
1	Car	To work/education from home	0.17	Non-working	1.5	15	35		1.75	
2	Car	From work/education to home	0.16	Non-working	1.5	15	35		1.75	
3	Car	To employer's business from home	0.03	Working	1.2	15	35	6.18		
4	Car	From employer's business to home	0.04	Working	1.2	15	35	6.18		
5	Car	To other from home - short distance*	0.12	Non-working	1.5	15	35		1.46	
6	Car	From other to home - short distance	0.10	Non-working	1.5	15	35		1.46	
7	Car	To other from home - long distance**	0.03	Non-working	1.5	15	35		1.88	
8	Car	From other to home - long distance	0.02	Non-working	1.5	15	35		1.88	
9	Car	Non-home based employer's business	0.11	Working	1.2	15	35	6.18		
10	Car	Non-home based other - short distance	0.07	Non-working	1.5	15	35		1.46	
11	Car	Non-home based other - long distance	0.02	Non-working	1.5	15	35		1.88	
12	LGV	All journey purposes	0.06	Working - Freight	1.25	10	25			0.73
13	OGV1	All journey purposes	0.04	Working - Freight	1	10	25			0.73
14	OGV2	All journey purposes	0.03	Working - Freight	1	10	25			0.73
15	Coach	All journey purposes	0.01	Work.& Non-work	13.2	10	25	4.96	1.26	

(Source: NESA Manual, PESR, and HEATCO Deliverable 5)

Passenger traffic (in passengers per day/annual), and freight traffic (in tons per day/annual) were determined in the "After" (D1) and "Before" (D0) scenario (Table 2). Number of passengers, vehicles, and tones are fixed during the entire horizon of 25 years (2014 – 2038) taking into consideration the migration tendency from villages to cities and abroad. Based on the interviews 20% increase in the D1 compared to the basic D0 scenario was defined, as an average percentage increase for all local roads subject to this STUDY, although there were some differences from place to place.

Table 2 Traffic Forecast (Demand)

ROADS		Length (Km)	Vehicles D0 (d)	Vehicles D1 (d)	Vehicles D0 (a)	Vehicles D1 (a)	Tonnes D0 (a)	Tonnes D1 (a)	Passengers D0 (d)	Passengers D1 (d)	Passengers D0 (a)	Passengers D1 (a)
1	Kichevo (A2) - Motel Krushino	2.35	269	350	98,269	127,750	20,797	24,957	411	535	150,155	195,202
2	Motel Krushino – v. Knezino	1.60	269	350	98,269	127,750	20,797	24,957	411	535	150,155	195,202
3	For Drugovo (A2 – Walk-in Clinic)	0.65	77	100	28,077	36,500	6,050	7,260	118	153	42,902	55,772
4	R-1305 – v. Brzdani (A2 - Walk-in Clinic)	1.50	12	15	4,212	5,475	1,753	2,103	18	23	6,435	8,366
5	R-1305 – v. Kochista	1.00	38	50	14,038	18,250	35,241	42,289	59	76	21,451	27,886
6	R-1305 - v. Zashle	0.50	38	50	14,038	18,250	24,208	29,050	59	76	21,451	27,886
7	Tetovo – Trebosh	1.45	769	1,000	280,769	365,000	9,163	10,995	1,175	1,528	429,015	557,720
8	R-1302 Gjerdovi Vodenici - v. Rusinovo	1.90	577	750	210,577	273,750	20,350	24,420	882	1,146	321,762	418,290
9	s. Rusinovo - v. Vladimirovo	3.50	190	248	69,490	90,338	6,783	8,140	291	378	106,181	138,036
10	St. Spas - v. Pekljani	2.80	77	100	28,077	36,500	7,949	9,539	118	153	42,902	55,772
11	v. Dragobrashte - maala Mirmarci	1.15	15	20	5,615	7,300	1,490	1,789	24	31	8,580	11,154
12	Resen - v. Dolna Bela Crkva	1.50	38	50	14,038	18,250	1,862	2,234	59	76	21,451	27,886
13	Resen - v. Stenje	1.17	462	600	168,462	219,000	1,917	2,300	705	917	257,409	334,632
14	Bitola - v. Poeshevo	3.85	231	300	84,231	109,500	9,422	11,306	353	458	128,705	167,316
15	R-1311 v. Dolno Orizari - v. Karamani - v. Trn	6.50	1,538	2,000	561,538	730,000	86,933	104,320	2,351	3,056	858,031	1,115,440
16	A2 – v. Misleshevo	1.40	769	1,000	280,769	365,000	48,104	57,725	1,175	1,528	429,015	557,720
17	v. Dolna Belica - v. Veleshta	2.35	250	325	91,250	118,625	27,717	33,260	382	497	139,430	181,259
18	v. Misleshevo – A2 ("Eurotel")	0.75	769	1,000	280,769	365,000	48,104	57,725	1,175	1,528	429,015	557,720
19	A3 - v. Trkanje	1.15	269	350	98,269	127,750	4,417	5,300	411	535	150,155	195,202
20	Kochani - dam Gradche	4.80	115	150	42,115	54,750	913	1,095	176	229	64,352	83,658
21	Butel – Rastak	3.00	58	75	21,058	27,375	3,524	4,229	88	115	32,176	41,829

(Source: Authors' own creation and calculations)

Based on the data in Table 2 (number of vehicles, passengers, and tones in the both case scenarios and the local roads' length), roads-km per year (p. a.) for vehicles, passengers, and tones in the both case scenarios (Table 2) for 2014 were calculated.

Table 3 Road-km p.a. (2014)

ROADS		Vehicle-km D0 (a)	Vehicle-km D1 (a)	Passenger - km D0 (a)	Passenger - km D1 (a)	Tonne - km D0 (a)	Tonne - km D1 (a)
1	Kichevo (A2) - Motel Krushino	230,933	300,213	352,865	458,725	48,874	58,648
2	Motel Krushino - v. Knezino	157,231	204,400	240,249	312,323	33,276	39,931
3	For Drugovo (A2 – Walk-in Clinic)	18,250	23,725	27,886	36,252	3,933	4,719
4	R-1305 - v. Brzdani (A2 - Walk-in Clinic)	6,317	8,213	9,653	12,549	2,629	3,155
5	R-1305 - v. Kochista	14,038	18,250	21,451	27,886	35,241	42,289
6	R-1305 - v. Zashle	7,019	9,125	10,725	13,943	12,104	14,525
7	Tetovo – Trebosh	407,115	529,250	622,072	808,694	13,286	15,943
8	R-1302 Gjerdovi Vodenici - v. Rusinovo	400,096	520,125	611,347	794,751	38,665	46,398
9	v. Rusinovo - v. Vladimirovo	243,216	316,181	371,635	483,125	23,742	28,490
10	St. Spas - v. Pekljani	78,615	102,200	120,124	156,162	22,258	26,709
11	v. Dragobrashte - maala Mirmarci	6,458	8,395	9,867	12,828	1,714	2,057
12	Resen - v. Dolna Bela Crkva	21,058	27,375	32,176	41,829	2,793	3,351
13	Resen - v. Stenje	197,100	256,230	301,169	391,519	2,243	2,691
14	Bitola - v. Poeshevo	324,288	421,575	495,513	644,167	36,273	43,528
15	R-1311 v. Dolno Orizari – v.Karamani – v.Trn	3,650,000	4,745,000	5,577,200	7,250,360	565,067	678,080
16	A2 - v. Misleshevo	393,077	511,000	600,622	780,808	67,346	80,815
17	v. Dolna Belica - v. Veleshta	214,438	278,769	327,661	425,959	65,134	78,161
18	v. Misleshevo - A2 ("Eurotel")	210,577	273,750	321,762	418,290	36,078	43,294
19	A3 - v. Trkanje	113,010	146,913	172,679	224,482	5,079	6,095
20	Kochani - dam Gradche	202,154	262,800	308,891	401,558	4,380	5,256
21	Butel – Rashtak	63,173	82,125	96,528	125,487	10,571	12,686

(Source: Authors' own creation and calculations)

Table 4 Travel Time Savings

ROADS		TTS for passengers traffic (in EUR)	TTS for goods traffic (in EUR)	TOTAL TTS (in EUR)
1	Kichevo (A2) - Motel Krushino	1,726,362	79,268	1,805,629
2	Motel Krushino - v. Knezino	1,175,395	53,970	1,229,365
3	For Drugovo (A2 – Walk-in Clinic)	136,430	6,378	142,808
4	R-1305 - v. Brzdani (A2 - Walk-in Clinic)	47,226	4,264	51,489
5	R-1305 - v. Kochista	104,946	57,157	162,103
6	R-1305 - v. Zashle	52,473	19,632	72,105
7	Tetovo – Trebosh	3,043,434	21,548	3,064,982
8	R-1302 Gjerdovi Vodenici - v. Rusinovo	2,990,961	62,710	3,053,671
9	v. Rusinovo - v. Vladimirovo	1,818,189	38,506	1,856,696
10	St. Spas - v. Pekljani	587,698	36,100	623,797
11	v. Dragobrashte - maala Mirmarci	48,275	2,780	51,055
12	Resen - v. Dolna Bela Crkva	157,419	4,529	161,948
13	Resen - v. Stenje	1,473,442	3,637	1,477,079
14	Bitola - v. Poeshevo	2,424,252	58,832	2,483,084
15	R-1311 v. Dolno Orizari - v. Karamani - v.Trn	27,285,958	916,477	28,202,434
16	A2 - v. Misleshevo	2,938,488	109,228	3,047,715
17	v. Dolna Belica - v. Veleshta	1,603,050	105,641	1,708,691
18	v. Misleshevo - A2 ("Eurotel")	1,574,190	58,515	1,632,705
19	A3 - v. Trkanje	844,815	8,238	853,053
20	Kochani - dam Gradche	1,511,222	7,104	1,518,326
21	Butel – Rashtak	472,257	17,145	489,402
TOTAL Travel Time Savings		**52,016,480**	**1,671,656**	**53,688,137**

(Source: Authors' own creation and calculations)

In Table 4, economic benefits associated with TTS for all local roads subject to this STUDY are provided (in EUR). The total user benefit from TTS is the sum of all time saving for all origin-destination movements and type of traffic (passenger and commercial goods). Total TTS for passenger traffic amount to 52 million EUR, while the total TTS for commercial goods traffic around 1.7 million EUR, or all together TTS of 53.7 million EUR for all local roads subject to this STUDY.

8.8. APPENDIX 8 Transport Demand Forecast Questionnaires

8.8.1. Focus Groups

1. What is the number of trips of your family in working day (Monday to Friday) (in working season/in non-working season)? (Before and After the road rehabilitation)
2. What is the purpose of those trips (work/non-work activities)?
3. What type of transportation you use to reach the destination of those trips?
4. What is the number of employed persons in your family?
5. Do you use public transportation? If yes, how frequently you use it.
6. Do you possess freight vehicle? If yes, how frequently you use it (in working season/non-working season).
7. Do you produce agriculture or other products? If yes, what quantities you produce on annual basis? How much of those quantities you sell on the market and how much you use for your purposes?

8.8.2. Municipality Authorities / LERs

1. Do you have any statistical measure of the number of trips on the rehabilitated road? (Before and After the road rehabilitation). If yes, provide the numbers for working day (Monday to Friday), if not, could you estimate the daily number of trips (in working season/in non-working season)?
2. What is the purpose of those trips (percentages for working and non-working activities)?
3. What is the number of employed people / ratio in the area of the municipality affected by the road rehabilitation?
4. Do you or other private entities provide public transportation for the people in the area of the municipality affected by the road rehabilitation? How many people use the public transportation?
5. Do you have any statistical measure of the tons of goods exported / imported through the rehabilitated road?

8.9. APPENDIX 9 Vehicle Operating Costs Savings detail calculation

As point out in the Detailed Analysis section of this Report, differences in the Vehicle Operating Costs (VOC) incurred by traffic using the road network after rehabilitation compared to the VOC incurred by traffic using the non rehabilitated roads are recorded among the benefits resulting from a road improvement (NESA Manual, 2013, p. 6-3-1).

The change in total VOC over all links depends on changes in the distance travelled by vehicles and on average link speeds. VOC in NESA Manual comprises six items: fuel, oil, tyres, maintenance, depreciation, and size of vehicle fleets. Only items which vary with the use of the vehicle are measured so, for example, vehicle excise duty, insurance and garaging are excluded from VOC.

The fuel consumption is estimated by vehicle category and fuel type using a function of the form (formula 6/3/1 from NESA Manual):

$$L = \frac{a + bV + cV^2 + dV^3}{V}$$

Equation 3 Fuel Consumption by vehicle category and fuel type

Where, L is consumption in litres per kilometre per vehicle, V is average link speed in kilometres per hour, and a, b, c, d, are parameters defined for each vehicle category in Table 6/3/1 in NESA Manual.

Table 5 VOC formula parameter values

Vehicle Category	Fuel (litres/km)			
	A	*B*	*C*	*d*
Petrol car	1.042850982	0.044837250	-0.00004913	0.00000217810
Diesel car	0.408988603	0.064502969	-0.00057759	0.00000454155
Petrol LGV	1.628610340	0.067231691	-0.00077899	0.00001052130
Diesel LGV	1.082489985	0.059963265	-0.00044831	0.00000831097
OGV 1	1.564481329	0.260097879	-0.00378306	0.00003244460
OGV 2	3.613294863	0.420269140	-0.00494704	0.00003828060
PSV	4.115603124	0.306464813	-0.00420643	0.00003652630

(Source: NESA Manual, 2013)

This function gives a higher consumption at low speeds, reflecting the effects of ***stop-start*** motoring in congested conditions. In Table 6, the Fuel Consumption per vehicle category and fuel type is presented:

Table 6 Fuel consumption per vehicle and fuel type

Vehicle Category	L (Litres/km)	
	D0	D1
Petrol car	0.114114	0.075582
Diesel car	0.084127	0.061536
Petrol LGV	0.223355	0.119477
Diesel LGV	0.164560	0.097249
OGV 1	0.381960	0.248379
OGV 2	0.735956	0.465050
PSV	0.679613	0.388757

(Source: Authors' own creation and calculation)

Proportion of cars and LGV's using petrol or diesel by vehicle-km in percentages for the period 2014 – 2038 are given in Table 6/3/3 in NESA Manual.

Table 7 Proportion of cars and LGV's by fuel type by vehicle-km

Year	Cars		LGV's	
	Petrol	Diesel	Petrol	Diesel
2014	52.8%	47.2%	4.1%	95.9%
2015	51.0%	49.0%	3.8%	96.2%
2016	50.3%	49.7%	3.5%	96.5%
2017	49.6%	50.4%	3.2%	96.8%
2018	49.0%	51.0%	2.9%	97.1%
2019	48.3%	51.7%	2.6%	97.4%
2020	47.6%	52.4%	2.3%	97.7%
2021	47.6%	52.4%	2.1%	97.9%
2022	47.5%	52.5%	2.0%	98.0%
2023	47.5%	52.5%	1.8%	98.2%
2024	47.4%	52.6%	1.8%	98.2%
2025	47.4%	52.6%	1.5%	98.5%
2026	47.4%	52.6%	1.5%	98.5%
2027	47.4%	52.6%	1.5%	98.5%
2028	47.4%	52.6%	1.5%	98.5%
2029	47.4%	52.6%	1.5%	98.5%
2030	47.4%	52.6%	1.5%	98.5%
2031	47.4%	52.6%	1.5%	98.5%
2032	47.4%	52.6%	1.5%	98.5%
2033	47.4%	52.6%	1.5%	98.5%
2034	47.4%	52.6%	1.5%	98.5%
2035	47.4%	52.6%	1.5%	98.5%
2036	47.4%	52.6%	1.5%	98.5%
2037	47.4%	52.6%	1.5%	98.5%
2038	47.4%	52.6%	1.5%	98.5%

(Source: NESA Manual, 2013)

Fuel costs are subsequently derived using the present average costs per liter fuel in Macedonia. Price of liter petrol is 1.271 EUR and the price of diesel is 1.076 EUR as of April 14, 2014 (http://www.fuel-prices-europe.info/).

The non-fuel elements of the vehicle operating costs are combined in a formula of the form:

$$C = a^1 + \frac{b^1}{V}$$

Equation 4 Non-Fuel Elements of the Vehicle Operating Costs

Where, C is cost in EUR per kilometre per vehicle, V is average link speed in kilometres per hour, and a^1 and b^1 are parameters defined for each vehicle category in Table 6/3/1 in NESA Manual. Since the calculations were made in EUR, conversion to the non-fuel prices per km and per hour given in the NASA Manual was made using the conversion factor of 1.20613 EUR/GBP as of April 14, 2014 (http://www.nbrm.mk/). The 2002 prices were also adjusted to 2014 prices (compounded with the adjusted GDP rate for a period of 12 years).

Table 8 VOC formula adjusted non-fuel parameter values (2014 prices and values)

Vehicle Category	Non-Fuel	
	a^1 (Cents/km)	b^1 (Cents/Hour)
Work car	6.486909068	18.15983809
Non-work car	5.023408816	0
Work LGV	9.421880705	61.54193923
Non-work LGV	9.421880705	0
OGV 1	8.769841922	344.6160478
OGV 2	17.06141579	664.2696916
PSV	39.79030804	907.2649371

(Source: NESA Manual, 2013, Authors' own calculations)

In Table 9, the economic benefits associated with Vehicle Operating Costs Savings (VOCS) for all local roads subject to this STUDY are provided (in EUR). The total user benefit from VOCS is the sum of all vehicle operating costs savings (fuel consumption and non-fuel elements) for all origin-destination movements and type of traffic (passenger and commercial goods). Total VOCS from fuel consumption amount to 14.3 million EUR, while the VOCS from non-fuel elements is around 7.7 million EUR, or all together total VOCS equals 22 million EUR.

Table 9 Vehicle Operating Costs Savings

ROADS		VOCS from fuel consumption (in EUR)	VOCS from non-fuel elements (in EUR)	TOTAL VOCS (in EUR)
1	Kichevo (A2) - Motel Krushino	475,809	254,500	730,309
2	Motel Krushino - v. Knezino	323,955	173,277	497,232
3	For Drugovo (A2 – Walk-in Clinic)	37,602	20,112	57,714
4	R-1305 - v. Brzdani (A2 - Walk-in Clinic)	13,016	6,962	19,978
5	R-1305 - v. Kochista	28,925	15,471	44,396
6	R-1305 - v. Zashle	14,462	7,736	22,198
7	Tetovo – Trebosh	838,813	448,663	1,287,475
8	R-1302 Gjerdovi Vodenici - v. Rusinovo	824,350	440,927	1,265,277
9	v. Rusinovo - v. Vladimirovo	501,118	268,037	769,156
10	St. Spas - v. Pekljani	161,978	86,638	248,616
11	v. Dragobrashte - maala Mirmarci	13,305	7,117	20,422
12	Resen - v. Dolna Bela Crkva	43,387	23,207	66,594
13	Resen - v. Stenje	406,101	217,215	623,316
14	Bitola - v. Poeshevo	668,158	357,383	1,025,541
15	R-1311 v. Dolno Orizari - v. Karamani - v. Trn	7,520,390	4,022,492	11,542,882
16	A2 - v. Misleshevo	809,888	433,191	1,243,080
17	v. Dolna Belica - v. Veleshta	441,823	236,321	678,144
18	v. Misleshevo - A2 ("Eurotel")	433,869	232,067	665,936
19	A3 - v. Trkanje	232,843	124,543	357,385
20	Kochani - dam Gradche	416,514	222,784	639,298
21	Butel – Rashtak	130,161	69,620	199,781
TOTAL Vehicle Operating Costs Savings		**14,336,466**	**7,668,263**	**22,004,729**

(Source: Authors' own calculations)

8.10. APPENDIX 10 Road Accidents Savings detail calculation

For this part, first, Ministry of internal affairs official data was used for the number and structure of road accidents (fatalities, severe injuries, slight injuries, damages only) per section for the period 2005-2013 (Table 15 and 16).

Table 15 Number and structure of road accidents (fatalities, severe injuries, slight injuries) 2005-2013

Local Road	2005			2006			2007			2008		
	Fatality	Severe	Slight	Fatality	Severe	Slight	Fatality	Severe	Slight	Fatality	Severe	Slight
A2 - v. Misleshevo	1	8	7	2	3	17		3	15		4	23
A3 - v. Trkanje	1	1	4			4			1			7
Bitola - v. Poeshevo			5		2	7		1	7	1	8	9
Butel – Rashtak				1		1						
Drugovo (A2-walk-in clinic)		5	18			4		2	4		4	6
Kichevo - v. Knezino		6	16		13	30	1	10	52		10	32
Kochani - dam Gradche		3	8		1	9			5		2	6
R-1302 Gjerdovi Vodenici - v. Rusinovo		4	26		11	23	1	11	32	2	19	52
R-1311 v. Dolno Orizari - v. Karamani - v. Trn		3	8		6	19	1	1	21		2	3
Resen - v. Dolna Bela Crkva	1	2	10		1	11		5	10		5	22
Resen - v. Stenje	1	1	3	1	1	7		3	10			7
v.Dolna Belica - v. Veleshta		3	5	1	3	6	3	3	16		1	10
v.Misleshevo – A2 "Eurotel"	1	2	1		1				1		1	8
v.Rusinovo - v. Vladimirovo		2	6	1	2	5			3		5	7
St. Spas - v. Pekljani	1		2	1	1	9	1	6	7	1	7	7
Tetovo – Trebosh		3	13		2	14	3	4	32		1	25
Junct. with v. Peklena – Junct. with road v. Laki												
TOTAL:	**6**	**43**	**132**	**7**	**47**	**166**	**10**	**49**	**216**	**4**	**69**	**224**

2009			2010			2011			2012			2013		
Fatality	Severe	Slight	Fatality	Severe	Slight	Fatality	Severe	Slight	Fatality	Severe	Slight	Fatality	Severe	Slight
	7	20	1	4	19	2	3	13		2	27	2	5	12
		1			6	1	6	13		1	3			6
1	3	5			3			2					2	5
											1			
1	4	15		1	8	1		10		3	12			3
1	6	36	5	7	9	1	4	20	1	4	21		5	5
	1	9	2	4	6		2	7			9			4
1	17	40	1	3	41		7	28	1	6	30	1		36
	3	12			2		1	5	1		8		1	10
	3	17		4	18		1	10	1	3	12		1	16
		13		2	6		1	3	1		9		1	1
	2	8	2		20	2	4	13	1	2	13	1	5	17
	1	3						3			5	1		
1	2	5			2		2	6			6		2	
	4	12		3	10		1	8		2	5		1	5
1	5	12		4	14	1	2	14		2	7		4	9
											2			
6	**58**	**208**	**11**	**32**	**164**	**8**	**34**	**155**	**6**	**25**	**170**	**5**	**27**	**129**

(Source: Ministry of Internal Affairs)

Then the absolute difference for the period before (2005-2008), and after the roads rehabilitation (2010-2013) was calculated. Estimated values for casualties avoided are given in Table 0.10 in HEATCO Deliverable 5. Those factor prices for 2002 (Austria) are adjusted for the national level of wages in Macedonia, and then using the adjusted GDP rate of 2.352% (explained previously) the Estimated values for casualties avoided for 2014 were calculated, and then for the entire time horizon (2014-2038). Last, based on the calculated absolute differences in the number and structure of road accidents (fatalities, severe injuries, slight injuries, damages only), the total Road Accidents Savings (RAS) were calculated.

Table 16 Costs from road accidents (vehicle damages only) 2005-2013 (in EUR)

Local Road	Year								
	2005	2006	2007	2008	2009	2010	2011	2012	2013
A2 - v. Misleshevo	5,186	5,786	4,522	9,173	6,110	9,676	12,771	8,525	7,261
A3 - v. Trkanje	1,459	6,532	0	2,091	0	2,917	6,564	4,084	2,593
Bitola - v. Poeshevo	600	1,702	3,647	3,079	1,848	1,637	0	0	3,890
Butel – Rashtak	0	2,593	0	0	0	0	0	810	0
Drugovo (A2-Walk in Clinic)	4,311	308	729	3,079	3,306	1,945	1,896	5,186	2,107
Kichevo - v. Knezino	6,370	7,780	18,606	7,982	11,961	12,318	9,254	8,355	1,232
Kochani - dam Gradche	7,131	3,404	1,864	3,485	6,969	6,596	3,614	5,835	1,637
Junction with the road v. Peklena – junction with the road for v. Laki	0	0	0	0	0	0	0	194	0
R-1302 Gjerdovi Vodenici-v.Rusinovo	10,105	7,374	19,400	24,271	16,564	12,836	11,961	13,955	14,425
R-1311 v.Dolno Orizari - v.Karamani - v.Trn	2,431	5,365	4,976	97	9,708	972	3,079	3,274	5,608
Resen - v.Dolna Bela Crkva	2,188	5,154	2,723	12,115	6,094	8,768	7,780	3,890	4,627
Resen - v.Stenje	4,433	2,512	6,143	1,037	3,760	972	421	2,626	827
v.Dolna Belica - v.Veleshta	2,998	4,733	12,642	4,781	4,319	8,501	10,373	6,969	10,535
v.Misleshevo – A2 "Eurotel"	1,313	324	648	2,885	2,593	0	2,431	2,431	810
v.Rusinovo - v.Vladimirovo	2,593	3,776	1,702	3,793	6,037	0	3,079	1,621	908
St. Spas - v.Pekljani	211	2,010	2,188	3,047	3,809	4,862	1,904	5,429	1,426
Tetovo-Trebosh	5,429	6,580	27,958	6,175	9,319	7,715	4,781	3,574	2,139
TOTAL	**56,758**	**65,932**	**107,747**	**87,090**	**92,398**	**79,716**	**79,911**	**76,758**	**60,024**

(Source: Ministry of Internal Affairs)

Based on the data given in Table 15, the absolute difference between the average number of accidents per section and per type for the period (2005-2009) - before the roads rehabilitation, and for the period (2010-2013) - after the roads rehabilitation was calculated (Table 17).

Table 17 Absolute difference in the number of accidents per section and per type (fatalities, severe injuries, slight injuries) before (2005-2008) and after the roads rehabilitation (2010-2013)

Local Road	2005-2008 (D0)			2010-2013 (D1)			Absolute change (D0) - (D1)		
	Fatality	Severe	Slight	Fatality	Severe	Slight	Fatality	Severe	Slight
A2 - v. Misleshevo	0.75	4.50	15.50	1.25	3.50	17.75	-0.50	1.00	-2.25
A3 - v. Trkanje	0.25	0.25	4.00	0.25	1.75	7.00	0.00	-1.50	-3.00
Bitola - v. Poeshevo	0.25	2.75	7.00	0.00	0.50	2.50	0.25	2.25	4.50
Butel - Rashtak	0.25	0.00	0.25	0.00	0.00	0.25	0.25	0.00	0.00
Drugovo (A2 – Walk-in Clinic)	0.00	2.75	8.00	0.25	1.00	8.25	-0.25	1.75	-0.25
Kichevo - v. Knezino	0.25	9.75	32.50	1.75	5.00	13.75	-1.50	4.75	18.75
Kochani - dam Gradche	0.00	1.50	7.00	0.50	1.50	6.50	-0.50	0.00	0.50
R-1302 Gjerdovi Vodenici-v.Rusinovo	0.75	11.25	33.25	0.75	4.00	33.75	0.00	7.25	-0.50
R-1311 v. Dolno Orizari - v. Karamani - v. Trn	0.25	3.00	12.75	0.25	0.50	6.25	0.00	2.50	6.50
Resen - v. Dolna Bela Crkva	0.25	3.25	13.25	0.25	2.25	14.00	0.00	1.00	-0.75
Resen - v. Stenje	0.50	1.25	6.75	0.25	1.00	4.75	0.25	0.25	2.00
v. Dolna Belica - v. Veleshta	1.00	2.50	9.25	1.50	2.75	15.75	-0.50	-0.25	-6.50
v. Misleshevo – A2 ("Eurotel")	0.25	1.00	2.50	0.25	0.00	2.00	0.00	1.00	0.50
v. Rusinovo - v. Vladimirovo	0.25	2.25	5.25	0.00	1.00	3.50	0.25	1.25	1.75
St. Spas - v. Pekljani	1.00	3.50	6.25	0.00	1.75	7.00	1.00	1.75	-0.75
Tetovo – v. Trebosh	0.75	2.50	21.00	0.25	3.00	11.00	0.50	-0.50	10.00
Junction with the road v. Peklena – junction with the road for v. Laki	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	-0.50
TOTAL:	**6.75**	**52.00**	**184.50**	**7.50**	**29.50**	**154.50**	**-0.75**	**22.50**	**30.00**

(Source: Ministry of Internal Affairs, Authors' own creation and calculations)

Based on the data given in Table 16, the absolute difference between the costs from road accidents (vehicle damages only), for the period (2005-2009) - before the roads rehabilitation, and for the period (2010-2013) - after the roads rehabilitation was calculated (Table 18).

Table 18 Absolute difference in the costs from road accidents (vehicle damages only) before (2005-2008) and after the roads rehabilitation (2010-2013) (in EUR per year)

Local Road	2005-2008 (D0)	2010-2013 (D1)	Absolute change (D0) - (D1)
A2 - v. Misleshevo	6,167	9,558	-3,391
A3 - v. Trkanje	2,520	4,040	-1,519
Bitola - v. Poeshevo	2,257	1,382	875
Butel – Rashtak	648	203	446
Drugovo (A2 – Walk-in Clinic)	2,107	2,784	-677
Kichevo - v. Knezino	10,184	7,790	2,395
Kochani - dam Gradche	3,971	4,421	-450
Junction with the road v. Peklena – junction with the road for v. Laki	0	49	-49
R-1302 Gjerdovi Vodenici - v. Rusinovo	15,288	13,294	1,993
R-1311 v. Dolno Orizari - v.Karamani - v.Trn	3,217	3,233	-16
Resen - v. Dolna Bela Crkva	5,545	6,266	-721
Resen - v. Stenje	3,531	1,212	2,320
v. Dolna Belica - v. Veleshta	6,288	9,094	-2,806
v. Misleshevo – A2 (“Eurotel”)	1,293	1,418	-126
v. Rusinovo - v. Vladimirovo	2,966	1,402	1,564
St. Spas - v. Pekljani	1,864	3,406	-1,542
Tetovo – v. Trebosh	11,536	4,552	6,983
TOTAL	**79,382**	**74,102**	**5,280**

(Sources: Ministry of Internal Affairs, Authors’ own creation and calculations)

Estimated values for casualties avoided are given in Table 0.10 in HEATCO Deliverable 5. Those factor prices for 2002 (Austria) are adjusted for the national level of wages in Macedonia with factor of 6.075. Then, using the adjusted GDP rate of 2.352% (explained previously) the Estimated values for casualties avoided for 2014 were calculated (Table 19), and then for the entire time horizon (2014-2038).

Table 19 Estimated values for casualties avoided (2014 prices)

Fatality	Severe Injury	Slight Injury
382,951	52,286	4,134

(Source: HEATCO Deliverable 5, Table 0.10, Authors’ own creation and calculation)

In Table 20, the economic benefits associated with RAS for all types of road accidents per section are presented (in EUR). The total user benefit from RAS is the sum of all road accidents savings from all type of accidents (fatalities, severe injuries, slight injuries, and damages only). Total RAS from Fatalities amount to (- 9.6 million EUR) which means that the number of fatalities on all roads together after the roads rehabilitation is increased. This can be explained with the absence of any traffic signalization (both horizontal and vertical) and other road safety elements (in details described in the next part of this Report), and the increased average vehicle speed due to the roads improvement from the rehabilitation at the same time. Total RAS from Severe Injuries are around

39.4 million EUR, RAS from Slight Injuries 21.8 million EUR, and RAS from damages around 0.2 million EUR, or all together RAS of 51.8 million EUR for all local roads subject to this STUDY.

Table 20 Road Accidents Savings

ROADS		RAS from Fatalities	RAS from Severe Injury	RAS from Slight Injury	RAS from Damages	TOTAL RAS (in EUR)
1	Kichevo (A2) - Motel Krushino	-9,625,470	4,161,648	2,733,829	40,127	-2,689,865
2	Motel Krushino - v. Knezino	-9,625,470	4,161,648	2,733,829	40,127	-2,689,865
3	For Drugovo (A2 – Walk-in Clinic)	-3,208,490	3,066,478	1,519,776	-22,677	1,355,087
4	R-1305 - v. Brzdani (A2 - Walk-in Clinic)	0	0	0	0	0
5	R-1305 - v. Kochista	0	0	0	0	0
6	R-1305 - v. Zashle	0	0	0	0	0
7	Tetovo – Trebosh	6,416,980	-876,136	251,862	234,035	6,026,740
8	R-1302 Gjerdovi Vodenici - v. Rusinovo	0	12,703,979	6,333,232	66,809	19,104,020
9	v. Rusinovo - v. Vladimirovo	3,208,490	2,190,341	1,218,822	52,415	6,670,068
10	St. Spas - v. Pekljani	12,833,960	3,066,478	1,485,225	-51,669	17,333,993
11	v. Dragobrashte - maala Mirmarci	0	0	-34,551	-1,629	-36,180
12	Resen - v. Dolna Bela Crkva	0	1,752,273	826,488	-24,170	2,554,591
13	Resen - v. Stenje	3,208,490	438,068	357,783	77,740	4,082,081
14	Bitola - v. Poeshevo	3,208,490	3,942,614	2,287,167	29,331	9,467,603
15	R-1311 v. Dolno Orizari - v. Karamani - v.Trn	0	4,380,682	2,644,950	-543	7,025,089
16	A2 - v. Misleshevo	-6,416,980	1,752,273	722,835	-113,656	-4,055,528
17	v. Dolna Belica - v. Veleshta	-6,416,980	-438,068	-668,742	-94,036	-7,617,825
18	v. Misleshevo - A2 (“Eurotel”)	0	1,752,273	912,866	-4,210	2,660,929
19	A3 - v. Trkanje	0	-2,628,409	-1,524,778	-50,922	-4,204,110
20	Kochani - dam Gradche	-6,416,980	0	34,551	-15,072	-6,397,501
21	Butel – Rashtak	3,208,490	0	0	14,937	3,223,427
TOTAL Road Accidents Savings		**-9,625,470**	**39,426,142**	**21,835,145**	**176,936**	**51,812,754**

(Source: Ministry of Internal Affairs, Authors’ own creation and calculations)

8.11. APPENDIX 11 Land Value Savings detail calculation

For this task, the average price differences in the "After" and "Before" scenario were calculated. Then they were monetized using the Macedonian Agency for real estate cadaster data for the land size (squared meters) of all local places affected by the road rehabilitation subject to this STUDY. Distinction was made between the urban and non-urban (agriculture) land when assessing the influence that roads rehabilitation has on the land value.

In Table 23 the local place sizes (in squared meters) obtained by the Macedonian Agency for real estate cadaster are presented.

Table 23 Local Places Sizes (in squared meters)

Region	Municipality	Local Place	Urban Land (m^2)	Agriculture Land (m^2)
Mountain Region	Kichevo	Brzdani	131,787	3,266,320
		Drugovo	607,756	5,448,210
		Knezino	135,617	1,190,972
		Krusino	57,574	1,056,902
	Demir Hisar	Dolenci (Zashle)	130,163	10,531,613
		Pribilci (Kocishta)	122,348	3,643,812
	Tetovo	Trebosh	260,069	3,669,389
	Berovo	Vladimirovo	291,484	53,521,180
		Rusinovo	1,622,791	60,264,529
	Vinica	Dragobrashte	144,909	13,549,040
		Pekljani	213,184	27,932,498
Lowland Region	Resen	Dolna Bela Crkva	118,657	4,549,824
		Stenje	316,370	16,101,367
	Bitola	Poeshevo	234,336	6,768,198
		Dolno Orizari	497,938	5,727,460
		Karamani	73,082	6,960,404
		Trn	388,973	11,204,968
	Struga	Veleshta	1,461,390	7,712,781
		Dolna Belica	279,211	5,845,147
		Misleshevo	1,622,115	11,276,878
	Kochani	Jastrebnik	551,203	4,105,212
		Leshki	55,741	3,419,628
		Trkanje	602,111	10,205,747
	Gazi Baba	Rashtak	316,140	7,539,975

(Source: Macedonian Agency for real estate cadaster)

In Table 24, the prices for the urban and agriculture land in 2007 and 2013 (in 2013 prices) obtained by the municipality authorities and realized focus groups' interviews are presented.

By multiplying the price difference with the land sizes (increase of the land value for 10% in average both for urban and agriculture land) the LVS for all local places subject to this STUDY were calculated (Table 25). The total user benefit from LVS is the sum of all LVS (from urban and agriculture land). Total LVS from urban land amount to 51.7 million EUR, while the total LVS from agriculture land 67.8 million EUR, or all together LVS of around 120 million EUR for all local places subject to this STUDY.

Table 24 Price of Urban and Agriculture Land in 2007 and 2013 (in EUR)

Region	Municipality	Local Place	Urban (EUR per m^2)		Agricultural (EUR per m^2)	
			2007	2013	2007	2013
Mountain Region	Kichevo	Brzdani	4.89	5.71	0.52	0.57
		Drugovo	7.34	9.79	0.73	0.90
		Knezino	1.96	5.22	0.57	1.06
		Krusino	1.96	5.22	0.57	1.06
	Demir Hisar	Dolenci (Zashle)	0.73	0.82	0.52	0.57
		Pribilci (Kocishta)	0.90	0.98	0.52	0.57
	Tetovo	Trebosh	10.31	31.50	1.00	3.02
	Berovo	Vladimirovo	6.36	7.01	0.42	0.46
		Rusinovo	6.36	7.01	0.42	0.46
	Vinica	Dragobrashte	2.94	3.26	0.74	0.82
		Pekljani	2.94	3.26	0.74	0.82
Lowland Region	Resen	Dolna Bela Crkva	8.36	10.03	0.90	1.08
		Stenje	12.64	15.17	0.71	0.85
	Bitola	Poeshevo	7.50	9.79	1.00	1.31
		Dolno Orizari	12.56	16.31	0.94	1.22
		Karamani	7.50	9.79	0.75	0.98
		Trn	5.02	6.53	0.75	0.98
	Struga	Veleshta	6.85	13.70	0.60	1.19
		Dolna Belica	6.53	13.05	0.49	0.98
		Misleshevo	6.46	19.58	0.44	1.32
	Kochani	Jastrebnik	0.73	0.82	0.52	0.57
		Leshki	0.73	0.82	0.52	0.57
		Trkanje	4.89	9.79	0.51	1.00
	Gazi Baba	Rashtak	7.55	15.10	1.51	3.52

(Source: Municipality Authorities and Focus Groups, Authors' own creation and calculation)

Table 25 Land Value Savings

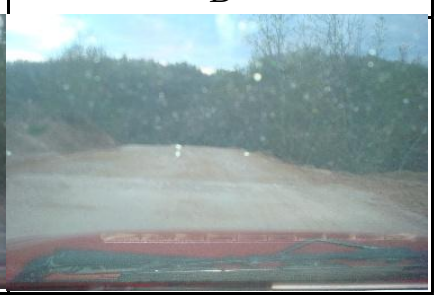
Region	Municipality	Local Place	LVS from Urban Land	LVS from Agriculture Land	TOTAL LVS (in EUR)
Mountain Region	Kichevo	Brzdani	107,493	159,853	267,346
		Drugovo	1,487,168	888,778	2,375,946
		Knezino	442,470	582,857	1,025,327
		Krusino	187,843	517,244	705,087
	Demir Hisar	Dolenci (Zashle)	10,617	515,413	526,030
		Pribilci (Kocishta)	9,979	178,327	188,306
	Tetovo	Trebosh	5,511,290	7,422,581	12,933,871
	Berovo	Vladimirovo	190,202	2,619,307	2,809,509
		Rusinovo	1,058,917	2,949,324	4,008,242
	Vinica	Dragobrashte	47,279	994,628	1,041,906
		Pekljani	69,554	2,050,510	2,120,064
Lowland Region	Resen	Dolna Bela Crkva	198,407	816,445	1,014,852
		Stenje	799,957	2,276,430	3,076,387
	Bitola	Poeshevo	535,188	2,042,605	2,577,793
		Dolno Orizari	1,868,283	1,635,082	3,503,365
		Karamani	166,908	1,589,652	1,756,560
		Trn	583,777	2,559,047	3,142,823
	Struga	Veleshta	10,012,754	4,592,798	14,605,551
		Dolna Belica	1,821,931	2,860,594	4,682,525
		Misleshevo	21,275,375	9,993,042	31,268,416
	Kochani	Jastrebnik	44,959	200,908	245,867
		Leshki	4,547	167,355	171,902
		Trkanje	2,946,710	4,994,656	7,941,366
	Gazi Baba	Rashtak	2,385,232	15,184,501	17,569,734

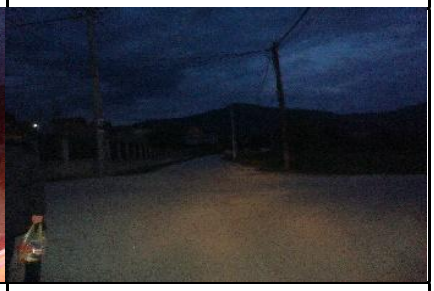
TOTAL Land Value Savings	**51,766,840**	**67,791,937**	**119,558,777**

(Source: Municipality Authorities and Focus Groups, Authors' own creation and calculation)

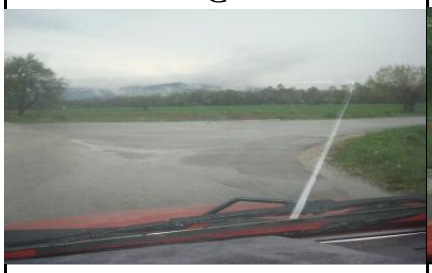
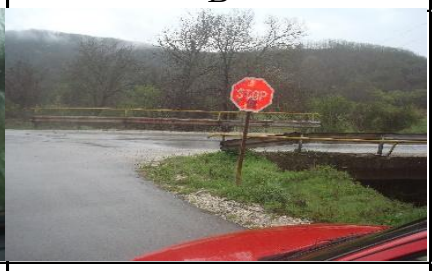
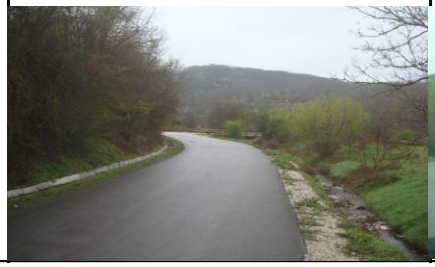
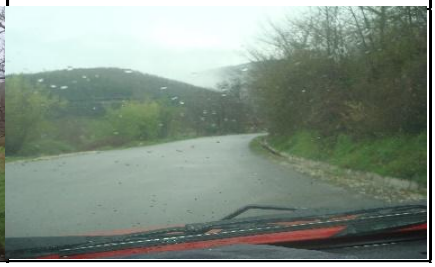
8.12. APPENDIX 12 Traffic Signalization pictures

8.12.1. Municipality Kichevo

Municipality	Roads		Pictures	
Kichevo	1	Kichevo (A2) - Motel Krushino	A	B
				
			C	D
				
			E	F
				
	2	Motel Krushino - v. Knezino	A	B
				
			C	D
				

Kichevo	3	For Drugovo (A2 – Walk-in Clinic)	A 	B 
	4	R-1305 - v. Brzdani (A2 - Walk-in Clinic)	A 	B 
			C 	D 
			E 	F 

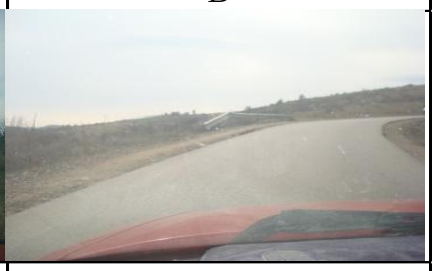
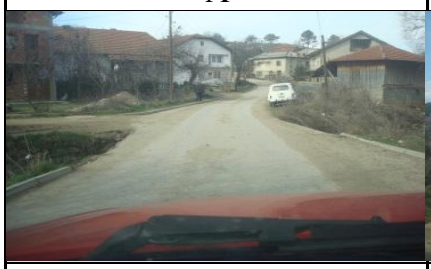
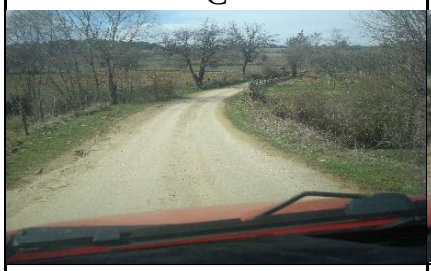
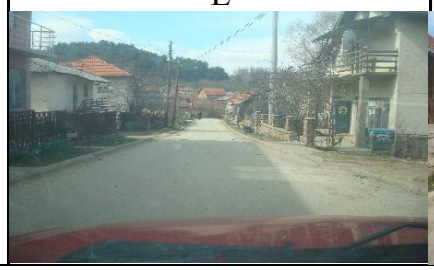
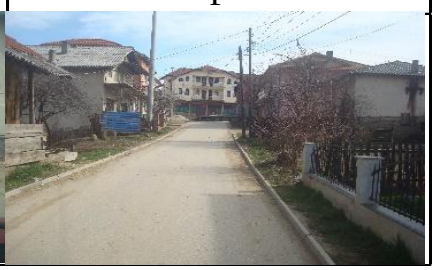
8.12.2. Municipality Demir Hisar

Demir Hisar	5	R-1305 - v. Kochista	A 	B 
			C 	D 
			E 	F 
	6	R-1305 - v. Zashle	A 	B 
			C 	D 
			E 	F 

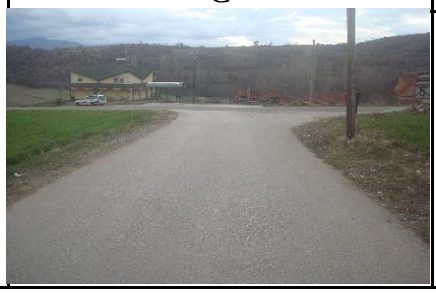
8.12.3. Municipality Tetovo

Tetovo	7	Tetovo - Trebosh	A	B
				
			C	D
				
			E	F
				

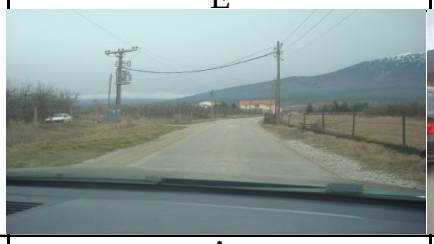
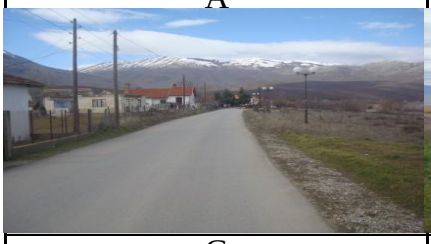
8.12.4. Municipality Berovo

Berovo	8	R-1302 Gjerdovi Vodenici - v. Rusinovo	A	B
				
			C	D
				
			E	F
				
	9	v. Rusinovo - v.Vladimirovo	A	B
				
			C	D
				
			E	F
				

8.12.5. Municipality Vinica

<table>
<tr><td rowspan="3">Vinica</td><td>10</td><td>St. Spas - v. Pakleni</td><td>A
  </td><td>B
  </td></tr>
<tr><td rowspan="2">11</td><td rowspan="2">v. Dragobrashte - maala Mirmarci</td><td>A
  </td><td>B
  </td></tr>
<tr><td>C
  </td><td>D</td></tr>
</table>

8.12.6. Municipality Resen

Resen	12	Resen - v. Dolna Bela Crkva	A 	B 
			C 	D 
			E 	F 
	13	R1307 - v. Stenje	A 	B 
			C 	D 
			E 	F 
			G 	H 

8.12.7. Municipality Bitola

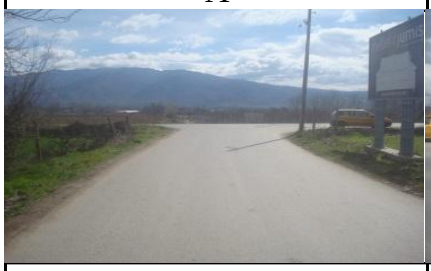
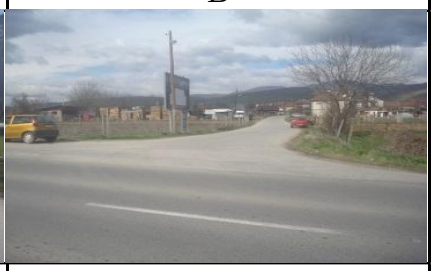
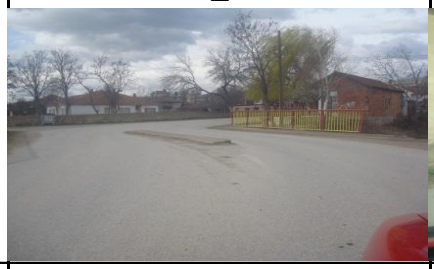
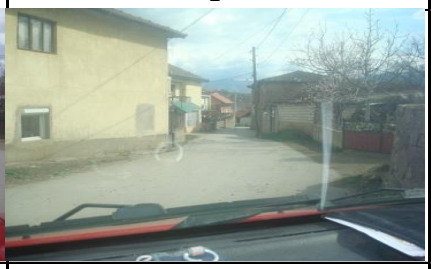
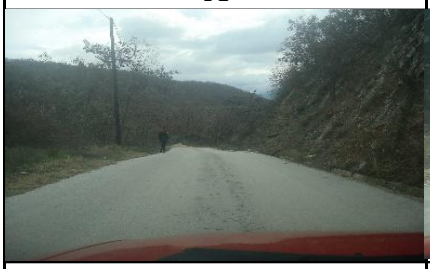
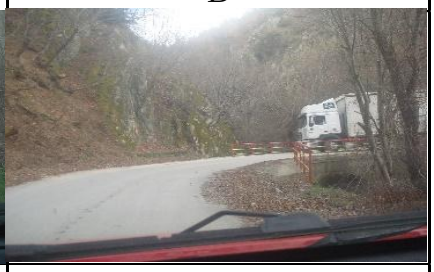
Bitola	14	Bitola - v. Poeshevo	A 	B 
			C 	D 
			E 	F 
	15	R-1311 v. Dolno Orizari - v. Karimani - v. Trn	A 	B 
			C 	D 
			E 	F 
			G 	H 

8.12.8. Municipality Struga

Struga	16	A2 - v. Misleshevo	A	B
				
			C	D
				
			E	F
				
	17	v. Dolna Belica - v. Veleshta	A	B
				
			C	D
				

Struga	18	v. Misleshevo – A2 (Eurotel)	A 	B 
			C 	D 
			E 	F

8.12.9. Municipality Kochani

Kochani	19	A3 - s. Trkanje	A 	B 
			C 	D 
			E 	F 
	20	Kochani - Dam Gradche	A 	B 
			C 	D 
			E 	F 

8.12.10. Municipality Gazi Baba

Gazi Baba	21	Butel - Rastak	A 	B 
			C 	D 

9. ANNEXES

9.1. ANNEX 1 Terms of Reference