



MINISTRY OF ENVIRONMENT
AND PHYSICAL PLANNING
Republic of Macedonia



MUNICIPALITY
GAZI BABA

LOCAL ECOLOGY ACTION PLAN





MUNICIPALITY GAZI BABA
LOCAL ECOLOGY ACTION PLAN

REPUBLIC OF MACEDONIA

**MINISTRY OF ENVIRONMENT
AND SPATIAL PLANNING**

**LOCAL ECOLOGY ACTION PLAN
OF THE MUNICIPALITY GAZI BABA**

**GUARANTOR: MINISTRY OF ENVIRONMENT AND SPATIAL PLANNING
MINISTER: DZELIL BAJRAMI**

**PROJECT COORDINATOR:
VIOLETA DRAKULOVSKA**

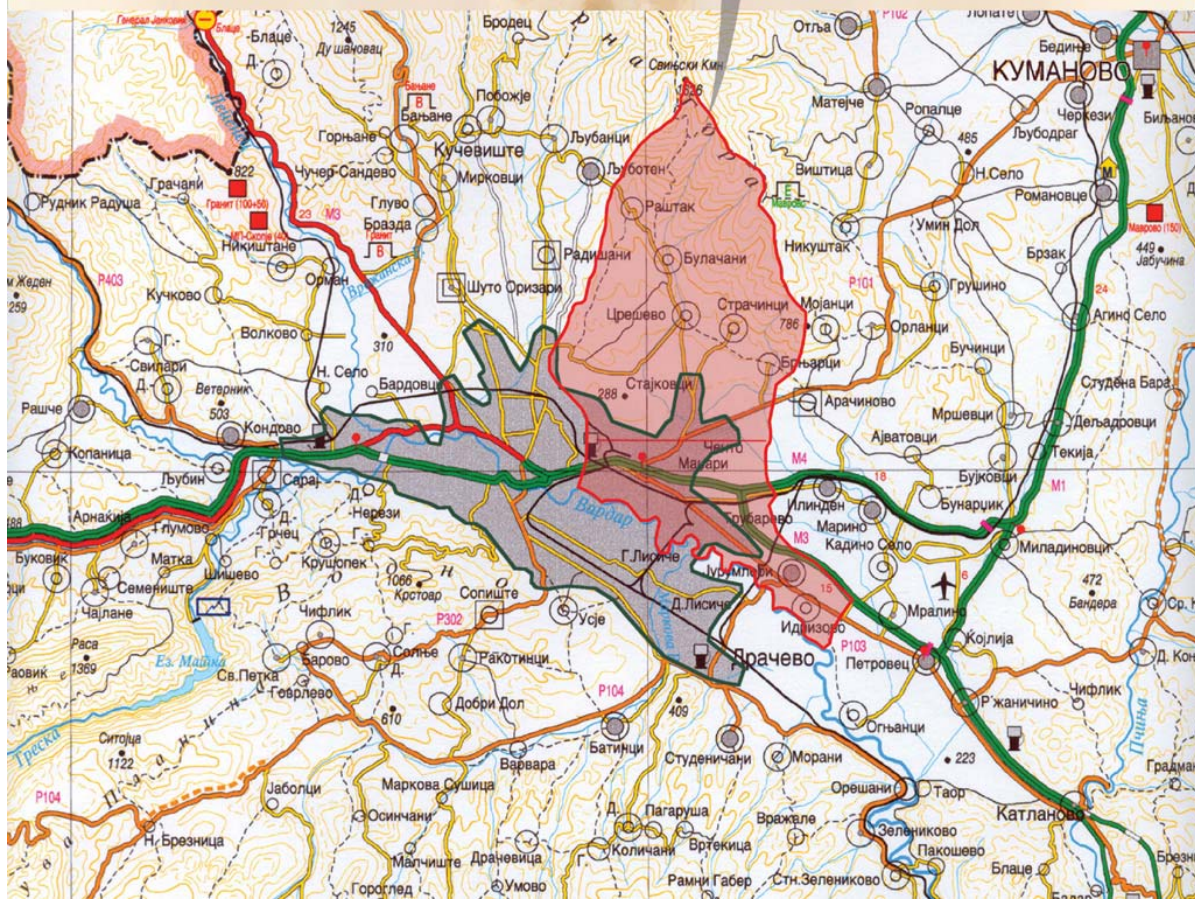
**CONTRACTOR: TEHNOLAB DOO. SKOPJE
MANAGER: M.A. MAGDALENA TRAJKOVSKA TRPEVSKA**

**PROJECT LEADER:
M.A. MAGDALENA TRAJKOVSKA TRPEVSKA**

BENEFICIARY: MUNICIPALITY GAZI BABA

**MAYOR:
KOCE TRAJANOVSKI**

**COORDINATOR OF THE COORDINATION BODY:
ALEKSANDRA DIMITRIEVSKA AVRAMOVSKA**



Dear readers,

It is a special pleasure to represent you the Local Ecology Action Plan (LEAP) of municipality Gazi Baba, whose main goal is to create strategy and policy for protection and promotion of the environment and nature and to offer precise measurements and activities for improvement of the quality of the environment in the municipality.



The process of preparation of this document lasted six months. The work was intensive, continuous and quality. To achieve the goal, that is to prepare a quality and objective Document, this process actively included members from the local government and members from the public, private and non-government sector, as well as the members of LUK who gave directions and recommendations for the preparation of the Document, with special contribution for involvement and informing the public about all phases of realization of this Document.

LEAP is focused on: the natural-geographic and socio-economic characteristics of the municipality, identification of the conditions in the environment, management with the environment, the participation of the public, presumptions about the realization and the monitoring for implementation of the LEAP. Separate part of this Document is the draft Action Plan for solving the priority key problems in the environment in the municipality.

With the Local Ecology Action Plan of municipality Gazi Baba, we give answer for several key issues:

- *What is the condition with the pollution and what can we do to protect ourselves?*
- *How to solve the problems?*
- *How the next generations to act towards the environment in the future?*

My pledge, acting and clear determination are directed to improvement of the quality of life of the citizens and improvement of the health of the population as absolute priority through measurements for protection of the environment.

With the preparation of the LEAP as developing document the municipality Gazi Baba affirmed its responsible attitude in finding a mechanism for integration of the protection of the environment in the local and social development, as main integrative parts of the Local agenda 21.

It is real to expect consistent implementation of the LEAP as main signpost in solving the problems in the environment, but at the same time as a tool for providing funds necessary for the realization of the proposed projects.

I would like to use this opportunity to express my gratitude to the Ministry of Environment and Spatial Planning, Tehnolab, the members of the Local Managing Committee and the local coordinator of the Project, the members of the work groups and the experts engaged for this project, who gave their contribution for the preparation of

the LEAP for the municipality Gazi Baba. At the same time, I would like to thank all legal and civil entities, as well as the citizens of municipality Gazi Baba for their contribution during the process of preparation of this Document.

*Sincerely,
Municipality Gazi Baba
Mayor Koce Trajanovski*

IN THE PREPARATION PARTICIPATED:

■ **WORK TEAM OF TEHNOLAB DOO SKOPJE**

Main coordinator and project leader:

- M.A. Magdalena Trajkovska Trpevska, graduated chemical engineer

Cooperatives:

- Elena Trpcevska, graduated technologist
- Ljubomir Ivanovski, grad. electro engineer
- Brankica Kostova, grad. mech. engineer
- Lidija Atanasovska, eng. for work protection
- Andrijana Veljanoska, eng. for protection of environment
- Marjan Gurovski, eng. for protection of environment
- Bosko Blazevski, construction technician

External experts:

Gorgi Blazevski, grad. civil construction eng.

Slavjanka Pejcinovska Andonova, grad. eng. technologist

■ **LOCAL MANAGING COMMITTEE (LUK) FOR THE PREPARATION OF THE LEAP FOR MUNICIPALITY GAZI BABA**

LUK coordinator

- Aleksandra Dimitrievska Avramovska, grad. eng. for afforestation and promotion of the environment

LUK deputy coordinator

- PhD Snezana Milkovska, grad. biologist, aero-palinologist

LUK members

- Tatjana Atanasovska Petrovska, grad. journalist
- Sasko Kocevski, president of the association of citizens of the settlement Zelezara
- Elena Vidinova Ivanovska, grad. eng. for environment, Makstil, Skopje

Expert

- PhD Jelena Dimitrievik, grad. eng. technologist

Cooperatives

- Filip Ivanov, grad. eng. agronomist, member of the association of citizens of settlement Zelezara
- Prof PhD Ljupco Melovski

External cooperatives

- Prof PhD Vlado Matevski
- PhD Mihail Kocubovski
- PhD Pece Siljanovski,
- PhD Persida Malinska
- PhD Donco Kitevski

- PhD Zoran Simonovski
- PhD Lidija Jovanovska
- PhD Malinova Marija
- Prof. PhD Vladimir Dzabirski
- Prof. PhD Mitko Karadelev
- Prof. PhD Sterija Nacevski
- Prof. PhD Stefanka Hadzi-Pecova

Public institutions:

- City of Skopje – sector for protection of environment and nature
- Public Enterprise Communal Hygiene, Skopje
- PE Water and Sewerage, Skopje
- PE Parks and greens, Skopje
- PHO Health protection office, Skopje
- Natural-mathematics Faculty, Skopje
- Faculty of Agriculture, Skopje
- Faculty of Forestry, Skopje

■ **QUESTIONNAIRE OF PUBLIC OPINION**

- EMAS association of citizens for development of health environment and working environment, Skopje
- Associations of citizens of settlement Zelezara, Skopje

■ **PROJECT COORDINATOR, MOEPP**

- Violeta Drakulovska grad. eng. architect.
- Cooperative: Svetlana Karovska grad. eng.

CONTENT

	INTRODUCTION.....	15
	EDITORIAL	
	Concept and process of preparation.....	17
	SUMMARY.....	20
1.0.	DECSRIPTION OF THE TERRITORIAL, NATURAL-GEOGRAPHIC AND SOCIO-ECONOMIC CHARACTERISTICS OF THE MUNICIPLAITY	31
1.1.	History of the Municipality Gazi Baba.....	31
1.2.	Geographic location of the municiplaity Gazi Baba.....	31
1.3.	Relief and soils.....	34
1.4.	Hydrography.....	35
1.5.	Climate.....	37
1.6.	Bio-geographical characteristics.....	38
1.7.	Administrative – territorial division and population	42
1.8.	Demographic characteristics.....	43
1.9.	Economic charcteristicsi.....	46
1.9.1	Economy development	46
1.9.2.	Agriculture.....	51
1.9.3.	Infrastructure.....	54
2.0.	IDENTIFICATION OF THE CONDITIONS IN THE ENVIRONMENT	
	55
2.1.	Urban development	55
2.1.1.	Housing.....	56
2.1.2	Green areas	57
2.1.3.	Streets and traffic	58
2.1.4.	Energy infrastructure.....	61
2.1.5.	Other elements of the urban infrastructure	64
2.2.	Quality of the environment.....	71
2.2.1.	Air.....	71
2.2.2.	Water and water quality.....	79
2.2.3.	Waste.....	91
2.2.4.	Lands	101
2.2.5.	Noise.....	105
2.2.6.	Natural resources	109
2.2.7.	Natural values and rarities.....	109
2.2.8.	Possible influences of the quality of the environment to the health of the population.....	116
3.0.	MANAGING WITH THE ENVIRONMENT	117
3.1.	Institucional frame.....	119
3.2.	National and municiplaity regulative.....	119
3.3.	Public consciousness.....	122
3.4.	NGO (Non government organizaitons)	122
4.0.	PRIORITIES AND KEY PROBLEMS IN THE MUNICIPLAITY GAZI BABA ACCORDING THE ANALYZE AND THE EVALUATION OF THE WORK TEAM.....	124
5.0.	PARTICIPATION OF THE PUBLIC	126
5.1.	Quaetionnaire of the ecology conditions in the municiplaity	126

5.1.1.	Results from the analyze of the answers received upon certain issues from Quastionnaire 1	126
5.1.2.	Analyze of the answers received upon certian isses from Questionnaire 2 (Questionnaire for public opinion about the problems with the environment)	130
6.0.	PRESUMPTIONS FOR THE REALIZATION AND MONITORING FOR IMPLEMENTATION OF THE LEAP FOR MUNICIPALITY GAZI BABA.....	133
7.0.	PLAN FOR IMPLEMENTAITON OF LEAP FOR THE MUNICIPLAITY GAZI BABA.....	134
7.1.	Urban development	135
7.2.	Air.....	136
7.3.	Water.....	139
7.4.	Waste.....	141
7.5.	Soil and land utilizatiotn.....	149
7.6.	Noise	151
7.7.	Natural values and rarities.....	153
7.8.	Increasing the public consciousness.....	154
8.0.	PLAN FOR MONITORING AND EVALUATION.....	156
8.1.	Urban development.....	157
8.2.	Air.....	158
8.3.	Water	161
8.4.	Waste	163
8.5.	Soil and land utilizatiotn.....	171
8.6.	Noise	173
8.7.	Natural values and rarities.....	174
8.8.	Public consciousness.....	177
9.0.	DRAFT ACTION PLAN FOR SOLVING THE PRIORITY KEY PROBLEMS	178
9.1.	Urban development.....	178
9.2.	Air.....	179
9.3.	Water.....	180
9.4.	Waste.....	181
9.5.	Soil and land utilizatiotn.....	182
9.6.	Noise	182
9.7.	Natural values and rarities.....	183
9.8.	Health of the population	184
9.9.	Managing with the environment.....	185
	USED LITERATURE AND DATA	186
	ANNEXES.....	188
1.	Questionnaire 1	189
2.	Questionnnaire 2.....	190

TABLES, PICTURES AND GRAPHICS

Tables

1.	Table number 1: Urban and rural settlements in the municipality Gazi Baba..	42
2.	Table number 2: Total number of population in the municipality Gazi Baba ...	43
3.	Table number 3: Total number of population in the municipality according the nationality and gender	43
4.	Table number 4: Total number of population in the municipality Gazi Baba at age of 10 and more, according gender and education	44
5.	Table number 5: Total number of population at age of 15 and more according education	45
6.	Table number 6: Percentage of employment according economy sectors.....	46
7.	Table number 7: Review of economy activities according areas in the municipality.....	47
8.	Table number 8: Data about more important economy subjects in the municipality Gazi Baba	49
9.	Table number 9: Data about more important economy subjects in the municipality Gazi Baba	50
10.	Table number 10: Structure of total areas (ha) in municipality Gazi Baba for 2005.....	51
11.	Table number 11: Structure of crops in the municipality Gazi Baba	51
12.	Table number 12: Cattle fund in the municipality Gazi Baba (individual economy)	52
13.	Table number 13: Gardening plants at the territory of the municipality Gazi Baba.	52
14.	Table number 14: Fodder plants at the territory of the municipality Gazi Baba.....	53
15.	Table number 15: Number of fruit trees and fruit production	53
16.	Table number 16: Number of vine and grapes and wine production.....	53
17.	Table number 17: Review of phone lines and subscribers for the municipality Gazi Baba.....	54
18.	Table number 18: Individual households, according type, size and content ...	56
19.	Table number 19: Type of housing, number and size of appartments, number of individual households and average housing area per family member	57
20.	Table number 20: Area of permanent types of greens in the municipality Gazi Baba	58
21.	Table number 21: Review of settlements which consist the block city greens area of municipality Gazi Baba for 2006	58
22.	Table number 22: Specification of lights according local communities	61
23.	Table number 23: Average density of installed (110 and 35 kV) power possibilities of the population (kVA/inhabitant) and the households (kVA/household) for the municipality Gazi Baba	62
24.	Table number 24: Current condition with the consumption and the installed capacity of the boilers for the heating plant "East".....	62
25.	Table number 25: Dimensions of the gas pipe line in Skopje	63
26.	Table number 26: Capacity and input and output pressure of GMRS	63
27.	Table number 27: Performed MRS in the municipality Gazi Baba	64
28.	Table number 28: Number of educational facilities in the municipality Gazi Baba	65

29.	Table number 29: Number of health facilities in municiplaity Gazi Baba	65
30.	Table number 30: Number of facilities for social protection in municiplaity Gazi Baba.....	66
31.	Table number 31: Sport clubs and associations within municiplaity Gazi Baba	68
32.	Table number 32: Annual consumption of fuel for the energy facilities	72
33.	Table number 33: Emission of polution elements from sources in municiplaity Gazi Baba.....	72
34.	Table number 34: Annual emission of polution elements from motor fuels in traffic accordng the number of registered vehicles.....	73
35.	Table number 35: Three automatic measurement stations at the territory of municipality Gazi Baba	74
36.	Table number 36: Minimal and maximal average monthly concentrations in 2003.....	74
37.	Table number 37: Minimal and maximal average monthly concentrations in 2004	74
38.	Table number 38: Minimal and maximal average monthly concentrations in 2005	75
39.	Table number 39: Water network in the inhabited places in municiplaity Gazi Baba	80
40.	Table number 40: Consumption of water per person in the municiplaity Gazi Baba	80
41.	Table number 41: Sanitary hygiene condition of the ground waters at the territory of municipality Gazi Baba in the period from 01.01.2005 to 31.12.2005	84
42.	Table number 42: Physical-chemical characteristics of the River Vardar, measurement point Trubarevo in the period 01.01.2005 to 31.12.2005	85
43.	Table number 43: Condition from drinking water resaurches in the rural part of the municiplaity Gazi Baba in the period from 01.01.2005 to 31.12.2005 .	85
44.	Table number 44: Condition from drinking water resaurches in the industrial part of the municiplaity Gazi Baba in the period from 01.01.2005 to 31.12.2005	86
45.	Table number 45: Review of the bigger industrial capacities in the municiplaity with data about the quantity and pretreatment of waste waters.....	87
46.	Table number 46: Types and quantities of waste at the territory of the municiplaity Gazi Baba	94
47.	Table number 47: Quantity of certain fractions of waste.....	95
48.	Table number 48: Locations of wild dumpsites and their capacity in the rural areas	96
49.	Table number 49: Locations of illegal dumpsites and their capacity in the urban areas	97
50.	Table number 50: Consumption of means for plant proteciton at the territory of municiplaity Gazi Baba	102
51.	Table number 51: Changed values for the level of noise over MDN	106
52.	Table number 52: List of problems connected to the environment on the grounds of performed questionnaire at the territory of municiplaity Gazi Baba	131

PICTURES

1. Picture number 1: Display of the methodology for preparation of LEAP for the municipality Gazi Baba	18
2. Picture number 2: Part of the work atmosphere during the preparation of the LEAP for the municipality Gazi Baba	19
3. Picture number 3: Holly Mother - symbol of the municipality.....	31
4. Picture number 4: R. Macedonia – territorial organization according regions.....	32
5. Picture number 5: The territory of municipality Gazi Baba	32
6. Picture number 6: Cadastre borders of the municipality Gazi Baba	33
7. Picture number 7: Average frequency and speed of winds (m/s) during the year, in eight directions, for Skopje - Petrovec.....	38
8. Picture number 8 and 9: Panoramic view of characteristic landscapes	40
10. Picture number 10: Percentage participation according national belonging....	44
11. Picture number 11: Total number of population in the municipality Gazi Baba at age of 10 and more, according education.....	44
12. Picture number 12: Total number of population at age of 15 and more, according education.....	45
13. Picture number 13: Percentage of age in the municipality Gazi Baba	45
14. Picture number 14: Percentage of employment and unemployment in municipality Gazi Baba	46
15. Pictures number 15 and 16 : AD "Pivara" and AD "Alkaloid".....	47
16. Picture number 17, 18, 19 and 20: AD "Evropa", AD "Zito Luks", Automobile shop "MakAutoStar", JSP "Skopje".....	48
17. Pictures number 21 and 22: Urban settlements in the municipality Gazi Baba	55
18. Pictures number 23 and 24: Rural settlements in municipality Gazi Baba	55
19. Picture number 25: Boulevard green areas on boulevard "Aleksandar Makedonski"	57
20. Picture number 26: International highway E-75	58
21. Pictures number 27, 28 and 29: Traffic infrastructure of municipality Gazi Baba	59
22. Picture number 30: Elementary School „Stiv Naumov”	64
23. Picture number 31: European University.....	65
24. Picture number 32: University St."Cyril and Methodius"	65
25. Picture number 33: Green market Avtokomanda	66
26. Picture number 34: Church "St. Arhangel Mihail" in the settlement Avtokomanda	67
27. Picture number 35 and 36: Sport recreational center Zelezara and sports hall Avtokomanda	68
28. Picture number 37 and 38: Sport – recreation activities	68
29. Picture number 39: Location Gazi Baba	69
30. Pictures number 40, 41, 42 and 43: Flooded areas at the territory of municipality Gazi Baba	83
31. Pictures number 44 and 45: Illegal dumpsites near village Trubarevo and Jurumleri.	97
32. Picture number 46: Illegal dumpsite Vardariste	97
33. Pictures number 47 and 48: Part of the fertile land in municipality Gazi Baba	102
34. Picture number 49: Location Gazi Baba characteristic landscape	110

35.	Picture number 50: Panoramic view of location Gazi Baba	110
36.	Picture number 51: Artificial lake in the botanical garden.....	111
37.	Pictures number 52 and 53: Types of plants in the botanic garden	112
38.	Picture number 54: Glasshouse.....	112
39.	Pictures number 55 and 56: Actions upon the event days of Spring and Ecology.....	120
40.	Picture number 57: Action „Eko Spring“	121

GRAPHICS

1.	Graphic 1: Changed levels of noise in 2004	105
2.	Graphic 2: Level of communal noise	106

ABBREVIATION

LEAP	Local Ecology Actoin Plan
MZSPP	Ministry of Environment and Spatial Planning
GUP	General Urban Plan
DUP	Detail Urban Plan
NEAP	National Ecology Action Plan
SWOT	Strengths Weaknesses Opportunities Threats
DPSIR	Driving Force Pressure State Impact Response
LUK	Local managing committee
NVO	Non-government organizations
UHMR	Hydro-meteorological Office
JZO ZZZ	Public Health Organization – Health Protection Office
EWB	European regulative for wild birds
MACOMO	Macedonian collection of microorganisms
REC	Regional center for protection of environment for central and East Europe
PMF	Faculy of Natural-mathematics
GMRS	Main Measurement regulation Stations
MRS	Measurement Regulation Stations
NPUO	National Plan for waste management
Long	Longitude
Lat	Latitude
MDK	Maximal alowed concentration
SS	Own funds
SD	Donations
ISKZ	Integrated prevention and polution control
EIA (EIA)	Environmental impact assessment
MZSV	Ministry of Agriculture, Forestry and Water Economy
NSBAP	National Strategy for bio-diversity Action plan
UNFCCC	UN Frame Convention for Climate Changes
RM	Republic of Macedonia

INTRODUCTION

The preparation of the LEAP came out of the need of the citizens for clean and healthy environment, but also as an obligation according the Law for environment (Official Registry of RM number 53/2005) where it is determined that "the municipalities and the City of Skopje, according the National Ecology Action Plan bring local action plans for the environment". According the Law for local governance (Official registry of RM 5/2002), one of the responsibilities and authorities of the municipalities is "protection of the environment and nature through measurements for protection and prevention from pollution of the water, soil, protection of nature, protection from noise and non-ionizing radiation".

Motivated from the legislation, but also aware about the conditions with the environment in the municipality, the municipality Gazi Baba started with the preparation of LEAP as a plan of activities for overcoming the problems with the environment.

Main goal of the preparation of the LEAP for municipality Gazi Baba is to determine the current condition of the environment, and then to create measurements and activities for protection and promotion, based on consensus between the local government, the citizens and the non-government sector.

It is of great importance that the LEAP is based on the real life necessities of the citizens, as well as on the economy acceptable and justified solutions for overcoming the identified environmental problems, as a first step towards creating sustainable development of the municipality.

LEAP as developing document represents analyze of the conditions in the municipality and determination of the needs for overcoming the problems. This responsibility is achieved by:

- Identification of the problems (determining the current condition) with the quality of the environment, their influence on the health of the population and the possibilities for development of the municipality;
- Determination of priorities;
- Preparation of dynamic plan of measurements and activities; and
- Defining precise projects (if possible).

The local plan of activities for protection and promotion of the environment has very important function in the determination and application of the principles of the sustainable development and in the creation of the grounds for real functioning of the local democracy, for creating an economy which would implement the values of the water, air, soil, bio-diversity, the natural resources and rarities, in direction to provide better life standard and sustainable utilization of the resources.

LEAP as planned and developing document of the municipality, accepted by the Council of the municipality should provide:

- Induce the local community to undertake precise obligations and to take care of the environment;
- To plan the development of the municipality Gazi Baba based on real available resources, based on the principles of sustainability;
- In cooperation with other institutions, by the local government to make efforts to achieve the determined priorities;
- To maintain balance in the system of the environment at local level;
- To start activities at local level, as actions and measurements for improving the quality of life in the municipality, which would raise the awareness of the population about the protection and promotion of the environment;
- Connecting at municipality, regional, state and international level in order to provide better conditions for living and work.

The action plan for protection and promotion of the environment of municipality Gazi Baba should be used as a possibility for promotion and establishing organizational and economy grounds, with which and through the LEAP, will be enabled the implementation of the principles for sustainable development of the municipality.

The realization of the proposed activities is a long term process, which should be achieved in small steps, rationally and patiently. The final effect will be positive, only if a real approach is achieved in solving each problem, with respect of the legislation, but also if the institutional, material-finance and personnel grounds of the municipality is improved.

The project leader, on behalf of the expert team of "TehnoLab" d.o.o., Skopje, would like to express sincere compliments to the local government – the Council of the municipality Gazi Baba and the Mayor Koce Trajanovski, as well as the citizens of the municipality and to the non-government sector, to the public enterprises and to all who were included in the preparation and collection of the data and assisted in the preparation of this LEAP.

I would like to express compliments to the Ministry of Environment and Spatial Planning for their financial support to this project, and about the consultations and directions in the preparation of this LEAP, to the project coordinator from the Ministry of Environment and Spatial Planning.

TehnoLab d.o.o. Skopje
M.A. Magdalena Trajkovska Trpevska
Project Leader

EDITORIAL

Concept of preparation process

The basic principle of the preparation of LEAP for the municipality Gazi Baba is the fast evaluation of the conditions in the environment and identification of the problems. This means that based upon expert's evaluation the current condition of the environment is presented, and the local government has possibility through questionnaires to identify and indicate, in their opinion, the most important problems.

The process of preparation of the LEAP is a real reflection of the cooperation between the Ministry of Environment and Spatial Planning, as a coordinator and financier of the project, the local government through the Council of the municipality, as direct and main carrier of the project, and the expert institution "Tehnolab" doo Skopje, as contractor of the document, defined with the Contract number 03-1689/1 dated from 29.03.2006.

During the preparation, the development and the finalization of the LEAP for the municipality Gazi Baba, the local population actively participated, as they were most interested subject in this process. The preparation of the LEAP contributed for affirmation of the principles of the Arhu Convention for access to information about the conditions in the environment and active participation of the public in the bringing of the decisions about the environment.

The success and the quality of the project depend on the right institutional placement.

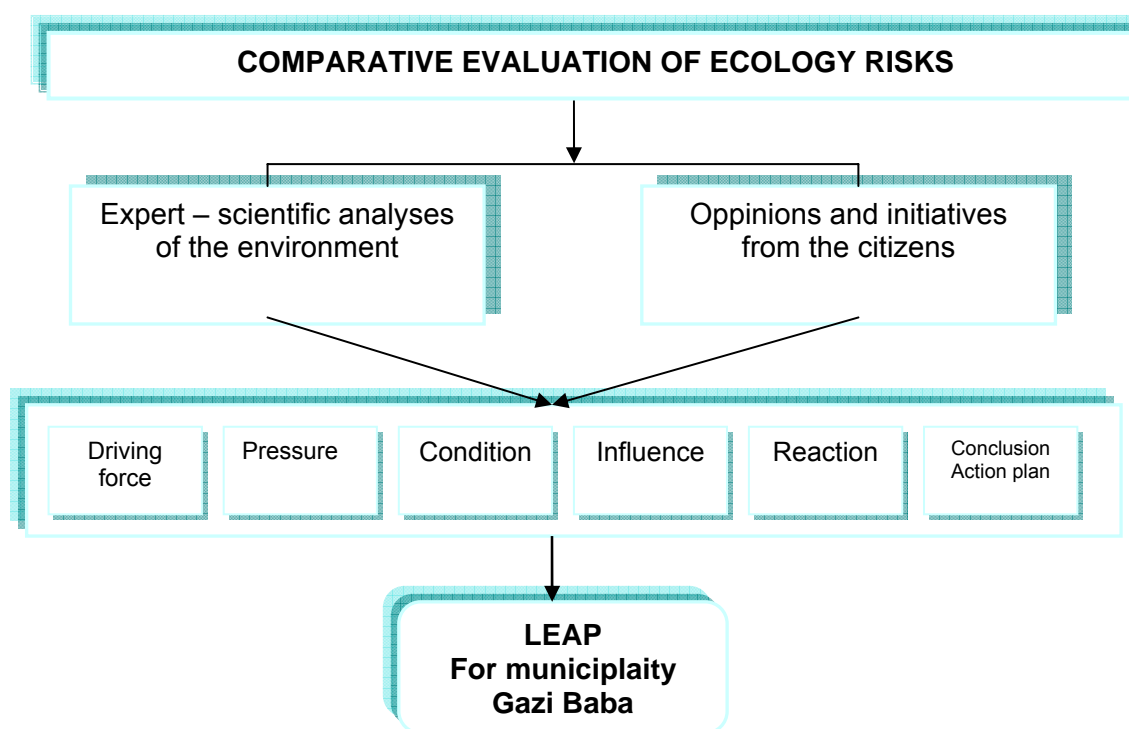
The first link in this chain is the Unit of the local government, which brought the decision for forming the Local managing committee (LUK) for the preparation of the LEAP. The committee consists from representatives of the local government and from the public, private and non-government sector. It gives directions and recommendations about the preparation of the document, and important role has in the informing and including the public in all phases of the LEAP.

At the same time, own contribution and engagement has the Ministry of Environment and Spatial Planning, through the appointed coordinator, who coordinates and supervises the activities and provides pre-conditions for active inclusion of all participants in the process of the preparation of the LEAP.

The expert institution "Tehnolab" doo Skopje, with the engaging of experts, performed evaluation of the current condition of the environment, performed categorization of the problems, defined the priorities and prepared draft-document available to the public for remarks and suggestions. During the preparation of the LEAP, the expert institution "Tehnolab" used the methodology based on the DPSIR (Driving force, pressure, state of environment, impact and response) as well as SWOT (Strength, Weakness, Opportunity and Treats) for identification of the advantages and

disadvantages of the municipality for solving the problems from the environment.

DPSIR model considers: the human activities (“Driving force” as industry, transport and others that make “pressure” on the environment and influence the quality and quantity of the natural resources which are defined as “condition” which directly “influences” the human health. The community responds to these changes through policies in the environment, common economy measurements and sector activities, and through changing of the public conciseness and behavior, defined as “answer”.



Picture 1: Diagram of the methodology of preparation of LEAP for the municipality Gazi Baba

The basic elements considered by the experts during the preparation of the LEAP are:

- Protection of the human health, formulating measurements and activities for reducing the negative impact and the pollution of the environment;
- Creating or improving the system for management with the environment for achieving higher quality of the environment;
- Raising the public conciseness about the problems related to the quality of environment, as grounds for creating conditions for prevention of the pollution.

During the identification of the priorities, the evaluation of the conditions in the environment was used, as well as the results from the analyses of the conducted questionnaire of the public opinion.

The solutions for overcoming the problems with the (un-) quality of the environment are based on the evaluation from the experts about the priority, and according the economic possibilities.

The final version of the document is a result of the given suggestions and opinions of all participants in the phase of the preparation of the document. It becomes property of the citizens, after it is adopted by the Council of the municipality.



Picture 2: Part of the work atmosphere during the preparation of the LEAP for the municipality Gazi Baba

SUMMARY

- *According the Law for environment (Official Registry of RM number 53/2005) the municipality Gazi Baba started an initiative for preparation of LEAP. The project is funded by the Ministry of Environment and Spatial Planning. The contractor of the project is the expert team of TEHNOLAB doo Skopje. During the preparation of the document was included the local government and the population of the municipality.*
- *The municipality Gazi Baba is located in the north part of Republic of Macedonia and spreads in the east part of Skopje valley and the City of Skopje. It spreads over 92 km². There are 21 inhabited places in the municipality, 7 of them are urban, and 14 rural.*
- *65% of the total territory in the municipality is fertile land. The rest of the territory is high areas, the location Gazi Baba, the region Kamnik, and the slopes of Skopska Crna Gora. Through the municipality flow the rivers Vardar, Rashtan Spring, Bulachanska and Creshovska River.*
- *The variety of the relief and the climate are favorable for many different types of trees, known and specific medical plants and over 130 types of mushrooms. Many types of animals, amphibians, insects, birds live on these areas, and 8 types of birds are protected by the European Regulative for wild birds.*
- *According the census from 2002, there are total 72.617 people in the municipality in 20.332 households, t.i. 22.815 households. The population is of different national composition and almost equal representation.*
- *The largest industry zone of the city is located in the municipality, as well as in the republic. On the territory of the municipality are registered over 6.600 business subjects, from which 2.50 are active. Dominant place in the economy development of the municipality has the industry, followed by agriculture and civil construction. 33% of the GDP of the republic comes from the territory of the municipality. Most important economy branches in the municipality are the metal industry, pharmaceutical, food manufacturing, confectionary and the industry for production of soft drinks and beer.*
- *The municipality characterizes with favorable traffic position. The city part is communication and transport gate of the city. Here pass the main transport and communication corridors to the city Skopje and the international corridor 8 and 10. The connection of the municipality with the other parts of the state and abroad is very good. The municipality is covered by the fix and mobile phone lines; the internet is more often used.*
- *The fertile land is used for all forms of agro structure. Most grown are the gardening cultures, orchard and grain cultures. Most important*

place has the fodder crops for the needs of the cattle and poultry breeding.

- The responsibilities and authorities for maintenance and promotion of the environment, gained from the citizens, are located in the municipality and city government. The solving of the problems in the municipality greatly depend on the character of the cooperation, and especially from the funds.*
- The population in the municipality rise questions for solving certain problems, before all through non-government associations, but such participation of the public was not enough when bringing decisions from this area. That is surely a result of the lack of information about their rights and responsibilities.*
- The results from the researches for determining the condition of the environment and in direction of preparation of LEAP for the municipality: urban development, quality of environment analyzed through the quality of the air, water, waste, soil, noise, natural resources, natural values and rarities, human health and management with the environment, showed that the population in the municipality Gazi Baba is facing problems in almost all parts of the environment, which disturb the quality of life.*

❖ Urban development

- The fast changes in the structure of the municipality and the planning of the urban development is essential for providing quality conditions for life and work of the population, for the functioning as society-economy, administrative and cultural whole.*
- The conditions for housing have specific place in the policy for development of the municipality. Gross housing density in Gazi Baba is 33 inhabitants/ha. The net housing density is 120 inhabitants/ha. Highest net density is in Avtokomanda with 432 inhabitants/ha. According the analyse of the elements of the housing standard, it was found that there is satisfactory housing standard in the municipality.*
- The municipality before all in the urban part is characterised with arranged green areas and tree lines along the local and city streets. For the maintenance is responsible the Public Enterprise »Parks and Greens« Skopje.*
- The primary street network in the municipality connects with the primary street network of the city and with the external road network in the republic. The local network connects almost all inhabited places. The roads are quality asphalt, except in some rural settlements.*

- *The public transport in the municipality Gazi Baba is organized with city and suburban bus lines by the Public Transport Enterprise "Skopje", and by several private transport enterprises. The passenger's transport and the transport of goods is also possible through the rail network, which through the rail line Belgrade – Skopje – Athens is connected to the international rail lines. In the settlement Madzari and Ilinden, there are fully equipped stations. The cargo stations with manipulative lines and warehouses are located in the settlement Trubarevo and near Avtokomanda (Public customs warehouses).*
- *There are over 320 transformer stations with different level of voltages. The central heating of the houses in certain settlements is part from the heating plant of the PE "Toplifikacija" and the former PE "Elektrostopanstvo". There is in the municipality part of the gas system for the needs of the energy and industry objects.*
- *The educational system is represented with the three levels of educational institutions: primary, secondary and high. There are 11 primary schools, 5 secondary, 4 faculties within the University "St. Cyril and Methodius" and 2 private faculties.*
- *Beside the public, there are private health organizations from the primary and secondary health protection. Beside the 11 kindergartens, there is one pupil's and one student's boarding schools and one hospice for old people.*
- *Beside the two green markets in the settlements, on the territory of the municipality is located the wholesales market – called Kvantashki market.*
- *In the municipality exist several Cultural Artistic Associations and amateur theatrical groups, and some of them are internationally famous, as the theatre "Steps". For sports and recreation are used the sport halls Vembly and Avtokomanda, the football ground Zelezara, the stadium Boris Trajkovski and the center for horse sports Hipodrom.*

However, even beside the prepared spatial-planned and urban documentation, the municipality is facing uncontrolled urban development on part of the municipality; unplanned construction of objects in some inhabited places; inadequate sanitary-hygiene conditions for life especially in the rural places; incomplete water supply and sewerage network, as well as unarranged sport and recreational objects, terrains and green areas.

Key problems:

- *Existence of unplanned construction of objects in some inhabited places – illegal objects. This refers to the consistent prevention of this*

phenomenon in the future, and recovering the conditions by finding appropriate solution for the existing objects.

Planned activities:

The part, which refers to the urban development, the following activities are proposed:

- Further finalization of the urban-plan documentation and improvement of the planning standards for all inhabited places.*
- Consistent realization of the solutions and directions from the urban plans.*
- Construction of social apartments for the social categories.*
- Measurements for prevention of illegal construction.*
- Consistent application of the penalty measurements in this area.*
- Finalization of the local roads.*
- Determining of locations and construction of sport and recreational objects.*
- Expanding and improving the green areas, construction arrangement and protection*

❖ **Air**

- Reason for the pollution of the air in the municipality is the emission of the polluting elements in the air from the industrial and energy installations, as stationed sources of pollution, and from the mobile sources, which are the exhausting gases from the motor vehicles in the traffic.*

Key problems:

- The lack of complete and reliable data about the emission of polluting elements and the quality of the air in the municipality Gazi Baba represents a problem from the aspect of inefficiency of expert knowledge about the condition with the pollution of the air, as grounds for undertaking further activities.*
- Lack of system for management with the air pollution (monitoring the emissions of polluting elements, measurements for their control in safe frames and their reducing), and undertaking technical and technological and administrative measurements.*
- The insufficiency of the system for evaluation of the health and ecology risks from the harmful influence of the air pollution. These insufficiencies refer mainly to the lack of continuance in the monitoring of the health condition as result from the pollution.*

Planned activities:

For the improving of the air quality, it is proposed:

- *Active participation of the municipality in defining zones and agglomerations where the level of one or more polluting elements is above, within or under the allowed values for the quality of the air.*
- *Preparation of Program for reducing the pollution and improvement of the quality of the air, through which would be undertaken all measurements for reducing the level of pollution.*
- *Active promotion of the Program of the municipality Gazi Baba during the preparation of the National Plan for protection of the air quality.*
- *Established local network of measurement stations and monitoring the pollution of the air in the settlements in the industry part of the municipality.*
- *Regular submission of reports from the local net to the Ministry of Environment and Spatial Planning because of coordination of the necessary strategy actions at national and municipality level.*
- *Establishing a procedure for informing the public about the condition with the air pollution in the municipality and the air quality.*
- *Close cooperation with all interested parties (consultant companies, academy institutions, non-government organizations, government institutions and many industry and energy installations in the municipality) for promotion of the cleaner production, implementation of higher standards and best possible production techniques.*
- *The municipality will tend and insist for maximal utilization of the capacities of the system ground (Russian) gas as ecological fuel, especially in the industry heating and households.*
- *The municipality will make efforts and will provide conditions for maximal implementation of the central remote heating of the households.*
- *The cooperation with the NGO-s for conducting projects for raising the public conciseness for usage of alternative fuels and fuels with low content of sulfur and lead.*

❖ **Water**

- *The population in the municipality Gazi Baba supplies with drinking water from the regional system of water supply of the City Skopje (spring Rashche and the well region Nerezi – Lepenec) and the local systems for water supply (the wells in village Jurumleri). Beside that, especially in the rural areas are used individual wells and pumps. The quality of the drinking water from the regional water supply system and from the local system is controlled regularly. The performed physical-chemical and bacteriological analyses show irregularities in the drinking water in many occasions in the rural areas.*
- *The urban inhabited places in the municipality are included in the city sewerage system, unlike the rural areas. In the rural areas, there is no sewerage system for collection of the atmosphere and fecal*

wastewaters, and this situation is a serious threat to the underground waters, which are used for drinking.

- The condition with the industry wastewaters in the municipality characterizes with lack of collector network and purging stations for the wastewaters.

Key problems:

- The water supply in some rural inhabited places is a problem because of the lack of quality drinking water. Most critical is the condition with the water supply from the underground waters from individual wells and pumps, especially because of the possibility of pollution of the underground waters.
- The inefficient sewerage system in the rural areas especially in the lower parts of the municipality is a problem with primary and secondary consequences – direct threat to the human health in cases of floods, as well as because of pollution of the ground and underground waters.
- The non-functionality of the canal system for water supply in the low parts of the municipality is a problem, which regularly occurs during heavy rainfalls and results with floods.

Planned activities:

The quality of the water will improve through:

- Construction of collector for the fecal sewerage from Indzikovo to the river Vardar with purging stations;
- Construction of water supply and sewerage network;
- Construction of the foreseen 7 wells according the feasibility study by PE "Water supply and sewerage";
- Construction of waterproof septic pits and regular cleaning and disinfections;
- Finding permanent solution for the problem with the waste waters by revising the possibilities for construction of regional separation sewerage system for fecal and atmospheric waters in Ilinden, Gazi Baba, Petrovec and Arachinovo;
- Regular cleaning and maintenance of the canal network and the objects in the regional canal system, as well as finalization of the additional canals;
- Providing protected zones around the springs of the drinking water;
- Construction of purging stations for waste waters;
- Preparation of study for monitoring the waste waters;
- Construction of sewerage system in the rural areas;
- Treatment of the waste waters in the rural areas;
- Constant monitoring and control of the quality of the wastewaters.

❖ **Waste**

- *The Public Enterprise “Communal hygiene” organizes the collection and the transport of the communal hard and industrial harmless waste only in the urban part of the municipality. The rural areas are not included and this results with creation of many wild dumpsites where all kind of waste can be found (communal, industrial, construction, harmful, veterinary, etc.).*

Key problems

- *The lack of relevant data about the quantities and types of waste on the territory of the municipality, as grounds for undertaking precise activities.*
- *The existence of many wild dumpsites with different capacity, as a result of the low awareness of the population and the inefficient waste management.*

Planned activities:

The problems with the waste can be overcome if the following activities are undertaken:

- *Establishing a system for collecting the communal waste at the whole territory of the municipality Gazi Baba (in the rural settlements), combined with the neighboring municipalities or independently.*
- *Establishing a dumpsite for internal waste (at municipality or regional level, public or private) and establishing a separate system of collecting this type of waste in the borders of the municipality.*
- *Repair of the wild dumpsites (in the first phase only the places where the organized waste collection exists, in the urban areas) and especially repair of the dumpsite Vardarishte.*
- *Establishing a system for selective collection of the waste and its processing, through the municipality communal enterprises, or through a tender with private operators.*
- *Personnel building of the municipality administration, which would monitor and control the conditions with the waste management (in cooperation with the municipality communal inspection or environment inspection). Also, these personnel will prepare plans and annual programs for waste management.*

❖ **Land**

- *Very often is the appearance of appropriation of the agricultural land, what represents permanent loss of productive land. The usage of the agro chemicals on the agricultural and forest production contributes to land degradation. The surface and the deeper erosion is present, and the quality of the land is not monitored.*

Key problems:

- *The appropriation of the agricultural land for other purposes, before all for construction of facilities and appropriate infrastructure with other activities.*
- *Lack of relevant data about the conditions with the soil and inefficiency of regular soil monitoring.*

Planned activities:

The land protection will be provided through:

- *Soil control and agricultural cultures;*
- *Production of safe food (promotion of organic production);*
- *Prohibition of the appropriation of the agricultural land for other purposes;*
- *Preparation of detailed evidence of the usage of agro chemicals in the production;*
- *Education of the farmers about the application of the agro chemicals in the agriculture and the harmful influence;*
- *Prohibition for construction of septic pits near the agricultural areas;*
- *Processing the organic waste in the agriculture (production of organic fertilizers, according appropriate technology);*
- *Sustainable management with agricultural land according the Law for agricultural land;*
- *Monitoring of the land quality.*

❖ Niose

- *In the municipality exists noise which overcomes the maximal allowed values and because of that, there is a need for placing monitoring points for checking the level of the noise. It s result from the increased traffic and the production and service facilities. Also, more often are the cases about very loud music from restaurants and cafes, which are not penalized by the authorities.*

Key problems:

The high noise will be reduced by:

- *Placing monitoring points for the intensity of the noise according previously prepared plan about the location;*
- *Preparation of a study about the influence of the communal noise on the human health;*
- *Monitoring of the noise;*
- *Placing of protection noise barriers anywhere it is necessary and possible.*

❖ **Natural resources, rarities and values**

- In the municipality Gazi Baba there are different natural resources: agricultural fertile land, rich resources of underground waters, archeological findings and locations, afforested areas, construction sites, picnic places, etc. the natural values and rarities at the territory of the municipality are not protected enough.

Key problems:

- Increased level of forest degradation in Gazi Baba.

Planned activities:

Rational utilization of the natural resources and quality protection of the natural rarities and values through the following activities:

- Bringing a Program for complete research of the area related to the resources;
- Bringing Decision for prevention of the illegal timber of the forest fund;
- Permanent forestation;
- Proclamation of the location Gazi Baba for city park, which would raise it to a higher level of protection from the current one (characteristic landscape);
- Amending the general urban plan of the City Skopje, where an error has been made and which allows existence of brown zones in the frames of the protected areas of this location;
- Preparation of a project for detailed arrangement of the space around the forest and defining the zones for Arboretum, scientific researches, sport and recreation and zoo;
- Preparation of a plan for management with the forest;
- Revitalization of the forest fund in the location Gazi Baba;
- Bringing long term strategy for the development of the botanic garden;
- Permanent expansion of the plant fund in the botanic garden;
- Forming data base for the plants which exist at the botanic garden with information about their taxonomy, phyto-geography ecology and other characteristics;
- Labeling of the plants;
- Preparation of Guide for information of the visitors of the botanic garden;
- Starting a procedure for gaining status botanic garden as a monument of the nature;
- Preparation of appropriate documentation for reconstruction, arrangement and management with the dendro-park of the Faculty for Agriculture and forestry in Skopje;
- Declaration of the Arachinovo march a protected area according the Law for protection of the environment ("Official registry of RM" number 67/04).

❖ **Influence of the environment on the health**

- *More serious indicators about the influence of the polluted environment on the human health are not marked. Though there is opinion that the correlation is possible between the events of illnesses, especially the infectious ones, with the damaged quality of the air, water, land and food. Most common diseases occur in the rural as well as in the urban areas (cardio-vascular and respiratory)*

The protection of the **human health** is possible through:

- *Preparation of plan of activities for control of the health condition of the population;*
- *Conduct of targeted epidemiological researches from aspect of air pollution, water quality and food quality;*
- *Preparation of plan for improving the hygiene in the municipality;*
- *Introducing health-ecology information system.*

❖ **Management with the environment**

- *The municipality doesn't have established monitoring over the quality of the environment. There are occasional measurements of certain parameters, but they are inefficient for a complete evaluation of the conditions. With the decentralization and the new legislation there is a possibility for the local authorities to monitor the conditions and to act for the improvement of the quality of the environment.*
- *The management with the environment is facing with: unconstructed system for that purpose; inefficient institutional and personnel equipping of the local government, inefficient information and participation of the population in bringing decisions about the environment; low awareness about the importance of the health environment.*

Planned activities:

the quality **management with the environment** foresees the following activities:

- *Comply of municipality regulation with the legislation, conventions and directives;*
- *Capacity building of the municipality with trained personnel for protection of the environment;*
- *Education of the public about the right for information access about the environmental issues and participation in decisions;*
- *Training of the population for the positive habits towards the environment;*
- *Raising the consciousness about the importance of health environment;*
- *Strengthening of the non-government sector.*

For overcoming the given problems with the environment in the municipality, it is necessary to respect and realize the proposed activities in the foreseen time frames.

The main assumption about the realization of the LEAP is the complete dedication of the population of the municipality towards improvement of the quality of the environment.

The local government has obligation for the precise realization of the LEAP followed with continued process of monitoring and evaluation.

The establishing the functional interaction between the local doers and the broader community, as well as the continuous cooperation with the carriers of the state government represent a necessity for successful achieving of the given tasks, and with that achieving bigger success in the realization of LEAP.

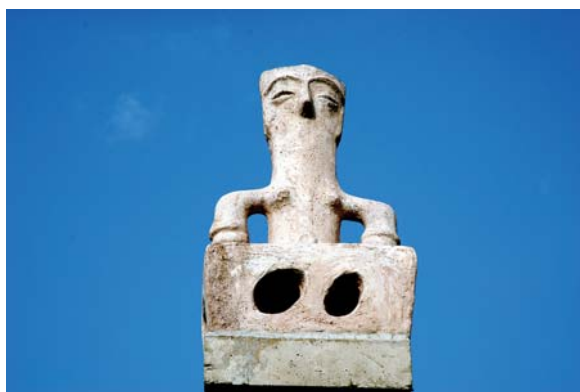
These activities are in function of constant updating of the document, which should be understood as a open plan for action, which will be updated and innovated depending from the needs and the problems in the environment.

1. DESCRIPTION OF THE TERRITORY, NATURAL-GEOGRAPHICAL AND SOCIO-ECONOMY CHARACTERISTICS OF THE MUNICIPALITY

1.1. History of municipality Gazi Baba

The area on which the municipality spreads with its geographical and strategic marks, faces through all epochs. The excavation of the archeological findings “Tumba Madzari” from the early neolith refers to the fact that these areas were populated and created from the very beginning of manhood.

From the findings in the settlement are noticed the ceramic models of houses formed as women, which in the modern life become part of the identity and symbol of the Municipality (Picture 3)



Picture 3: Big mother goddess symbol, of the Municipality

The name of the municipality Gazi Baba originates from the Turkish poet Ashik Chelebi – Gazi Baba, who lived in 14 century.

Later, throughout the centuries, the territory on which exists today's municipality, was recognized as place rich with religious objects and springs of water. At the beginning of the 20 century, the municipality was one of the 18 regions of the old Skopje.

The municipality Gazi Baba is formed on 3rd November 1976 and since then, that day is patron holiday of the municipality.

With the independence of Republic of Macedonia, the municipality Gazi Baba became part of the capital city and its communication and traffic gate. The location of the municipality is on boulevard “Alexandar Macedonian” bb, 1000 Skopje.

1.2. Geographic location of municipality Gazi Baba

The municipality Gazi Baba is located in the north part of Republic of Macedonia and spreads on the east part of the Skopje valley and the City of Skopje. The municipality covers 92 km². The lowest part is the village Trubarevo with 225 m altitude above sea level, and the highest part is on 1626 m altitude above sea level.

The Skopje valley, where the municipality is situated, is located in the north part of Republic of Macedonia, in the upper course of the river Vardar, and spreads between 41° 42' to 42° 21' north latitude and from 18° 45' do 19° 29' 30" east longitude. The bottom of the valley in the east part is on 225 m above sea level, and the north part is on 340 m above sea level. The highest point is found on the south side, on the peak Mokro on the mountin Jakupica, and is 2.540 m high above sea level.

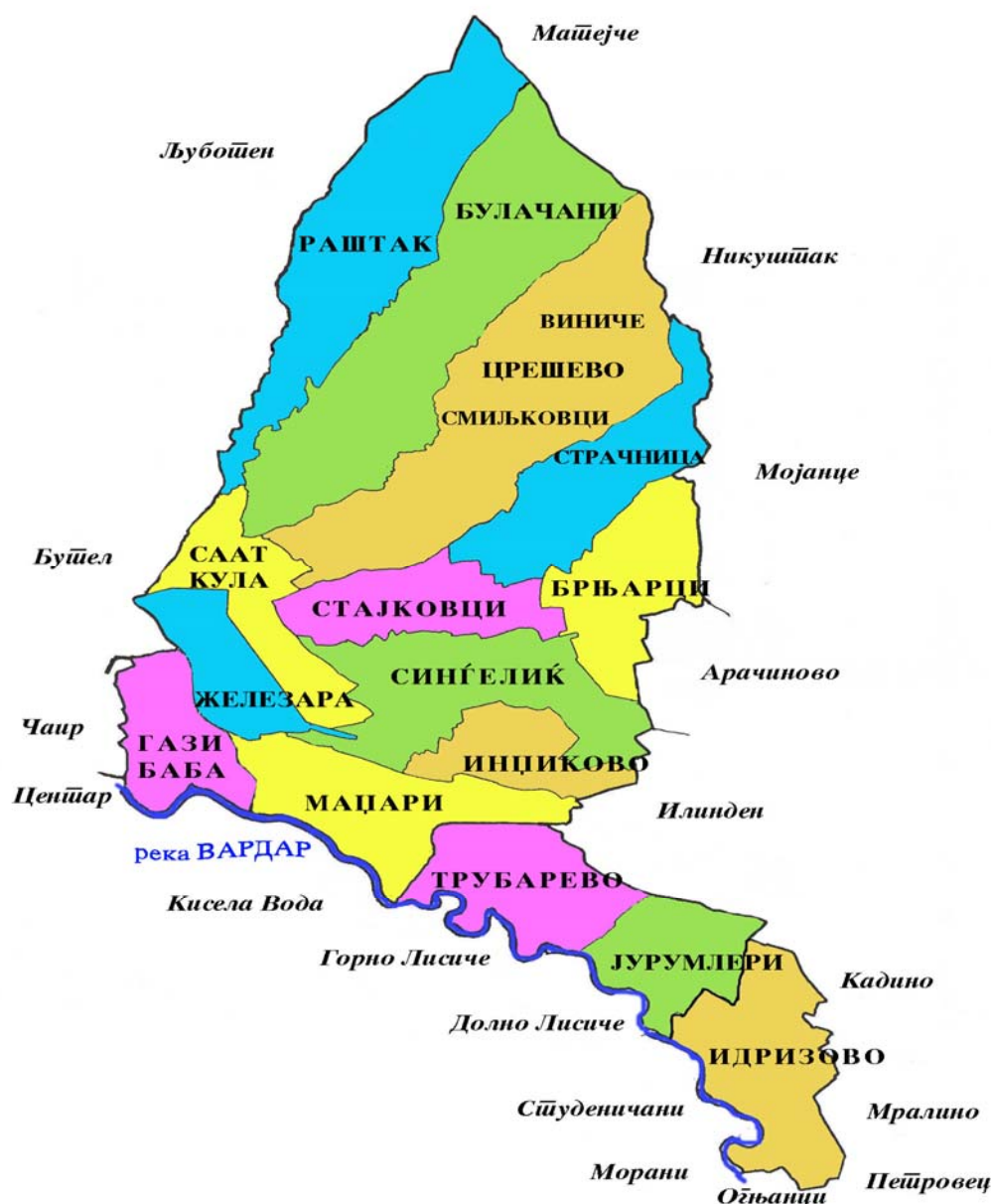


Picture 4: Republic of Macedonia – territorial organization according regions



Picture 5: The territory of the municipality Gazi Baba

The municipality Gazi Baba borders on the north-west with the municipality Butel, on the west with the municipalities Chair and Center, and on south with Kisela Voda and Aerodrom, and south-east with the municipality Petrovec, and on the east side with Ilinden, Arachinovo and Lipkovo. The diameter in direction east-west is 10 km, and south-north 15 km. (Picture 6)



Picture 6: Cadastre borders of the municipality Gazi Baba

1.3. Relief and soils

According to the relief, the municipality Gazi Baba is an area, whose most part (central, south-west and the south) is situated in a valley. 65% of the area is fertile land. The rest of the territory are several hills: in the north part there is characteristic landscape – the forest Gazi Baba, in the central part is the location Kamnik, and in the east – the mountain part is the mountain Skopska Crna Gora.

The relief of the municipality consists of several different morphological elements and shapes. The whole territory has a form of wide valley consisting of two types: high rim and low middle part – bottom of the valley. The representation of the valley provides good conditions for agriculture.

The whole territory of the municipality was flooded from the former Skopje Lake (Oligocene lake). The relief, abrasive terraces and surfaces kept their horizontal position. Because of the tectonic movements and the big seismic instability, as well as the frequent earthquakes with epicenter in the Skopje valley and especially in the east part (the location of the municipality), resulted in leaking of the lake, rhythmically, with holding on to several levels, which formed the Skopje valley.

The whole low lands of the municipality is covered with youngest fluvial segments, represented by silt, sand and gravel. Besides that, there is neogogenic lake – sandy clay sediments which are visible 2 to 5 m deep. That is why the low lands provided favorable conditions for quality agricultural crops. Also, in the low lands the erosion is weak, which minimizes the negative consequences.

The hills in the alluvial valley are: Gazi Baba, Kamnik and Krst, constructed from marl and dusty-clay sediments. As micro-relief forms they are relatively small and located on the left side of the river Vardar.

The hill Kamnik spreads northeast from the metal industry complex Mines and Iron plant “Skopje” – Skopje, in direction south-east – north-west. It spreads over 5 km, starting from the settlement Chento on southeast to the hill Krst on north-west, and is the highest hill on the bottom of the Skopje valley. The hill has several peaks, and the highest is 317 m above sea level.

The hill Krst is lower than the previous one and spreads in direction south-east – north-west over 1,5 km. There are two peaks on it, with height of 315 and 316 m. On the western slopes is located the settlement Butel.

South from the hill Krst, over the rails is situated the most remarkable hill in the municipality – the hill Gazi Baba. Together with the previous two, it closes the wide “amphitheatre” where the former metal complex Mines and Iron plant is located. The hill spreads over 3 km in length, and over 1,5 m in width, and on its west and north slopes are located the settlements Bit Pazar, Butel 2 and Zelezara.

The complex alluvial soils in Skopsko Pole is formed with fluvial accumulation activity of the rivers Vardar, Treska, Lepenec and Markova. The profile of these soils is relatively deep. The physical characteristics show great variety, and according to the chemical content they are carbon and poor in humus. They are spread on the hilly terrains of Zajchev Rid, Belushka, Gazi Baba, Chukov Rid and Kamnik. The meadow soils, formed under the influence of the high underground waters, spread on the east from the settlements Chento, the village Singelich, Indzikovo, and on the southeast towards the village Trubarevo and municipality Ilinden.

The resins are present on the east slopes of Gazi Baba and Kamnik. They are developed over different neogenic sediments. Larger areas southeast from Kamnik are the resins, which characterize with high productive ability. The alluvial-sandy soils are spread around Trubarevo and are used for intensive gardening, vine and fruit production¹.

1.4. Hydrograph

On the territory of municipality Gazi Baba exist larger and smaller rivers, brooks and underground waters. The density of the water courses, especially on the north-east from Skopje, in the mountain Skopska Crna Gora is very high. Most of the water courses are from temporary character and flow straight.

- **Rivers**

On the territory of the municipality flow the rivers: Vardar, Rashtanska (in the village Rashtak), Strashka (Bulachanska) in the village Bulachani and Chreshevska (village Stajkovci).

Rashtanska river is small and permanent brook which springs on 1.500 m above sea level. The surface of the basin is 3,92 km², the length of the river is 4,7 km, and the length of the basin is 5 km. the water flow has four springs: Delidere, spring Rashtak, Kolesh Mara 1 and Kolesh Mara 2.

Strateshka (Bulachanska) river springs north-east from the village Bulachani. It is left spring of the Bulachanska river. The river flows through the village. Part of the waters are used for irrigation. The surface of the basin is 4,5 km², the length of the water flow is 2,5 km, and the length of the basin is 4 km. The transversal fall is 18,5%.

The water flow of Creshevska river passes west from Stajkovci and on the maps is marked as occasional water flow. But according to the inhabitants, the water flow is more or less permanent. But because of the irrigation from the lower part of the flow, the river dries during the summer period. The heavy rains and the melting of the snow result in high level of the flow and flooding the riverbanks. The water flow, through the canal Deran, is connected to the

¹ General Urban Plan 2001-2002, about Skopje, book 4, June 2002

rim canal from Chento to Arachinovo. The basin surface is about 17 km², which can result in floods with 33 m³/s.

The rim canal (about 4 km) passes from Singelich to Arachinovo (west to east) and all water flows coming from Skopska Crna Gora infuse in this canal. The rim canal is important for the retention of the waters. It protects Skopje valley from flooding by the water flow from Skopska Crna Gora. With the construction of the canal, the water regime and the local terrain conditions east from Chento, Singelich and Indzikovo are changed. The canal is often “attacked” by sewerage waters and has low bio-diversity. Because of that, it is marked as water habitat with low function of aquatint.

The covering of the canals is common appearance, especially if they are near inhabited places.

- ***Underground waters***

In the narrower area of the alluvial valleys of the municipality, big reserves of underground waters can be found, wells and arterial. The underground waters lie on waterproof surfaces consisted of thick sand and gravel. Richest areas with underground waters are near the river Vardar, on depth of 2 to 18 m. they have the capacity of 10 l/s and can be used for irrigation and water supply. In the lower areas, the underground waters are used as drinking water through the wells.

The factory for steel products “Makstil” uses water from a well deep about 50 m, which is very rich in water. It is found about 1,5 km from the traffic knot in Butel. The surplus of the water, through the Burinar canal is flown in a lake. The canal is watered only during spring, and in the summer period it dries out because of the usage of the water for irrigation.

- ***Artificial lakes***

On the periphery near the village Smiljkovci are found two artificial lakes (one permanent, and the other dried). They were created with the embankment of the Burinar water flow which is occasional canal and periodically brings water to the Smilkovo Lake – a fish pond, together with the water from “Makstil”.

The lake strand is covered with reed and similar vegetation. The surface of this lake is small, which was reduced by using the waters for irrigation. The lake is mezotrophic, and there are several types of fish and is used for fishing.

- ***Springs***

There are several springs in the municipality:

- Near the village Rashtak, there are 5 springs, located on high grounds and run out freely.
- Near the village Bulachani, there are 4 springs, from which only one is used as a tap.

One small spring called “mineral water”, located northeast from the village Stajkovci, and west from Brnjarci. It is on 1.500 m air distance from the highway and on altitude of 50m higher than the highway. The spring has local importance, and the inhabitants believe that it has medical qualities (the water is not used for drinking).

1.5. Climate

The territory of the municipality Gazi Baba is under the influence of two climates: Mediterranean and moderate continental. During winters there are cold continental and wet periods, and during the summers – warm continental and dry Mediterranean periods.

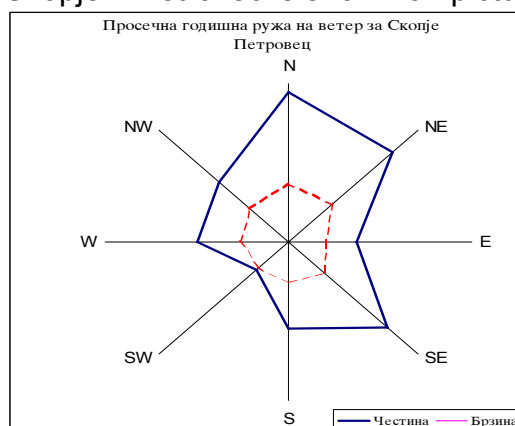
The average temperature of the air is $+12,5^{\circ}\text{C}$. The minimal absolute annual temperature of the air is $-22,9^{\circ}\text{C}$, and the maximal $+42,4^{\circ}\text{C}$.

The average annual relative humidity of the air is 70%. The average annual number of clear days is 70, and cloudy days – 107. the average annual rain fall is $516,1 \text{ mm/ m}^2$. the average annual number of days with rain is 112, with fog is 81, and freezing days 0,6. in this area the absolute highest temperature of the air is $42,4^{\circ}\text{C}$, and the absolute minimal temperature is $-25,6^{\circ}\text{C}$.

The medium relatively humidity of the air for Skopje is between 67 and 78%. The lowest relative humidity is during July and August and is 54% - 69%.

There are three types of winds on the territory of the municipality: Povardarec, South and north-west wind. The Povardarec comes from the Mountain Shar along the river Vardar, towards the south parts of Macedonia. During the summers it is dry, and during the winters it is followed by rains. The South blows from the opposite direction. It is warm wind and is always followed with rain. The wind which blows from Kachanik towards Skopje along the river Lepenec, is similar to the Povardarec. The speed of the winds is: maximal from 29 to 30 km/h, medium from 14 to 21 km/h, and the minimal from 1 to 5 km/h.

The orthography conditions have big influence over the direction of the winds. The average annual frequency of the winds is in 8 directions, and their speed expressed in m/s, for Skopje – Petrovec is shown on picture 7.



Picture 7: Average frequency and the speed of the winds (m/s) a year, in 8 directions, for Skopje – Petrovec

the territory of the municipality belongs in the more dry areas and the average rain fall is 515 mm/m². these quantities are uneven during the seasons. May has most rain fall, with average 66 mm/m², or 12%. August has at least rain fall, with 30 mm/m² and July with 33 mm/m². the falls during the winter are usually in the form of snow. Only 17% are falls of snow and sleet. They occur in the winter period, from November to March. The falls are often in the form of dew, hail and rime, and have negative impact on the agricultural cultures.

The territory of the municipality characterizes with highest cloudiness in Macedonia, after the Polog Valley (6,0 tenth). There are average 105,5 cloud days, and 69 sunny days.

The fog appears in all times of the day, but mostly during the early morning hours from 7 to 8 a.m. there are usually 72 foggy days. Also, here was noticed heavy fog which lasted 17 days.

1.6. Bio-geographical characteristics

The territory of the municipality has rich biological diversity in all its parts – eco-systems, communities and species. There are many vegetation and animal forms, and depending from their distribution, they can be grouped in higher ecological and bio-geographical identified categories – zones.

- **Zone of low swamps, marshes, meadows and valley forests along rivers**

This zone covers the lowest part of the municipality, up to 300 m. there are low, meadow, march and river forests, where the anthropogenic influence is highest.

- *Vegetation*

This zone (which is the largest) includes the river forest fytocenoses, swamps and marches, and the wet valley meadows. Most frequent are the willows and the poplars, which are found along the river Vardar. The swamps and the marshes spread over small areas near the villages Stajkovci and Jurumleri. The meadows are found on small areas, and mainly near the villages.

- *Flora*

Dominant and important vegetation types in the low zone are the following: *Rottboelia digitata* (1-2), *Cyperus longus*, *Salix alba*, *Salix fragilis*, *Populus alba*, *Phragmites australis*, *Trifolium resupinatum*, *Butomus umbellatus*, *Typha angustifolia*.

- **Zone of hill pastures and under forest open terraines**

- *Vegetation*

The zone of the hill pastures spreads from the lowest parts of the municipality, and up to 1000 m altitude.

This zone includes the fertile lands, which cover large areas, but which because of the urbanization are reducing. Here, different crops are grown (wheat, rye, barley, corn) as well as gardening culture (peppers, tomatoes, onions, garlic, leek, potatoes, watermelon etc), as well as strawberries near the villages Singelich and Stajkovci, in many green houses.

- *Flora*

Dominant and important vegetation types are: *Xeranthemum annuum*, *Thymus tosevii*, *Crysopogon gryllus*, *Andropogon ischaemum*, *Hordeum asperum*, *Tuberaria guttata*, *Hordeum bulbosum*, *Trifolium echinatum*, *Alkanna nonneiformis*, *Erysimum difusum*.

- **Zone of hill forests – oak region**

- *Vegetation*

The hill forests are spread between 250 – 800 m altitude, and are present on the mountain Skopska Crna Gora. Dominant forest types are *Quercetum frainetto-cerris macedonicum* Oberd. 1848 em. H-t 1959. In the lowest parts of this zone are present the bushes, from which most dominant is *as. Querco-Carpinetum orientalis macedonicum* Rud. 1939 ap. Ht. 1946. There are also many orchards and vine, mainly near the rural settlements.

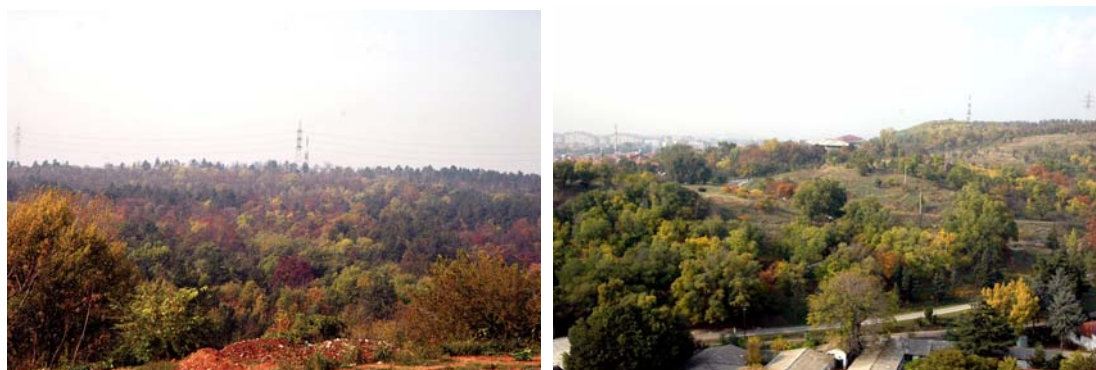
- *Flora*

Dominant and important vegetation types in the oak region are: *Alkanna nonneiformis*, *Quercus frainetto*, *Quercus cerris*, *Ulmus minor*, *Anemone nemorosa*, *Carpinus orientalis*, *Castanea sativa*, *Fraxinus ornus*, *Acer tataricum*, *Cyclamen hederifolium*, *Cornus mas*.

- **Forests**

The zone of new forests in the municipality grows from 80 ha, planted in 2003, to 155 ha in 2004, and the cut gross wood mass is reducing from 2.200 m in 2000 to 322 m in 2003, and 627 m in 2004. (Statistic review: Agriculture, Forestry: 1997-20004, 504(5.4.05)).

On the territory of the municipality exists the location Gazi Baba, which according the decision of the Council of the City Skopje in 1998 was declared as characteristic landscape. The location Gazi Baba is unique of the type on the Balkan region and represents true green treasure. The total area is 102.44 ha, from which 88,24 is forest (man-made plantings) or 86,13% of the total surface, and 14,20 ha or 13,87% is an area which is not afforested. In the Gazi Baba forest, there are many wood types and bushes, and from the conifer types, most found is the black pine.



Picture 8 and 9: panoramic view of the characteristic landscape

One of the biggest problems with the natural resources is the uncontrolled timber of the forests and destroyed forest funds.

- **Fauna**

From the fauna point of view, Skopska Crna Gora is very little researched, especially the insects. Even though, as more important are the three types of butterflies: *Iphiclides podalirius*, *Lycaena dispar* i *Parnassius mnemosiw* which are included in the lists of the international conventions. In the list of endemic straight-wings is the *Andreiniimon nuptialis*, and from the spiders the *Troglohyphanthes kratochvili*.

From the 57 types of birds registered at the lake near the village Smiljkovci, 34 are registered in 1999 in the region between Hipodrom and Smiljkovci. Eight of them are protected with the European Directorate for wild birds.

Among the found amphibians, two types are protected by the European Directorate for flora and fauna. From the reptiles, in the lake are registered the European lake turtle, and the grass snake.

Almost all spinals characteristic for the oak zone and the open terrains of the Skopje Valley can be seen on Skopska Crna Gora. From the mammals, the wild goat and the lynx are not seen.

- **Medical plants**

On the territory of the municipality are found the following types of medical plants: white mallow, horse tail, spring primrose, primrose, blue and red juniper, wild thyme, wolfs apple, bell, chamomile, snakes milk, goldfinch, forest strawberry, rabbit's foot, ivy, sop, hop, black mallow, rabbits thorn, mountain tea, plantain, sweet fern, raspberry, dandelion, underoak, white underoak, fennel and nettle.

- **Mushrooms on the territory of the municipality Gazi Baba**

On the territory of the municipality are marked 135 types of mushrooms, and the most part of them are poisonous.

There are some with high endemic value as the: vrgan, rujnica, orange euphorbia, fairy carnation.

From the potential economy type, more important are: yellow hedgehog, orange hedgehog and the wolf bread. The type egg is with high nutrition value and is forbidden for purchase in Europe, but in our country, it is still pursuable.

Very rare is the mushroom called “hedgehog” found in Skopska Crna Gora in the oak forests. There are only three location where this mushroom is found, so it protection is necessary.

In the municipality are found edible mushrooms, but not economy effective, t.i., they are not purchased. Here belong: the field champignons, the “puf” and the “ink”. beside these there are dangerous parasite mushrooms which damage the oak and the beech trees and the oak roots.

According the experiences from the European countries, many mushrooms are protected by law, and the collection is forbidden, but in our country regulative from this area doesn't exist. It is essential that the population is educated about the right collection of the mushrooms and the medical plants.

The samples from the fungus are kept in the National collection of mushrooms MA COMO (Macedonian Collection of Microorganisms). These types are preserved according all standards (labeled, frozen, treated with insecticides) and all necessary data are marked in the data base called FUNGI MACEDONICI. The micro-lab exists since 16.07.2001, and is located in the facility of the Biology institute at the Natural-Mathematics Faculty in Skopje.

1.7. Administrative – territorial division and population

The number of settlements in the municipality Gazi Baba is 21. Seven are urban, and 14 rural. Table 1 shows the urban and rural settlements.

Table 1: Urban and rural settlements in the municipality Gazi Baba

N°	Urban settlements	Rural settlements
1	Zelezara	Brnjarci
2	Avtokomanda	Bulachani
3	Keramidnica	Viniche
4	Madzari	Idrizovo
5	Triangla	Indzikovo
6	Hipodrom	Jurumleri
7	Chento	Rashtak
8		Singelich
9		Stajkovci
10		Strachinci
11		Smilkovci

12		Trubarevo
13		Creshevo
14		Goce Delchev (Skopsko Pole)
Total	7	14

Source: Law for territorial organization of the local government in Republic of Macedonia (Official registry of RM number 55/2004)

On the territory of the municipality live 72.617 people (Table 2)

Table 2: Total population in the municipality Gazi Baba

N°	Inhabited places	Total population
1.	Skopje - Gazi Baba	15.182
2.	Madzari	12.874
3.	Brwarci	395
4.	Bulachani	1.104
5.	Goce Delchev (Skopsko pole)	1.405
6.	Idrizovo	2.040
7.	Indzikovo	3.343
8.	Jurumleri	2.983
9.	Rashtak	367
10.	Sinjelich	23.915
11.	Stajkovci	3.532
12.	Smiljkovci	345
13.	Strachici	1.185
14.	Creshevo	1.278
15.	Trubarevo	2.669
Total:		72.617

Source: Census of the population, households and apartments in RM, 2002, final data, State Statistics Office, book X, 2004.

1.8. Demographic characteristics

According the last census in 2002, in the municipality live total 72.617 people.

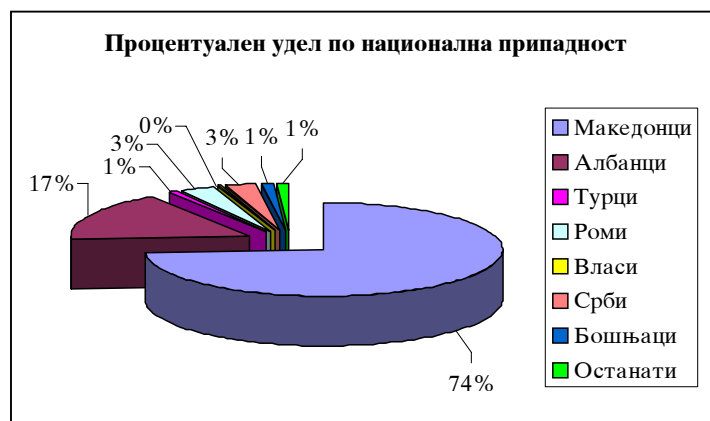
The population is from different national composition, with domination of the Macedonian population, and almost equal sex representation (Table 3)

Table 3: Total population in the municipality according national belonging and gender

Municipality Gazi Baba	Nationality								Total
	Macedonians	Albanians	Tyrks	Roms	Vlachs	Serbs	Bosnians	Other	
Male	26.641	6.477	318	1.020	108	1.053	345	414	36.376
Female	26.856	6.025	288	1.062	128	1.044	365	473	36.241
Total	53.497	12.502	606	2.082	236	2.097	710	887	72.617

Source: Census of the population in RM, 2002, final data, State Statistics Office, book XIII, 2004.

Picture 10 shows the national structure of the municipality Gazi Baba.



Picture 10: Percentage according the nationality

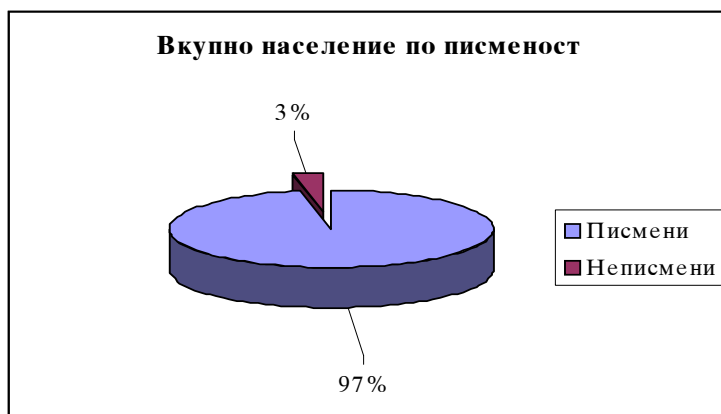
The number of the population in the municipality at the age of 10 and above, according the education is shown in Table 4.

Table 4: total population in the municipality Gazi Baba, age 10 and above, according the education

Municipality	Total		Male		Female	
	Literate	Illiterate	Literate	Illiterate	Literate	Illiterate
Gazi Baba	61.156	1.966	31.137	385	30.019	1.581

Source: Book XIII total population, households and apartments, according the territorial organization of republic of Macedonia from 2004

Picture 11 shows the structure of the population in the municipality Gazi Baba according the education



Picture 11: Total population in the municipality at are of 10 and above, according the education

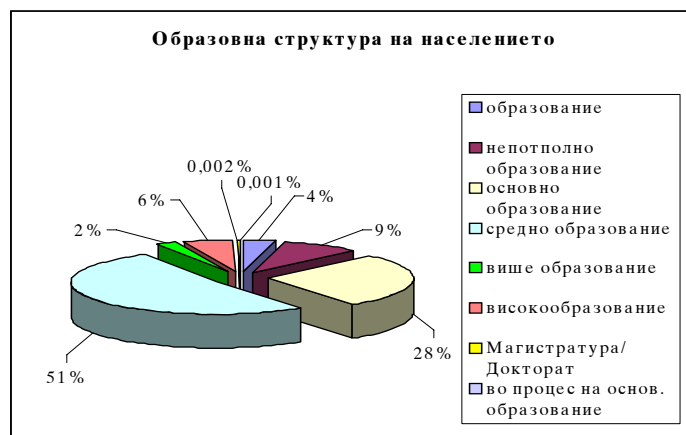
The educational structure of the population is favorable. The population with graduated secondary school is dominant. (Table 5)

Table 5: total population at age of 15 and above, according the education

Total	EDUCATIONAL STRUCTURE OF THE POPULATION			
57.981	Without education	Incomplete education	Primary education	Secondary education
	2.069	5.098	16.112	30.010
	Higher education	High education	MA/ PhD	During the primary education
	1.296	3.197	124	75

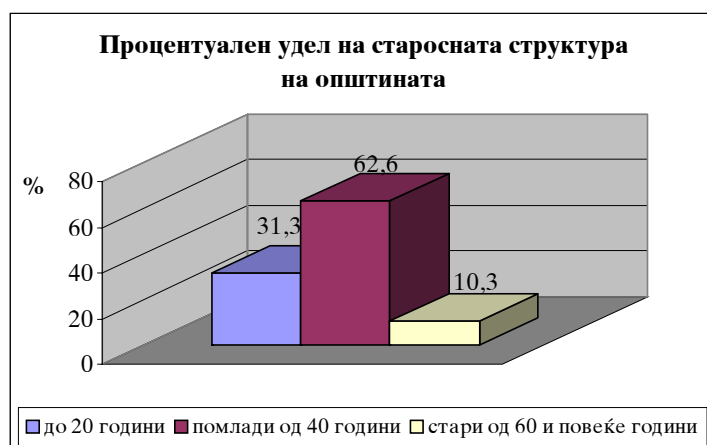
Source: Census of the population in RM, 2002, final data, State Statistics Office, book XIII, 2004.

Picture 12 shows the educational structure of the population in the municipality Gazi Baba.



Picture 12: Total population in the municipality at are of 15 and above, according the education

The average age of the population is 32,9 years, with age index of 0,331. Picture 13 shows the percentage of the age structure of the population in the municipality Gazi Baba.



Picture 13: percentage of the age structure of the population in the municipality

1.9. Economy characteristics

From the total number of population in the municipality, economically active are 29.326 people or 40,38% of the population. Employed are 19.766 people, and unemployed are 9.560 people. From the gender point of view, the relation male – female is 60:40.

Picture 14 shows the percentage of employed and unemployed people in the municipality.



Picture 14: Percentage of the employed and unemployed population in the municipality

Table 6 shows the sectors in which are employed the population of the municipality.

Table 6: Percentage of employment according the economy branches

Economy branch	Percentage of the employment [%]
Services	60
Industry	37
Agriculture	2
Unknown	1

Source: Census of the population, households and apartments in RM, 2002, final data, State Statistics Office, book XIII, 2004

1.9.1 Economy development

The biggest industry zone of the city and the republic, is located in the municipality Gazi Baba. On the territory of the municipality are registered 6.600 business subjects, and 2.050 are active. Dominant branch in the municipality is the industry, followed by the agriculture and the construction. The municipality produces 33% from the GDP of the republic.

The GDP of the municipality per person is 11.964 US \$ (according the census from 2002), and GDP per person of Macedonia is 2.725 US\$.

The municipality is characterized with favorable traffic position, expert work labor, tradition for certain activities, and quality economy structure. The transport, forwarding, service and the trade activity find their place in the municipality, beside the agriculture and the cattle breeding, which are also important part of the economy life.

- **Industry**

Most important economy branches in the municipality are the metal industry, pharmaceutical, food processing, confectionary and beer and soft drinks production.



Pictures 15 and 16: AD "Pivara" (Brewery) and AD "Alkaloid"

The review of the economy branches in the municipality are shown in table 7.

Table 7: review of the economy branches in the municipality

N°	Activity	Surface fo the facilities/m ²	Area of land/ha
1.	Industry and mining	336.329	468,35
2.	Whole trade	165.937	87,14
3.	Civil construction	6.922	1,12
4.	Traffic and communicaion	26.342	19,28
5.	Tourisn and hotelier	11.087	1,17
6.	Finance, technical and business services	70.263	24,22
7.	Housing-communal activities and arrangement of settlements and spaces	6.323	6,78
8.	Crafts and personal services	12.169	5,53
9.	Agriculture and fishery	2.672	1,34
10.	Forestry	0.00	0,00
11.	Water economy	0.00	0,00
	Total:	638.044	614,93

Source: general urban Plan 2001-2020 for Skopje, book 4, June 2002

More important economy subjects in this municipality are:

- AD Makstil – iron plant, AD Makstil - Valavnica, Mittal Stil, RZ -Institut, RZ - Valavnica, Famord, Famord Engineering, MZT Learnica, MZT Hepos, FOP, MZT vehicle equipment, MZT special vehicles and equipment, MZT Pumps, Sanos, JUG (metal industry)

- Alkaloid - Premazi, Alkaloid – pharmacy (chemical –pharmaceutical industry)
- Makpetrol - Tema, Sigma Masla (chemical industry)
- Toplifikacija, ESM - Energy, MZT Energy (energy)
- Komuna (production of waved paper, carboard and paper and cardboard packing)
- Mega - Trubarevo, Evropa, Pivara, Pilko, F.Z. Stopanstvo, Promes, Soleta, Zito Luks - Avtokomanda, Zito Skopje - Zito Leb, Zito Skopje - Glorija, Zito Skopje, Mlin Mak, Multiprom, Vitalija, Rimes (food processing industry)
- JSP Skopje, Proleter Skopje (pasengers and cargo transport)
- Makedonski folklor, Frotireks, Tekstil (textile)
- Grafohartija, Aleks Prom (wood industry)
- Dasto (electro-industry) and others



Pictures 17, 18, 19 and 20: AD "Evropa", AS "Zito Luks", car salon "MakAutoStar", PTE "Skopje"

Table 8 and 9 show the more important economy subjects in the municipality with number of employees, surface (m2), final products and installed capacity.

Table 8: Information about more important economy subjects in the municipality Gazi Baba

N ^o	Name of the economy subject	Number of employees	Area (m ²)	Final products (t/year)	Installed capacity
Metalurgy and metal industry					
1.	A.D. "Makstil - Celicarnica"	366	64.755	300.000	700.000 (t/year)
2.	A.D. " Makstil - Valavnica"	411	78.000	292.000	
3.	"Mittal Stil"	/	/	/	/
4.	RZ - Institute	31	/	3.810	/
5.	RZ - Valavnica	496	121.449	800.000	/
6.	Famord	/	/	/	/
7.	Famord engineering	/	/	/	/
8.	MZT Learnica	400	9.975	3.000	6.000 (t/year)
9.	MZT Hepos	405	15.000	/	/
10.	FOP	/	/	/	/
11.	MZT Vehicle equipment	/	/	/	/
12.	MZT Special vehicles and equipment	/	/	/	/
13.	MZT Pumps	/	8.244	/	/
14.	Sanos	/	/	/	/
15.	JUG	/	1.760	/	/
Chemical - pharmaceutical industry					
16.	Alkaloid – layers	100	50.621	5.039 (t/year)	/
17.	Alkaloid – Pharmacy	752	43.105	710 (t/year)	/
Chemical industry					
18.	Makpetrol – Tema	/	800	/	/
19.	Sigma Oils	/	/	/	/
Energy					
20.	Heating plant	/	33.252	/	For whole 310 MW
21.	ESM – Energy	137	37.157	120.000 (t/year)	/
22.	MZT Energy	38	8.000	/	/
Production of waved paper, carboard and paper and cardboard packing					
23.	Komuna	420	10.000	12.000 (t/year)	/

Table number 9: Information about more important economy subjects in the municipality Gazi Baba

N ^o	Name of the economy subject	Number of employees	Area (m ²)	Final products (t/year)	Installed capacity
Food industry					
24.	Mega - Trubarevo	100	30.000	3.000 (t/year)	/
25.	Evropa	530	5.000	5.000 (t/year)	/
26.	Pivara – Brewery	438	123.307	138.764 (l/year)	/
27.	Pilko	/	10.000	600 (t/year)	/
28.	F.Z. Economy	/	1.000.000	/	/
29.	Promes	124	600	/	/
30.	Soleta	/	/	/	/
31.	Zito Luks - Avtokomanda	111	16.000	9.567.770 (pair/year)	/
32.	Zito Skopje - Zito Leb	20	3.000	1.080 (t/year)	/
33.	Zito Skopje - Glorija	35	7.000	800 (t/year)	/
34.	Zito Skopje - Mlin Mak	73	3.677	14.000 (t/year)	/
35.	Multiprom	/	2.000	/	/
36.	Vitalija	30	2.000	720 (t/year)	/
37.	Rimes	97	600	560 (t/year)	/
Transport of passengers and goods					
38.	JSP Skopje	/	/	/	5 MW
39.	Proleter Skopje	/	/	/	/
Textile industry					
40.	Macedonian folclore	/	/	/	/
41.	Frotirex	30	985	170 (t/year)	/
42.	Textile	/	16.000	/	/
Wood industry					
43.	Grafohartija	/	400	/	/
44.	Aleks Prom	/	/	/	/
Electro industry					
45.	Dasto	/	1.800	/	/

1.9.2. Agriculture

From the total surface of the municipality, 65% is fertile land. Only 5% belongs to the hill-mountain region. The updated data about the agro-structure of the land in the municipality, which refers to the planted areas, pastures, forests and unfertile land, are given in the Table 10.

Table 10: Structure of the total areas (ha) in the municipality Gazi Baba for 2005

N ^o	Type of agricultural land	Area (ha)
1.	Orchards and gardens	3.857
2.	Orchards	194
3.	Vine	565
4.	Meadows	580
5.	Total: Fertile land (1 to 4)	5.196
6.	Pastures	459
7.	Fish ponds	/
8.	Ponds and reeds	8
9.	Total: Agricultural land (5 to 8)	5.663
10.	Forests	528
11.	Unfertile land	971
12.	Total area (9 to 11)	7.162

Source: State Statistics Office of Macedonia, report number 25-827/3 dated from 24.08.2006

The structure of the crops (barley and corn) in the municipality Gazi Baba, according the data from 2006 are given in the table 11.

Table 11: Structure of the crops in the municipality Gazi Baba

Place	Area (ha)	
	Barley	Corn
Bulachani	54.8	19.92
Trubarevo	7.28	2.7
Sinjelich	40.96	4.46
Strachinci	4.3	1.74
Rashtak	5.23	7.03
Brnjarci	41.22	9.72
Indzikovo	7.17	1.69
Idrizovo	6.15	10.59
Creshevo	27.62	7.58
Smiljkovci	5.46	2.98
Stajkovci	32.19	15.08
Madzari	8.23	2.83
Jurumleri	13.05	6.01
Viniche	3.91	0.88

The cattle fund in the municipality Gazi Baba (individual), according the data from 2006, is given in table 12.

Table 12: Cattle fund in the municipality Gazi Baba (individual)

Place	Number of animals	
	Cattle	Sheep
Bulachani	98	1061
Trubarevo	38	/
Sinjelich	216	1719
Strachinci	55	166
Rashtak	23	256
Brnjarci	61	120
Indzikovo	118	/
Idrizovo	75	/
Creshevo	71	58
Smiljkovci	33	65
Stajkovci	75	58
Madzari	19	/
Jurumleri	34	/
Viniche	37	4

Source: Territorial unit of the Ministry of Agriculture, Forestry and Water economy in Gazi Baba, 2006

The gardening crops present in the municipality Gazi Baba are given in table 13.

Table 13: gardening crops on the territory of the municipality

Cultures	Area (ha)		Production	
	Planted	Yield	Total tons	Kg per ha.
Potatoes	209	209	3090	14785
Onions	59	59	134	2278
Garlic	28	28	30	1082
Beans	91	91	266	2922
Peas	26	26	54	2077
Cabbage	72	71	945	13310
Tomatoes	138	138	906	6565
Peppers	172	172	542	3153
Cucumbers	36	36	227	6306
Water melon	161	161	2340	14534

Source: Statistic review: Agriculture, 5.4.01, 524, agriculture, orchard and vine, 2005

The fodder plants, present on the territory of the municipality Gazi Baba are given in table 14.

Table 14: Fodder plants on the territory of the municipality Gazi Baba

Cultures	Area (ha)		Production	
	Planted	Yield		Planted
Clover	67	67	225	3.351
Alfalfa	224	202	690	3.416
Hay	16	16	47	2.906
Cattle pea – hay	113	8	174	2.175
Cattle corn (green mass)	35	34	612	18.000
Cattle beet	/	/	/	/

Source: Statistics review: Agriculture, 5.4.01524 agriculture, orchard and vine, 2005

The fruit trees present on the territory of the municipality Gazi Baba are given in table 15.

Table 15: number of fruit trees and fruit production

Culture	Number of trees		Production	
	Total	Productive	Total in tons	Kg per tree
Sweet Cherries	1830	1730	56	33
Cherries	2285	2185	58	26
Apricots	5300	5300	210	40
Quinces	850	850	20	24
Apples	16150	16150	546	34
Pears	11500	11350	253	22
Plums	8070	8070	172	21
Peaches	6270	6270	49	20
Nuts	3530	3530	3530	14
Almonds	562	430	4	10

Source: Statistics review: Agriculture, 5.4.01524 agriculture, orchard and vine, 2005

The information about the number of vine are given in the table 16. The processed grapes from own production is 2.255 tons, 1.750 liters.

Table 16: Number of vine and production of grapes and wine

	Fertile area – ha	Number of logs in 000		Production	
		Total	Productive	Total in tons	Kg per log
Vine	539	1528	1431	4126	3

Source: Statistics review: Agriculture, 5.4.01524 agriculture, orchard and vine, 2005

In the rural areas, people are growing peppers, tomatoes, rye, potatoes, cabbage, eggplant, cauliflower and water melons (melons).

1.9.3. Infrastructure

The municipality Gazi Baba represents a communication and transport gate of the city Skopje. The main communication and transport corridors pass through the municipality for the city Skopje, as economy, political and cultural center of Republic of Macedonia. In the municipality exist favorable conditions for informing the population about the important events which happen at municipality level, but some improvement is necessary for the infrastructure possibilities for these goals.

The municipality Gazi Baba represents important communication center of the domestic and international roads. The transport corridor VIII (East – West; Tirana – Skopje – Sofia – Varna) and the corridor X (South-North; Athens – Skopje – Belgrade – Zagreb – Munich) pass through part of the municipality.

The telecommunication connection of the municipality with the other parts of the state and abroad is very good. The mobile phone lines and the internet is more often used. The review of the phone lines and the subscribers in Macedonia for the municipality Gazi Baba according NTEC 5 (123) is shown in table 17.

Table 17: review of phone lines and subscribers in the municipality

Phone lines (installed capacity – total)	Phone subscribers			
	Total	Home	Business	Official and others
24 840	19 699	15 892	3 522	285

Source: book: *Statistic review: Transport, tourism, and other services from 2005*

2.0. IDENTIFICATION OF THE CONDITIONS OF THE ENVIRONMENT

2.1. Urban development

The fast development in the structure of the municipality, like the planning of the urban development, is of great importance for providing quality life and work conditions, for normal functioning as society-economy, administrative and cultural whole.

From the spatial – planned and urban documentation for the area of the municipality, the following documents were prepared and adopted:

- General urban plan of the City Skopje from 2002;
- Detailed urban plans for most of the locations in the city urban part of the municipality (according the GUP for Skopje);
- Detailed urban plans which are in procedure, according the law spatial and urban planning;
- Urban documentation for the inhabited places;
- Common Act for the inhabited places, which do not have urban documentation.

The unit for urbanism in the municipality Gazi Baba, started the initiative for amending and supplementing the General Urban Plan of City Skopje.



Pictures 21 and 22: Urban settlements in the municipality



Pictures 23 and 24: Rural settlements in the municipality

Beside the relatively well planned documentation which should provide controlled urban development, the municipality Gazi Baba faces with the illegal construction and inadequate sanitary-hygienic conditions for life for all inhabitants of the municipality.

The illegal construction enables avoiding the complex procedure for collecting the documentation for construction, tax evasion and other supplements for arrangement of the construction sites, which is a problem in the further comply and adjustment in the new plan documentation. The illegal, so called “wild” construction, is followed by illegal connections to the infrastructure systems and creating wild dumpsites for the solid waste, which directly influences the quality of the environment.

In the municipality a\exists 5 locations with illegal construction. Related to the geographical characteristics, one location is outside of the borders of the city urban construction area (local community “Krste Misirkov”, local community “Indzikovo”), and 4 are within (Madzari, Keramidnica, Sava Mihajlov and Kamnik).

2.1.1. Housing

The conditions for housing have specific place in the policy for development of the municipality. they reflect the social, economy, cultural and spatial needs of the population. According the analyze of the elements for the housing standard (number of apartments, housing area per person, average size of the houses, construction material, equipment with installations), it can be stated that the municipality has satisfactory housing standards.

According the data from the last census (2002), in the municipality Gazi Baba live total 72.617 people in 20.332 households, t.i. 22.815 houses.

Table 18 shows the total number of individual households, as well as the total and average number of family members in the individual households.

Table 18: Individual households, according the type, size and content

Total number of individual households	Total number of family members	Average number of members in the households
20.332	72.617	3,57

Source: Census of the population, households and apartments in RM, 2002, final data, State Statistics Office, book XIII, 2004

Gross density of the population in the municipality is 33 people/ha (number of people compared to the total area of the community). The average net housing density is 120 people/ha (number of people compared to the area of housing). Largest net housing density is in Avtokomanda, with 432 people/ha (Data from the GUP 2001-2020 for Skopje, book 4, June 2002).

Table 19 shows the number and type of households in the municipality and their sizes.

Table 19: Type of households, number and size, number of individual households and average housing area per family member

Total number of households	Total houses		Average housing area per family member	Other households
	Number	Size (m ²)		
22.815	22.739	1.521.629	18.27	76

Source: Census of the population, households and apartments in RM, 2002, final data, State Statistics Office, book XIII, 2004

2.1.2. Green areas

The municipality, before all in the urban area is characterized with well-arranged green areas, as well as nice yards beside the local and city streets.

For the maintenance of the green areas, placing new green areas, renewal of the yards, planting new trees, horticultural decoration with dendro material, and the reconstruction of the degraded and damaged green areas is a responsibility of PE "Parks and Greens" Skopje. The protection and the keeping of the green areas is a task for the caretaker service.



Picture 25: Boulevard green on Boulevard "Alexandar Macedonian"

Table 20 gives the total area of permanent green area at the territory of the municipality.

Table 20: Areas of the permanent types of greens in the municipality Gazi Baba

N°	Green areas	Size [m ²]
1.	Boulevard green	112.673
2.	House block greens	192.152
3.	Unarranged areas	31.453
Total greens:		336.278

Source: draft-program for maintenance of the public green areas

Table 21 gives review of settlements which consist the public city green areas in the municipality for 2006.

Table 21: Review of settlements which consist the housing bloc greens of the municipality for 2006.

N°	Settlements	Area [m ²]
1.	Settlement "Avtokomanda"	51.760
2.	Settlement "Zelezara"	29.516
3.	Settlement "Chento"	42.841
4.	Settlement "Madzari"	29.313
5.	Settlement "Hipodrom"	38.721
Total green areas		192.151

Source: draft-program for maintenance of the public green areas in the municipality Gazi Baba for 2006, PE "Parks and Greens" Skopje

2.1.3. Streets and traffic

The traffic infrastructure is a vital factor for the long term economy development of the municipality. The connection with well roads of each inhabited place means reducing the migration village – city.

The municipality Gazi Baba represents communication and traffic gate of the city Skopje, through which pass the main transport and communication corridors to the city.

Through the municipality pass the international highways: E-65, 9,8 km long and E-75, 18 km long. The highway E-65 (east-west) connects the traffic directions Tirana – Skopje – Sofia – Varna. The highway (north-south) represents main crossroad for the road directions Athens – Skopje – Belgrade – Zagreb – Munich.



Picture 26: International highway E-75

The traffic, transport vehicles, together with the citizens of the municipality with the daily needs for transport, consist the traffic system of the municipality. The normal functioning is regulated with many laws, regulations, as well as with formal and informal rules.

The primary traffic network in the municipality is categorized into two categories: *boulevard roads* (speed lower than 60 km/h) and *gathering streets*.

The primary street network in the municipality is connected to the primary city traffic and to the external road network in the republic. With the local network are connected almost all inhabited places. The road network consists from quality asphalt roads, except in the rural areas.



Picture 27, 28, 29: traffic infrastructure of the municipality

According the decision for determination of highways and local streets in the city Skopje (Official registry number 5 dated from 16.03.1998) on the territory of the municipality are determined the following highway (boulevard) roads: boulevard Aleksandar Makedonski, boulevard Vojvodina, street Koce Metalec, street 16th Makedonska brigada, street Lazar Pop Trajkov, street Blagoja Stevkovski, street Madzari, street Zane Zores, street Metodija Andonov Chento, street Alija Avdovich and street Pero Nakov.

As local (gathering) roads are determined: street Belasica, street 15th Korpus, street Intrenacionalni brigadi, street Pehchevska, street N.K.Majski, street Vera Radosavlevich, street Palmiro Toljati, street Srechko Puzalka, street Fushtanska, street Finska, street S.Mihajlov and street R.Kovachevich.

From the existing crossroads on the territory of the municipality Gazi Baba, for most frequent are considered the following:

- crossroad: boulevard Alexander Macedonian – 16th Makedonska Brigada – street 588, and

- crossroad: Blagoja Stefkovski – Madzari street

- **Public transport**

By the public transport enterprise “Skopje”, and by the several private transport enterprises, the public passenger’s transport in the municipality is organized with city and suburb bus lines, as follows: 5 city bus lines and 8 suburb bus lines.

- **Rail transport**

The transport of the passengers and the cargo transport is achieved by the Skopje rail knot, through the rail line Belgrade - Skopje – Athens is connected to the international rail network.

The rail infrastructure consists of passenger’s stations, cargo terminals, ranging station, industry lines, etc.

In Madzari and Ilinden are placed fully equipped stations with platforms and passenger space – waiting rooms and ticket windows, and somewhere, usually near the larger industry complexes are built rail stations for entrance of the passengers.

The cargo stations are equipped with manipulation lines, warehouses and loading stations, as in Trubarevo and near Avtokomanda (the public Customs warehouses of Fershped Skopje).

- **Air traffic**

15 km away from the municipality is located the Public Enterprise for Air Transport “Macedonia”, Skopje.

2.1.4. Energy infrastructure

- **Lights**

The street lightening at municipality level consists of 5.154 lightning points, as follows: 3.694 lights of 125 W, 880 from 250W, 580 from 400 W.

The specification of the lights and their power per local communities is given in table 22.

Table 22: Specification of the lights according local communities

N ^o	Local community	Specification of the power of the lights			Total number of lights
		125 W	250 W	400 W	
1.	Avtokomanda	93	36	31	160
2.	Keramidnica	164	-	10	174
3.	Zelezara	11	315	16	342
4.	Madzari I	275	33	-	308
5.	Hipodrom	132	49	22	203
6.	Triangla	204	90	8	302
7.	Trubarevo	292	1	6	299
8.	Goce Delchev	44	1	12	77
9.	Jurumleri	380	-	-	380
10.	Kolonija Idrizovo	176	-	-	176
11.	Madzari II	440	130	30	600
12.	K.P. Misirkov	229	205	30	454
13.	Indzikovo	43	-	12	55
14.	Jane Sandanski	255	17	8	280
15.	A. Avdovich	240	-	5	245
16.	Stajkovci	220	3	8	231
17.	Strachinci	30	-	8	38
18.	Smilkovci	43	-	-	43
19.	Creshevo	100	-	8	108
20.	Viniche	39	-	2	41
21.	Bulachani	52	-	8	60
22.	Rashtak	46	-	-	46
23.	Pitu Guli	81	-	8	89
24.	Brnjarci	65		8	73

Source: municipality Gazi Baba 2006

• **Electro- energy system**

On the territory of municipality Gazi Baba exist:

- two transformer stations with transformation of 110/35 kV;
- three transformer stations with transformation of 35/10 kV;
- 322 transformer stations with transformation of 10/0,4 kV.

The length of the distribution network, according the voltage level is:

- 110 kV ground lines 8,4 km
- 35 kV ground lines 13,49 km
- 35 kV cables (underground lines) ... 4,82 km
- 10 kV ground lines 65 km
- 10 kV cables (underground lines) ... 139 km

The length of the low voltage network is about 212 km ground electrical network, and about 107 km underground network.

Table 23 gives the average density of the installed power (110 and 35 kV) per person (kVA/person) and household (kVA/household) for the municipality.

Table 23: Average density of the installed power (110 and 35 kV) per person (kVA/person) and household (kVA/household) for the municipality

Municipality	Installed power per person [kVA/person]	Installed power per household [kVA/household]
Gazi Baba	2,44	8,94

Source: GUP for 2001-2020 for Skopje, book 4m June 2002

- **Central heating**

Within the PE “Toplifikacija” (“Heating”) exist 4 heating plants which provide heating for several settlements in Skopje. One of them located on the territory of the municipality Gazi Baba, is the plant called “East” with total capacity of 293,93 MW.

Table 24 gives the current condition of the consumed and installed capacity of the plant.

Table 24: Current condition of the consumer and installed capacity of the plant “East”

Plant “East”	Reported power of the consumption MW
Consumer	352,894
Heating plant	412,886
	Power of the boilers (maximal) MW
Water boilers	279,12
Steam boilers	14,81

Source: Cadastre of polluters and polluting elements in the air for Skopje, 2004

The plant “East” are installed total 7 units which as a fuel use crude oil and natural gas.

The plant “East” come out three main lines:

- Line “A” towards the settlement Prolet and Kapishtec (with starting nominal diameter NO500)
- Line “B” which divides in two parts: one towards the settlement Avtokomanda and the second towards the right bank of the river Vardar and the central city area, all the way to the Civil Construction faculty (with starting nominal diameter NO700)
- Line “C” towards the settlement Jane Sandanski and Novo Lisiche (with starting nominal diameter NO700)

Beside this, part of Zelezara uses the heating from the former PE “Elektrostopanstvo”, plant for energy. It has two boilers with total power of 60 MW and use natural gas and petroleum as fuel.

- **Gas pipeline**

The gas pipe line consists of technologically wholes with different main functions, work regimes and work pressures as:

- the regional gas-line with segregated pipe lines and
- city gas network.

Table 25 shows the segregated pipe lines in the city Skopje.

Table 25: Dimensions of the segregated pipe lines in the city Skopje

Dimensions of the segregated lines	Skopje – South	Skopje - North
Length (km)	8,3	1,83
Diameter (mm)	426	325

Source: GUP 2001-2020 for Skopje, book 4, June 2002

The segregated pipe lines are with capacity of 70.000 m³/h. at the end point of each segregated line were constructed Main Measurement Regulatory Stations – GMRS, whose function is to establish the regime of the work of the city network, and to control and measure the quantity of the gas delivered to the city – user. For the needs of the city, two GMRS were built, Skopje – North near Zelezara, and Skopje – South near OHIS. The capacity and the input and output pressure of the GMRS is given in table 26.

Table 26: Capacity, input and output pressure of GMRS

GMRS	Capacity (m ³ /h)	Projected pressure (bar)	
		Input	Output
Skopje-North	70.000	54 – 20	13 – 9
Skopje-South	70.000	54 – 20	13 – 9

Source: GUP 2001-2020 for Skopje, book 4, June 2002

The main purpose of the city gas network is transport and division of the gas on the territory of the city to the end users.

The adjustment of the work regime to the pressure which is demanded by certain users and the maintenance of the given values in the system is performed with the Measurement Regulatory Stations - MRS. Until now, 6 MRS were built which connect the big industry users in the municipality (Table 27)

Table 27: built MRS in the municipality Gazi Baba

N°	Industry objects	Type	Capacity (m ³ /h)	Maximal capacity (m ³ /h)	Output pressure (bar)
1.	FAS "11 Oktomvri"	IV	4.000	6.000	3
2.	Pivara	IV	3.000	6.000	3
3.	Toplana "East"	VIII	40.000	36.000	
4.	Alkaloid	II	750	1.500	3
5.	Evropa	II	1.300	1.500	3
6.	Mak. Folklor	II	870	1.500	3

Source: GUP 2001-2020 for Skopje, book 4, June 2002

2.1.5. Other elements of the urban structure

- **Education**

On the territory of the municipality exist educational institutions of all levels of education starting from the primary, secondary, and faculty education, like the faculties from the state University “St. Cyril and Methodius” (Faculty of Chemistry, Natural-Mathematics, Agricultural and Forestry) and the two private universities (European University and the Pittsburgh University). In the urban part there are facilities for pre-school children – kindergartens. Also, there is one pupil’s and student campus. (Table 28)

Picture 30: Primary school “Stiv Naumov”



Pictr 31: European University



Picture 32: University “St. Cyril and Methodius”

Table 28: Number of educational facilities in the municipality Gazi Baba

Level of education	Title	Number
Primary	Primary schools	11
	Special primary schools	1
Secondary	Regular secondary schools	5
	Special secondary schools	1
High (Faculty)	State faculty	4
	Private faculty	2

Source: WEB page of municipality Gazi Baba – www.gazibaba.gov.mk
GUP 2001-2020 for Skopje, book 4, June 2002

- **Health**

There is one private hospital in the municipality, one polyclinic and one health dome, 6 health stations, several private health dentist offices (Table 29).

Table 29: Number of medical facilities in the municipality Gazi Baba

Type of medical protection	Title	Number
Primary	Ambulances (medical stations)	6
	Health domes	1
	Private medical organizations	13
Territorial	Policlinics	1
Secondary	Private hospital	1

Source: WEB page of municipality Gazi Baba – www.gazibaba.gov.mk
GUP 2001-2020 for Skopje, book 4, June 2002

- **Social protection**

Table 30 shows the number of facilities for social protection in the municipality Gazi Baba.

Table 30: Number of facilities for social protection

Type of protection	Title	Number
Pre-school age	Kindergartens	11
Youth and adults	Pupil's campus	1
	Student's campus	1
	Rehabilitation institutions, education of children with damaged sight	2
	Gerontological institution (hospice)	1

Source: WEB page of municipality Gazi Baba – www.gazibaba.gov.mk
GUP 2001-2020 for Skopje, book 4, June 2002

- **Markets**

There are three markets in the municipality: Green market – Chento, Green Market – Avtokomanda and so called Kvantashki Market (whole sales), and as the other markets in the city are facing the problem with parking places.



Picture 33: Green Market, Avtokomanda

- **Culture**

Although the municipality is defined as industry zone, during its history it gained with many things from the culture sector, to which it can be proud.

In the municipality work the cultural artistic associations “Jonche Hristovski” and “Trajko Popov”, the well known folk association “Rashtak”, formed 1932, especially active association of citizens “Darhija” several amateur theatre groups and the independent theatre “Steps”. All of them have national and international reputation.

Since 2001, in the municipality are registered 10 associations of citizens: the Youth Center Idea, the Youth Council of Gazi Baba, the Organization of women of Gazi Baba, RKEC Darhija, the Citizen’s association of Zelezara, Women’s Action, Crisis Center Hope, Ecology association Green World, Third age Veteran women, Association for birds in Macedonia.

From the cultural-history characteristics, more important are: the neolith settlement Tumba Madzari, with the famous ceramic statue “Big Mother” and the pre-historic necropolis with urns near the traffic knot Hipodrom.

In the settlement Avtokomanda is located the library “Koco Racin” and in Chento the library “Kole Nedelkovski”.

In the municipality are located several Culture Clubs which unfortunately are very ruined.

Within the frames of the urban area of the municipality, are located several monuments:

- Church “St. Arhangel Mihail” (with Britain and Serbian graves)
- The Ashik Chelebi turbe, 1572
- Kind K’zi turbe, 15th century
- Archeological findings, village Madzari, 4th century



Picture 34: Church "St Arhangel Mihail" in Avtokomanda

- ***Sport and recreation***

Within the municipality exist 5 sport terrains:

- "Weambly", closed terrain for small football,
- "Avtokomanda" sports hall,
- "Hipoodrom" sports-recreational center,
- SRC "Zelezara", football field,
- "Boris Trajkovski", football stadium in Madzari.

There are several football clubs and organizations, where the football, the handball, box, basketball, karate achieved remarkable results. The sports, and the nourishing of the body and spirit, have long tradition in the municipality.



Picture 35 and 36: Sports recreational center Zelezara and sports hall Avtokomanda

Table 31 shows the sport clubs and associations at the level of the municipality.

Table 31: Sport clubs and associations in the municipality Gazi Baba

N ^o	Type of sport club	Name
1.	Football club	Madzari Solidarnost 92
		Metalurg
		Skopje
2.	Handball club	Metalurg
		Skopje
3.	Karate club	Tigar
		Metalurg
4.	Kick-box	Skopje
5.	Basketball club	Madzari
		Kinder Basket
6.	Wrestling club	Skopje
7.	Horse club	Ilinden
		Hipodrom

Source: WEB page of municipality Gazi Baba – www.gazibaba.gov.mk

The citizens who don't practice any sports or are amateur, can recreate and have fun in different ways, places and terrains.



Pictures 37 and 38: Sport-recreation activities

The recreation location - Gazi Baba represents unique area of that kind in Skopje with space for rest and recreation (picture 39).



Picture 39: Location Gazi Baba

❖ **Permanent legislation**

- Law for spatial and urban planning (Official Registry of RM number 51/05).
- Law for the City of Skopje Official Registry of RM number 55/04)
- Law for territorial organization of the local government Official Registry of RM number 55/05)
- Law for construction sites (Official Registry of RM number 53/01)
- LEAP of Skopje, 2004
- GUP of Skopje, 2002
- Detailed urban plans for the municipality Gazi Baba

❖ **Identification of problems**

- Uncontrolled urban development;
- Unplanned construction of objects in some inhabited places;
- Inadequate sanitary-hygiene conditions for life, especially in the rural areas;
- Incomplete road structure between the rural settlements.

❖ **Key problems:**

- *Unplanned construction of objects in some inhabited places. This refers to the consistent prevention of this events in the future, and finding suitable solution for the existing objects of this type.*

❖ **Influence on the environment and human health**

- The uncontrolled urban development in some inhabited places lead to unplanned and permanent land degradation. This is a main precondition for the existence of the problems in all spheres of human life. The end result is the creation of low quality environment, which has negative impact on human health.

❖ **Recommendations**

- Completing of the urban-plan documentation and promotion of planned standards for all inhabited places.
- Consistent realization of the solutions and directions from the urban plans
- Construction of social buildings for the lowest social categories;
- Measurements for prevention of illegal construction;
- Consistent implementation of the penalty measurements;
- Finalization of the local roads;
- Determining location for construction of sport and recreation facilities;
- Increasing the green areas, promotion and protection.

2.2. Quality of the environment

In cooperation with the Ministry of Environment and Spatial Planning, the City and the NGO sector, municipality Gazi Baba prepares separate programs for control of the air, drinking water and public fountains, ground waters, pollution of the soils and measuring the level of communal noise.

Based on the analyses and the received results, appropriate measurement for actions are planned, and the dynamic of the implementation and the effects of all of that will be monitored.

2.2.1. Air

During the analyze of the quality of the air as one of the main factors for quality life, having in mind the industry development of the municipality, the condition in the traffic, heating, type and quantities of used fuels, and the level of conducted measurements and activities for monitoring and prevention, and reducing the pollution of the air.

Also, the climate conditions in the municipality, with the impact on the air quality, are part of the complex climate characteristics of the Skopje Valley, which from the ecology point of view characterizes with unfavorable specifics.

The fact itself, that the municipality covers the industry area, urban and rural zone, clearly defines the determination – analyze of the air quality to be revised from the point of these three aspects.

The emission of the polluting elements, the transmission in the space, and the influence on the environment and human health, are main processes, which reflect the condition with the air quality in the municipality.

- ***Emission from stationed sources***

The group of stationed sources include the business subjects and house fires.

Analyze was performed about the emission from the 85 more important business subjects at the territory. Forty of them are unproductive, and 45 productive. Related to their location, 24 are in the urban, 17 in the rural and 44 in the industry zone of the municipality.

The determination of the quantities of polluting elements in the air during the year, and expressed in t/year, was performed at 246 points from these business facilities and is a result from the measured concentrations of polluting elements [mg/m_n^3] and the annual activity. At this points, 95 were from industry facilities without process of combustion, and 151 from facilities with combustion (for technological processes and heating), with total installed power from 642 MW.

The average annual consumption of fuels for the energy facilities is given in table 32.

Table 32: annual consumption of fuels for the energy facilities

Municipality	Coal [t/year]	Oil [t/year]	Petroleum [t/year]	Gas [t/year]
Gazi Baba	370,0	8.900,0	61.500,0	31.600,0

Source: Cadastre of polluters and polluting elements in the air for city of Skopje, 2004

From the performed analyzes it was found that the number of households which use wood for heating is 6.970 or 17% at city level, and 3.300 households are heated by extra light oil.

The average consumption of these fuels is: wood – 29.30 t/year, and oil 2.500 t/year.

The total emissions from the main polluting elements in the air SO₂, CO, NO_x, SPM, CO₂ from the stationed sources are given in table 33.

Table 33: Emission of polluting elements from the stationed sources in the municipality

Municipality	Polluting elements [t/year]				
	SO ₂	CO	NO _x	SPM	CO ₂
Gazi Baba	5.790,0	5.670,0	1.310,0	360,0	360.000,0

Source: Cadastre of polluters and polluting elements in the air for city of Skopje, 2004

The analyze of the emission of polluting elements show that the presence of SO₂ is because of the usage of the petroleum in the industry, and the increased presence of CO is a result of the incomplete combustion characteristic for house heating.

- **Emission from mobile sources**

The emission of polluting elements form mobile sources is a result from the usage of motor fuels in the traffic, and in the industry, construction and agricultural mechanization. During the combustion of these elements mainly is produced SO₂, CO, NO_x, SPM, CO₂, aldehyds, lead and organic asids. The level of the emission of these elements depend from the type of the fuel, the level of activity and the age structure of the car park.

The analyze for quantites of polluting elements in the air from the traffic are performed with calculations based on data about the number and structure of the registered vehicles in the municipality, type and quantity of the consumed fuels and average annual distance.

Table 34 shows the emitted quantities of polluted elements from the motor vehicles in the municipality, for different types of fuels, calculated at annual level.

Table 34: Annual emission of polluting elements from the motor fuels in traffic, according the number of registered vehicles

Polluting elements	Annual emission of polluting elements from the motor fuels [t/year]			Total [t/year]
	Petrol	Oil	LPG	
SO ₂	7,3	41,5	0,0	48,8
NO ₂	182,8	238,6	107,4	528,8
VOC	455,3	55,0	77,0	586,8
TSP	29,0	47,7	0,0	76,7
CO	2.065,1	227,2	353,0	2.645,4
Pb	6,2	0,0	0,0	6,2

Source: Cadastre of polluting elements in the air for Skopje, 2004

Because of that, and to receive complete picture about the emissions of polluting elements from the mobile sources, is necessary to include the influences from all vehicles which are present or transit the municipality. this is complex and long term task, which the municipality Gazi Baba will consider much more in the future.

- **Emission in the air – quality of the air**

For monitoring the conditions with the air quality, within the national network of monitoring stations, on the territory of the municipality, are placed 3 automatic stations. The location and the institutions which perform the measurements are given in table 35.

Table 35: three automatic measurement station on the territory of municipality Gazi Baba

Station	Measurements performed by	Longitude	Latitude	Altitude [m]
"Gazi Baba"	MZSPP	21°27'49"	42°00'13"	250,2
"Avtokomanda"	UHR	21°29'00"	42°00'00"	250
"Pivara"	ZZZ	21°28'15"	41°59'54"	239

Source: Ministry of Environment and Spatial Planning, 2006

The Ministry of Environment and Spatial Planning performs measurements of the concentrations of SO₂, CO, NO₂, PM₁₀, O₃, and the Hydro-meteorological Office and the Health Protection Office the SO₂ and the smoke.

Table 36 shows the minimal and maximal average monthly concentrations of SO₂ and the smoke in 2003, and table 37 - SO₂, CO, NO₂, PM₁₀, O₃, in 2004.

Table 36: Minimal and maximal average monthly concentrations in 2003

Polluting element	Minimal average concentration (months)	Measurement point	Maximal Average concentration (months)	Measurement point
SO ₂ [µg/m ³]	16,8 (July)	"Avtokomanda"	39,9 (Feb.)	"Avtokomanda"
Smoke [µg/m ³]	7,6 (June)	"Pivara"	107,8 (Dec.)	"Avtokomanda"

Table 37: minimal and maximal average monthly concentration in 2004

Polluting element	Minimal average concentration (months)	Measurement point	Maximal Average concentration (months)	Measurement point
SO ₂ [µg/m ³]	6,33 (July)	"Gazi Baba"	47,04 (Jan.)	"Avtokomanda"
^ad [µg/m ³]	9,52 (June)	"Pivara"	90,07 (Nov.)	"Avtokomanda"
NO ₂ [µg/m ³]	36,34 (June)	"Gazi Baba"	52,48 (Sept.)	"Gazi Baba"
CO [mg/m ³]	0,62 (June)	"Gazi Baba"	1,75 (Sept.)	"Gazi Baba"
PM10 [µg/m ³]	32,49 (June)	"Gazi Baba"	65,83 (Sept)	"Gazi Baba"

Source: Ministry of Environment and Spatial Planning, 2006

Table 38 shows the minimal and maximal average monthly concentration of SO₂ and the smoke in 2005 by the PHO Health Protection Office, Skopje, at the measurement point "Pivara".

Table 38: minimal and maximal average monthly concentration in 2005

Polluting element	Minimal average concentration (months)	Measurement point	Maximal Average concentration (months)	Measurement point
SO ₂ [µg/m ³]	4,0 (Sept.)	"Pivara"	183,0 (Dec.)	"Pivara"
Smoke [µg/m ³]	9,0 (June)	"Pivara"	452,0 (Jan.)	"Pivara"

Source: Ministry of Environment and Spatial Planning, 2006

The number of days with values over MDK for of SO₂ is one day in December, or 0,29% and the number of days with values over MDK for smoke is 45 days in November, December and January, or 12,93% from the total number of taken measurements.

The average daily maximal allowed concentrations are: for of SO₂ is 150 µg/m³; for CO is 1 mg/m³; for NO₂ is 85 µg/m³; for PM10 is 120 µg/m³; for smoke is 50 µg/m³.

It can be noticed that the municipality Gazi Baba, in the industry-rural zone (where the monitoring station are located) marks pollutions over the allowed values during the autumn and winter period. This is a result of the concentration of the stationed and mobile sources of the air pollutants, as well as to the orography and climate conditions.

Beside these measurements, by the PHO Health Protection Office Skopje, are performed measurements of the air pollution from ashes and internal dust. On the territory of the municipality are located 6 measurement locations: „Pivara”, („Evropa”), TEC Madzari, MZT, Zelezara, Tajmisha street and Gemidziska street.

The maximal allowed concentrations are 300 mg/m²/day.

The results from the measurements during 2005 showed that on the location „Pivara” occur values over the MDK during January, April, May, August and December. On the location TEC Madzari, values over the MDK occur in June and September, on Tajmishka street in July and September, and in Zelezara in November.

This condition confirms the constatation that the condition with the air quality in the industry-urban zone is unfavorable and demands undertaking measurements for lowering the findings.

❖ **Permanent legislation**

- Law for environment (Official registry of RM 53/05)
- Law for air quality (Official Registry of RM 67/2004)
- Book of regulations about the criteria, methods and procedures for evaluation of the air quality
- Decree for border values of levels and types of polluting elements in the air, and alarm level, time frame for achieving the border values, margins of tolerance of the border values, values and long term goals (Official Registry of RM 50/2005)
- Book of regulations for the maximal allowed concentrations of harmful elements in the air (Official registry of RM 3/90)

❖ **Identification of the problems**

- Big concentration of industry objects at the territory of the municipality
- High density of the traffic during work days in the industry-urban area;
- Lack of reliable data about the emissions of polluting elements and the air quality for municipality Gazi Baba;
- Usage of fuels, which emits high quantities of polluting elements, especially in the domestic heating;
- Usage of old equipment and technology in the industry sector;
- Usage of fuels with high concentration of sulfur and old car park;
- Inefficient institutional and human resources in the municipality and other relevant institutions, as a lack of funds for conducting the legislation in this area;
- Lack of plans and programs for reducing the air pollution and improving the air quality at national and local level;
- Inefficiencies in the system for evaluation of the health and ecology risks from the harmful influence of the air pollution;
- Inefficient cooperation of the interested parties in the process of air management;
- Lack of alternative sources of energy on the market.

❖ **Key problems:**

- *The lack of reliable data about the emissions of polluting elements and the air quality in the municipality, is a problem from the point of view of having incomplete expert information about the condition with the pollution, as grounds for undertaking further activities;*
- *The air pollution from the industry objects and the traffic;*

- *Lack of systems for pollution management (monitoring the polluting elements, measurements for control and reducing), and undertaking technical-technological and administrative measurements.*
- *Lack in the system for evaluation of the health and ecology risks from the harmful influence of the air pollution. These lacks refer to the continuance in the monitoring of the health condition of the people as a result from the pollution.*

❖ Influence on the environment and human health

The climate-meteorological and topography characteristics, the high concentration of stationed and mobile sources of pollution in the air, especially in the urban and industry part of the municipality, are the main reasons for the intensive air pollution and creating preconditions for winter and summer smog.

The days without winds, temperatures under zero, temperature inversions, specific meteorological conditions, overstepping the MDK for SO₂ and smoke, are direct causes for smog – situations from the first and second degree, noticed in the city and the municipality.

The epidemiological researches from the past (during the periods 1973-1977, 1989-1993 and 1994-1997) about the influence of the air pollution over the human health, resulted in positive correlation between the average monthly concentrations of SO₂ and smoke and the increase of the cases of chronic diseases of the respiratory organs, especially at children, as well as bronchopneumonia with recidivist character.

In direction to reduce the air pollution, before all in the urban part, activities are undertaken for control of the implementation of ecology standards by the companies in the municipality. at the same time, there is a process of replacement of the hard fuels with remote heating systems, which influence on the improvement of the air.

Because it is very difficult to correct the errors in the municipality organization from the past, in the future should be paid much more attention to the influence of the existing and the new objects on the environment, and the air. Here will help the issuing of the new Integrated Ecology Permits for all polluting facilities (existing and new ones). The permits will regulate the emission in the air, soil, water and the utilization of the energy, and will monitor on the cumulative effect from the pollution.

According the new regulations, the municipalities will be responsible for the issuing of the B integrated ecology permits and will be directly included in the process of pollution limitation from the industry facilities.

❖ Recommendations

- Active participation of the municipality in defining the zones and agglomerations, where the level of the polluting elements is above or under the allowed values for air quality;

- Preparation of program for reducing the pollution and improving the air quality, through which all necessary measurements for reducing the pollution will be undertaken;
- Active promotion of the program of the municipality during the preparation of the National Plan for protection of the air quality;
- Establishing local network from measurement stations and monitoring the pollution in the settlements and industry part of the municipality;
- Regular submission of reports from the local network to the Ministry of Environment and Spatial Planning for coordination of the needed strategic actions at national and municipality level;
- Establishing a procedure for informing the public about the conditions with the air pollution and the air quality in the municipality;
- Cooperation with all interested parties (consultant companies, Academy institutions, NGO, government organizations, energy installations in the municipality) for promotion of the ecology production, implementation of higher standards and best possible techniques in the production;
- The municipality will pledge and create conditions for maximal implementation of the central remote heating in the households;
- Cooperation with the NGO-s for conducting projects for raising the public awareness for utilization of the alternative fuels and fuels with low concentration of sulfur and lead.

2.2.2. Water and water quality

The condition with the water quality is directed to: the water supply (systems for water supply and separate springs), utilization (for the needs of the population, industry and agriculture) and collecting the waste and atmosphere waters. Their [protection is regulated by a complex of legislation which cover the springs, flows and underground waters also, the provision of suitable technical and technological procedures (construction of sewerage, waste waters treatment) has crucial influence on the protection and water quality.

► Water supply

The population in the municipality supplies with drinking water through the regional system for water supply of Skopje (spring Rashce and well area Nerezi – Lepenec) and the local systems for water supply (wells in Jurumleri). Beside this, in the rural areas are used individual wells and pumps. The quality of the drinking water is controlled regularly.

From the regional system of water supply of Skopje, in the municipality are supplied about 62.000 people (85% of the population). Drinking water is provided to all urban areas and the following rural settlements are also included in the system: Singelich, Stajkovci, Trubarevo and Indzikovo.

The inhabited places Creshevo and Smilkovci are supplied from the Zelezara system managed by RZ Services.

The rural areas: Goce Delchev, Jurumleri and Idrizovo are supplied from the regional water supply system from wells located between Jurumleri and the river Vardar. At the moment, the secondary network and the house connections are finalized.

The rural area Vinche, Rashtak, Bulachani, Strachinci and Brnjarci have local system with own wells above the inhabited places. The secondary network is in very bad condition.

The regional system is managed by the PE "Water supply and Sewerage" Skopje, and the local system for Goce Delchev, Jurumleri and Idrizovo, by the PE "Ilinden". The length of the network is shown in table 39.

Table 39: Water supply network for the inhabited places in the municipality.

N ^o	Inhabited place	Length of the network [km]
1.	Zelezara	8,5
2.	Avtokomanda	9,6
3.	Keramidnica	11,5
4.	Madzari	27,8
5.	Triangla	13,2
6.	Hipodrom	2,3
7.	Chento	31,0
8.	Brnjarci	No system
9.	Bulachani	No system
10.	Viniche	Own system
11.	Idrizovo	Local system
12.	Indzikovo	Part of Chento
13.	Jurumleri	Local system
14.	Rahstak	No system
15.	Singelixh	Main system
16.	Stajkovci	15,2
17.	Strachinci	No system
18.	Smilkovci	Local system
19.	Trubarevo	Main system
20.	Creshevo	Local system
21.	Goce Delchev (Skopsko Pole)	Local system
Total:		119,1

Source: PE "Water supply and sewerage" Skopje 2006.

Table 40 shows the consumption of water per person in the municipality

Table 40: Water consumption per person in the municipality

N ^o	Water consumption per person	[m ³]
1.	Annual consumption	52,59
2.	Monthly consumption	4,38
3.	Invoked water per household	3.258.796

Source: PE "Water supply and sewerage" Skopje 2006.

The water supply for the needs of the industry is mainly solved in the frames of the objects. With the construction of wells and pumps, they use the underground waters for technology purposes. There are no reliable data about the ways and quantities of water. The MESP is preparing a Cadastre of waters, but the data about the municipality Gazi Baba are incomplete.

The condition with the usage of the well water is similar, for the needs of the agriculture. In the rural area, many individual farmers use well water not just for drinking but also for irrigation.

The PE "Water supply and sewerage" prepared a feasibility study for the usage of the underground waters for irrigation and cleaning of the traffic areas. With this feasibility study, it is foreseen that in the municipality Gazi Baba should be constructed:

- 5 wells with pumps for irrigation
- 3 wells with pumps for filling tanks for cleaning the traffic areas

► **Sewerage and waste waters treatment**

- a) fecal sewerage
- b) atmosphere sewerage

a) *Fecal sewerage system*

The urban areas in the municipality are connected to the city sewerage system, opposite of the rural areas.

On the territory of the municipality in the rural areas, there is no sewerage system for the fecal and atmosphere waste waters. The problem with the waste waters at the households and business subjects is solved individually. The waste waters from the households and other users are let into the septic pits built in the yards. The problem occurs at places with higher density as Singelich, Goce Delchev, and others, where because of the small area of the yards, there is not enough space for the new septic pits.

In future should be built waterproof septic pits which would be cleaned with vacuum pumps and tanks, according to determined dynamics depending from the capacity. The tanks should be cleaned in the collector system for communal waters for that purpose.

For the rural areas Stajkovci, Singelich and Indzikovo, a primary pipe system, which ends near Indzikovo. There are 2 km left and the line will reach the river Vardar. The second phase would be to construct secondary sewerage network.

Problem which should be solved as soon as possible is the sewerage system from Stajkovci to Singelich, and Indzikovo. Because of the connection of 300 households in Singelich, there is flooding from the system on the streets in Indzikovo, which makes ecology, health, epidemiology and other problems. This is a serious problem for the municipality and the city Skopje. By the municipality as temporary measurement was constructed overflow spilt, so that the waste waters do not spread on the streets.

For the rural places Trubarevo, Goce Delchev, Jurumleri and Idrizovo, the project for the fecal sewerage is divided in two phases. The first phase – construction of temporary pipeline through the inhabited places was

completed along 3.000 m, and is not realized for about 2.000 m. the second phase would be construction of secondary sewerage system.

The permanent system for waste waters is burden with the additional quantities of sanitary and fecal waste waters because of the illegal connections, and is a danger for floods, source of diseases and pollution of the underground waters.

According the received information, most of the complaints refer to the problems with the fecal sewerage system.

b) Atmosphere sewerage system

The collection of the atmosphere waters from the streets, roofs and other areas is performed through the permanent atmosphere system. A new system is foreseen for construction, which is projected in compliance with the leveling solution of the street network.

The atmosphere waters by the gravity is lead to the lowest part and through the sewerage collector is led to the recipient (river Vardar or the permanent canal).

The atmosphere waters which flow freely over the surface are collected through the sewerage canals if the configuration of the terrain allows that. During heavy rains, they are held on the surface and cause floods in the municipality.

In the valley part there is a network of open land canals with length of over 60 km. The main network has two big canals and is 20 km long. The secondary network has gullies and smaller canals through the inhabited places and is 40 km long.

The system is in very bad condition and does not satisfy the needs. More than 70% of the canals do not function. They are covered with vegetation and waste. Additional problem is the pollution from the fecal waste waters and harmful material from the economy subjects.

Some of the gullies and canals are completely covered, especially along the streets and yard gates. Only the main canals are in function, but with lowered intensity.

Because of the condition in this part of the municipality and especially in Chento, Singelich, Indzikovo, Idrizovo and Jurumleri, during heavy rains appear floods, which results in damaging of the households and economy facilities and damaging of the agriculture fund.



Picture 40, 41, 42 and 43: Flooded areas in the municipality

The maintenance of the main sewerage canals is responsibility of the PE “Water supply – Vardar” Skopje, but for a longer period, it is not in a position to perform quality maintenance of the canals and each year they become more and more damaged, and cannot perform their function.

The problem with the non-functioning of the system in Skopje Valley was revised several times at cross-municipality level. At this moment, the best solution is the regular cleaning of the system and maintenance of the canal network and construction of additional canals, where necessary.

From these reasons, an agreement was concluded between the municipalities Ilinden, Gazi Baba Petrovec and Arachinovo, for finding permanent solution for the problem with the waste waters through revising the possibility of construction the regional separation sewerage system for the fecal and atmosphere waters from the area of the municipalities.

► **Water monitoring**

○ *Water Quality*

The permanent water infrastructure doesn't meet the needs of the population for quality drinking water. The problem with the supply of quality water is still present in the municipality. Most critical is the condition with the supply from underground waters through individual wells and pumps, because of the possibility of pollution of the underground waters.

PHO Health Protection Office Skopje, performs regular controls of the sanitary-hygiene condition of the ground waters – the river Vardar. During

January - December 2005, 9 water samples were taken and all samples were physically-chemically irregular, and 7 were bacteriological irregular (table 31).

Table 41: Sanitary hygiene condition of the ground waters or the period 01.01.2005 to 31.12.2005

Ground wates	Physical analyzes		Bacteriological analyzes	
	Total	Irregular	Total	Irregular
River Vardar	9	9	8	7

Source: PHO Health Protection Office, Skopje 2006

The physical and chemical characteristics of the water from the river Vardar, measuring point Trubarevo for the period from 01.01.2005 to 31.12.2005 are given in table 42.

The results in table 42 show that the water from the river overcomes class III.

The water supply from the water supply system (regional and local system) meets the needs of the population only in the urban part of the municipality, and the water is regularly controlled.

Table 43 shows the results from the measurements of the drinking water in several villages in the municipality.

Table 42: Physical chemical characteristics of the river Vardar, measuring point Trubarevo, for the period 01.01.2005 to 31.12.2005

Parameters	Average value	MDK for class III
Probable number of colphormous bacteria in l/l	240000	50–500 (vo 100 ml)
Total number of aerob mezophine bacteria in l/l	835,5	
Sulfito-reduction clostridas in l/l	94700	
Bacteriogram in l/l	1,7	
Temperature [°C]	14,8	
Color (mg/l Pt)	15,833	26 - 40 (mg/l Pt)
Abstruse	0,939	1.1 - 3.0
pH	8,83	6.3 - 6.0
Total rest from evaporation at 378,16K	262,750	
Suspended elements	33	30 - 60
Dissolved oxygen in [mg/l]	10,108	5.99 - 4.00
Oxygen in %	98,948	115 - 125
Biochemical consumption of oxigen BPK5 [mg/l]	3,470	4.01 - 7.00
Dry rest from philttrated water	235	1000
Chemical consumption of oxigen from KMnO ₄ [mg/l O ₂]	2,332	5.01 - 10.0
Ammonia as nitrogen (µg/l NH ₃)	310	500 (µg/l NH ₃)
Nitrates as nitrogen (µg/l N)	50,167	500 (µg/l N)
Nitrates as nitrogen (µg/l N)	1150	15000 (µg/l N)
Ferro (µg/l Fe)	107,750	1000 (µg/l Fe)
Copper (µg/l Cu)	3,180	50 (µg/l Cu)
Zink (µg/l Zn)	6,525	200 (µg/l Zn)
Lead (µg/l Pb)	1,363	30 (µg/l Pb)
Chrom 6-valence (µg/l Cr ⁶⁺)	5,400	50 (µg/l Cr ⁶⁺)
Chrome total (µg/l Cr)	2,247	100 (µg/l Cr)
Phenoli (µg/l)	0,218	50 (µg/l)

Detergents	15,417	
Aluminum ($\mu\text{g/l Al}$)	57,783	1500 ($\mu\text{g/l Al}$)
m – alkalinity ml/l n 10 HCl	37,280	
p – alkalinity ml/l n 10 HCl	2.840	
Cyanide ($\mu\text{g/l CN}^-$)	1,683	100 ($\mu\text{g/l CN}^-$)
Phosphates - ortho as phosphor	68,535	
Alcality (mg/lCaCO_3)	196,510	100-20 (mg/lCaCO_3)
Ammonia as NH_4 ($\mu\text{g/l NH}_4$)	595	10000 ($\mu\text{g/l NH}_4$)

Source: PHO Health Protection Office Skopje, 2006

Table 43: Condition of the water researches in the rural part of the municipality for 01.01.2005 to 31.12.2005

Inhabited place	Physical – chemical analyzes		Bacteriological analyzes	
	Total	Irregular	Total	Irregular
Bulachani	14	14	14	9
Idrizovo	21	9	21	1
Jurumleri	6	6	6	0
Trubarovo	3	1	1	0
Total	44	30	42	10

Source: PHO Health Protection Office Skopje, 2006

As it can be seen from table 43, it can be concluded that over 70% of the samples are not drinkable.

The inhabited places Goce Delchev, Jurimleri, Kolonija Idrizovo and Idrizovo have problems with the quantity and quality of the water. In the taken samples, it is noticed presence of nitrates and chlorides. The bacteriological indicators show presence of aerobe mezofil bacteria, streptococcus and coliphore bacteria form fecal origin in the drinking water.

In the industry area of the municipality were performed physical-chemical and bacteriological analyzes during 2005. in most of the cases the water is completely good for drinking. (table 44)

Table 44: Conditions from the analyzes of the drinking water in the industry area for the period from 01.01.2005 to 31.12.2005

Measuring point	Physical – chemical analyzes		Micro-biological analyzes	
	Total	Irregular	Total	Irregular
b.bun.-Pivara-Avtokomanda	2	0	2	0
b.bun.Turboin zenjering-Avtokomanda	1	1	0	0
b.bun.Makohemija-Madzari	1	0	0	0
b.bun.Kozara-UV lampa	0	0	1	0
b.bun.h.Belvi	1	1	1	0
b.bun.EL-AZETKA	1	0	1	0
min.v.Pelisterka-inspekcija	1	0	1	0
min.v.Kozuvchanka-inspekcii	1	1	1	0

min.v.Dobra Voda-inspekcii	1	1	1	0
punkt 14 zelezara-gr.vod.	14	0	14	0
punkt 19 Avtokomanda	24	0	24	0
punkt 20 Chento-gradski vodovod	12	0	12	0
fabrika Evropa-gradski vodovod	2	0	2	0
Glorija-gradski .vodovod	3	0	3	0
Pivara-(K.Kola-nov pogon)	5	0	5	0
Gradski .vodovod – Vitalija	2	0	2	0
Gradski .vodovod –RZ services fluid gas	12	0	12	0
Gradski .vodovod - RZ services water economy	12	0	12	0
b.bun.-Makohemija AD	1	0	1	0
Total	96	4	95	0

Source: PHO Health Protection Office Skopje, 2006

► **Waste waters from the industry**

The larger consumers of water in the industry sector are: the food processing industry (food and beverages), the chemical industry, metal industry and the meat industry.

The quantity and quality of the industry waste waters is different and depends from the technology, technical-technological capacity of the facilities and the presence (or lack) of purging stations.

The purging stations for the industry zone in Macedonia are used only for mechanic purging. Only a small number of purging stations have mechanical and chemical purging. Part of the industrial purging stations are out of work because of damaging, lack of spare parts of high costs for maintenance.

The condition is similar with the industrial wastewaters in the municipality also, which characterizes with lack of collector network and purging stations.

Part of the industry objects solve the problem with the waste waters by implementing modern technologies, and the pollution is minimal. Table 45 shows the review of the larger industry capacities in the municipality with data about the quantities and pre-treatment of wastewaters.

Table 45: Review of larger industry capacities with data about the quantities and pre-treatment of the wastewaters

N°	Business subjekt	Type of industry	Quantity of waste waters m ³ /year	Waste waters		
				With treatment	Without treatment	Recipient
1.	Alkaloid, PC Premazi i sintezi	Chemical	97.590	NO	√	Colector system, river Vardar
2.	Alkaloid, PC Farmacija	Chemical-pharmaceutical	113.000	NO	√	City sewerage river Vardar
3.	Evropa	Food	138.000	No	√	r.Vardar
4.	JSP Avtokomanda	Traffic	70.495	Mechanical	No	r.Vardar
5.	Komuna, Stara Keramidnica	Paper	325.000	No	√	Colector system, river Vardar
6.	Komuna, Madzari	Paper	37.300	No	√	Colector system, river Vardar
7.	Pivara	Beverage	1.245.000	No	√	Colector system, river Vardar
8.	Rimes	Meat	5.337	No	√	r.Vardar
10	Makstil	Metal	/	Mechanic and chemical	No	Colector system, river Vardar
11	Mittal stil	Металургија	/			

Source: MESP, 2006

The monitoring of the waste waters is performed by the central Laboratory for environment. Very few industry capacities make their own research of the wastewaters. The results are submitted to the Information center of Ministry for Environment and Spatial Planning (MESP). Although it is necessary to undertake activities for monitoring the wastewaters from much many industry objects in the municipality, what will provide clear picture about the condition with the wastewaters and taking appropriate activities.

❖ **Permanent legislation**

- Law for environment (Official registry of RM 53/05)
- Law for waters (Official Registry of RM number 4/1998 with supplements in the Official registry number 42/2005)
- Law for health protection (Official Registry of RM 25/2000)
- Book of regulations for determining and maintenance of protected zones around the drinking springs.
- Book of regulations for quality and health condition of the drinking water
- Decree for water classification (Official registry of RM 18/99) where the ground waters are classified
- Decree for categorization of the water flows and lakes, accumulations and underground waters (Official registry of RM 18/99)
- Book of regulations about the ways of taking samples and methods in the lab analyze of the drinking water.

❖ **Identification of the problem**

- The water supply of the population in the municipality is followed by: water losses, low pressure, illegal connections, old network, small reservoir area and incomplete water supply system.
- There is inefficient area for new septic pits in the inhabited places.
- Part of the primary sewerage network is missing and the complete secondary network for Stajkovci, Singelich, Indzikovo, Trubarevo, Goce Delchev, Jurumleri and Idrizovo.
- There is no collector system for Stajkovci, Singelich, Indzikovo and Hipodrom, which should be connected to the city collector and the secondary network.
- There is no sewerage system for Rashtak, Bulachani, Creshevo, Strachinci, Vinche and Brnjarci.
- There is no data about the monitoring of the quantities and quality of the waste waters.
- Non-functionality of the sewerage system of Skopje Valley which results with floods in the rural areas, and what is a direct threat to human health and endangerment of the normal life conditions.

❖ **Key problems:**

- *The water supply in the rural areas is a problem because of inefficient quality drinking water. Most critical is the condition with the supply from the underground waters through wells and pumps, because of the possibility of polluted underground waters*
- *Incomplete fecal system in the rural areas, especially in the low parts of the municipality, is a problem with primary and secondary consequences – direct threat to human health during floods, and pollution of the underground waters.*
- *The non-functionality of the canal system in the low parts of the municipality is a problem, which is regular during heavy rains and results with floods.*

❖ **Influence on the environment and human health**

The suspicious water quality from the local systems and the individual wells is a direct threat to the human health. This water is a potential cause of diseases and illnesses with people and the cattle.

Also, the usage of the water for irrigation is also a potential threat.

The frequent floods, ground waters in the yards, meadows and fertile land in the rural parts of the municipality, is a danger for diseases. More dangerous is the flooding of the fecal waters from the pits and the old and damaged sewerage system.

The release of the waste waters from the industry facilities without checking the level of pollution and pre-treatment, is a possibility the recipient to become polluted above the limitations, and with that to disturb the natural balance if the water flow.

❖ **Recommendations**

- Construction of collector for fecal sewerage from Indzikovo to Vardar with purging stations of Skopje;
- Construction of water supply and sewerage system;
- Construction of the foreseen 7 well according the feasibility study
- Construction of waterproof septic pits and regular cleaning;
- Reconstruction of the municipality sewerage network in the inhabited places;
- Finding permanent solution for the problem with the wastewaters by revising the possibility of construction of regional separation sewerage system for the fecal and atmosphere waters from the municipalities Ilinden, Gazi Baba, Petrovec and Arachinovo;
- Regular cleaning and maintenance of the canal network and construction of new ones;
- Providing protected zones around the drinking water springs;
- Construction of purging station for wastewaters;
- Preparation of a study for monitoring of the water quality;
- Construction of fecal sewerage for the rural places;
- Treatment of the fecal waters in the rural areas;
- Monitoring and control of the wastewater quality.

2.2.3. Waste

For improving of the life quality and protection of the human environment it is necessary to solve the problem with the waste, the organized collection, transport and keeping.

Each of the three phases means undertaking appropriate activities, using the experiences from the developed countries, complied according the real possibilities of the municipality, the city and the republic (example: selection of the waste in the starting phase of the collection; separate keeping and treatment of the chemical and other harmful waste; destruction of the medical waste by burning).

Types of waste in the municipality Gazi Baba

The municipality Gazi Baba with its characteristics is a territory on which almost all kinds of waste are produced: communal waste, industry harmless, internal, packaging waste and some types of harmful waste.

The communal solid waste in the municipality is produced by the citizens in the households, service facilities, trade and business sector, which is not industrial. Also, even 25% of the communal waste belongs to the group of so called **commercial waste** created in the commercial objects in the municipality (offices, shops, restaurants, cafes, municipality and state institutions, post, banks). This type of waste is most favorable for the primary selection.

Beside this waste, **the product's and packaging waste** (paper, glass, plastic, textile) is also present. According the data from the National Plan for waste management, this type of waste covers 17,7 % in the total quantities of communal waste. Unfortunately, there is no selection system for this type of waste too.

The collection of this type of waste is performed by PE "Communal Hygiene".

In the urban part of the municipality, the high density of population, creates needs for more frequent collection, unlike from the rural parts, where the density is lower, but the transport costs for the collection are higher.

The industry harmless waste created by the industry facilities is regarded as communal waste. This type of waste is transported to the city dumpsite Drisla, if it doesn't have any harmful elements. Unfortunately, in the current conditions for work, nobody brings any proof for harmful or harmless characteristics of the industry waste.

On the territory of the municipality there is **internal waste** created by the civil construction. The data about the quantities of the waste do not exist. This type is the main component of the illegal dumpsites.

Special types of harmful waste, created by the citizens from the commercial objects, medical institutions and certain industry capacities are:

Domestic harmful waste (batteries, car batteries, paints, varnishes, cosmetics) but because of the small quantities it is mixed with the communal waste. The current practice is the solid harmful waste from the households to be mixed with the harmless one, and the waste oils are let into the sewerage.

Medical waste is created in the health and veterinary institutions and is a result from usage of different materials in the treatment of the people and animals. The annual quantities of medical waste at level of the city is 400 tons. There is no evidence according municipalities.

PE "Communal Hygiene" collects the selected medicine waste from the institutions, transports it to Drisla, and destroys it in a special incinerator.

The industry, depending from the input raw material and technological processes, creates certain types of *industry harmful waste*. There is no infrastructure in Macedonia for separate collection, treatment of the harmful waste. There is a book of regulations about the procedures with the harmful waste, but the implementation is at a very low level. This means that municipality Gazi Baba doesn't have information about this type of waste.

Waste from the electric and electronic devices is connected to the old devices, as fridges, stoves, cookers, audio and video systems, computers, etc. all of these contain elements of harmful waste, but, they are not separated from the other waste. In the municipality there is no system for this type of waste, as in the republic.

Also, *the waste from the old vehicles (tires, body, batteries, etc)* usually end in illegal dumpsites, car parks, end streets, sometimes is collected by the informal sector, and is divided and offered on the market as old iron.

Waste from agricultural production is found only in the rural areas. The intensive gardening makes large quantities of bio-waste. The lack of organized system for collecting and processing, makes creating of many illegal dumpsites of seasonal character. The uncontrolled decay results in glass gases and drainages. Very often is the burning of this waste.

According to the available data and the expert's evaluations, table 46 gives all quantities of solid waste according to types, sources and locations for removal of the waste from the territory of the municipality.

Table N° 46: Types and quantity of the waste, which is created on the territory of the Municipality Gazi Baba

	Type of waste	Quantity (t)	Sources of creating in Gazi Baba Municipality	Locations for permanent removal of the waste
1.	Communal waste from households	10.238	Urban and rural living places	- dump site Drisla - part of the illegal dumpsites (rural environment)
2.	Commercial waste	4.479	Commercial facilities and institutions	- dump site Drisla - part is collected and processed
3.	Industrial harmless waste	1.449	Industrial companies and zones	- dump site Drisla - part is collected and processed
4.	Internal waste	no data	Organized buildings, households	- illegal dump sites through the municipality
5.	Waste from products and packages	3.162	Households and commercial facilities	dump site Drisla
6.	Domestic harmful waste	36	Households, commercial facilities	- dump site Drisla - part of the illegal dumpsites (rural environment)
7.	Medical waste	no data	Public and private medical institutions	-dump site Drisla
8.	Industrial harmful waste	no data	Industrial companies	- in the companies
9.	Waste motor and hydraulic oil	no data	Households, car services, industry	- sewerage systems - directly in the soil
10.	Used batteries and car batteries	no data	Households, car salons, industry	- dump site Drisla - part is collected and processed
11.	Waste from electrical and electronic equipment	no data	Households, commercial facilities	- dump site Drisla - part of the illegal dump sites (rural environment)
12.	Waste from used vehicles	no data	Households, industry, commercial facilities	- on different locations - part is collected and processed
13.	Waste from used tires	no data	Households, industry, commercial facilities	- part is collected and used as fertilizer
14.	Waste from agricultural production	no data	Agricultural production in rural places for living	- part of the illegal dump sites (rural environment) - part is burnt (uncontrolled)

Data sources :JP "Communal hygiene", Skopje, 2006.

Quantitative and quality evaluation for the creation of the solid waste

As we have already mentioned, the collection of the communal waste by the PE "Communal Hygiene" is performed only in the urban area of the municipality. this waste ends in the dumpsite Drisla, where the waste is measured.

Having in mind the average level of waste creation which includes the communal and commercial waste, given in the National Plan for waste management (NPUO) from 0,78 kg/h/den (283 kg/h/year), an expert analyze can be done about the waste creation.

The analyze considers the total number of the population in the municipality (72.620) and the number of population included in the waste collection (51.3970) in the urban parts.

The results from the analyze is:

- Quantity of the created waste is 20.670 t/year.
- The quantity of collected waste is 17.920t/y.
- The quantity of the waste which is not collected and ends on the illegal dumpsites is about 2.700 t/y.
- The quantities of the commercial waste is 4.480 t/y.
- The quantities of the packaging waste is 3.160 t/y.

Related to the quality evaluation of the solid communal waste from the municipality with application of the percentage between separate fractions received from NPUO the table 47 is received, which shows the quantities of certain fractions.

Table 47: Quantities of different fractions of waste

N ^o	Waste fractions	Percent age (%)	Quantities of certain fractions (t/y)	
			From total collected waste	From total created waste
1.	Organic	26,2	4.693	5.387
2.	Wood	2,7	484	555
3.	Paper and cardboard	11,6	2.078	2.385
4.	Plastic	9,6	1.719	1.974
5.	Glass	3,5	627	720
6.	Textile	2,9	520	596
7.	Metals	2,6	466	535
8.	Harmful waste	0,2	36	41
9.	Composits	2,2	394	452
10.	Complex products	0,3	54	62
11.	Internal waste	3,6	645	740
12.	Other	3,6	645	740
13.	Small parts	30,9	5.536	6.354
	Total:	100	17.915	20.674

Source: Expert evaluation 2006

Waste treatment

The waste collection covers the whole territory of the urban part of the municipality. this territory is defined according the Law for city of Skopje.

According the data from the PE “Communal Hygiene” on the territory of the municipality are located 820 containers of 5 and 7 m³. the individual users – households and economy subjects dump the waste in 1,1 m³ containers and plastic bins of 120 l.

There are no data about the organized selection and recycling of the waste in the municipality.

The rural areas are not included, and this results in creation of illegal dumpsites.

Tables 48 and 49 show data about the wild dumpsites with location and capacity, in the rural and urban areas.

Table 48: Location of illegal dumpsites and capacity in rural areas

N^o	Location	Description	Capacity (m³)
1.	Strachinci	after Stajkovci, near the pylon	15
2.	Strachinci	Before the village, on the left	100
3.	Creshevo	Before the village, near the playground	150
4.	Bulachani	Near the school	10
6.	Bulachani	On the exit towards Rashtak	20
7.	Rashtak	Playground	250
8.	Viniche	Before and on the exit of the village	15
9.	Smilkovci	Road towards Butel	7.200
10.	Brnjarci	Pavement-crossroad-rail	100
11.	Singelich	Canal	200
12.	Indzikovo	Street Sava Mihajlov	2.200
13.	Indzikovo	Alog highway	100
14.	Indzikovo	Local community Pitu Guli	25
15.	Kamnik	Road to the graveyard	80
16.	Drma	Near the local road	20
17.	Idrizovo	Road to Drachevo	150
18.	Idrizovo	Near the local road	70
19.	Jurumleri	Road to Drachevo along Vardar	100
20.	Trubarevo	Near the graveyard	50
21.	Trubarevo	Near Vardar	250

Source: Municipality Gazi Baba 2006



Pictures 44 and 45: illegal dumpsites near Trubarevo and Jurumleri

Table 49: Location of illegal dumpsites and capacity in the urban areas

N ^o	Location	Description	Capacity (m ³)
1.	Vardarishte	street Vera Radosavljevich along the river	660
2.	Zelezara	street Gemidziska, near Vatrostalna	30
3.	Keramidnica	Bridge Twins	20
4.	Keramidnica	Near the playground	250
5.	Street Pero Nakov	Near MZT	150

Source: municipality Gazi Baba, 2006

Attention should be given to the of the former city **dumpsite Vardarishte** near the river Vardar in the frames of the municipality Gazi Baba. It was opened in 60-s, and was officially closed in 1997, when all of the waste was brought to the dumpsite Drisla. The dumpsite Vardarishte is located on waterproof ground which results in direct pollution of the river. The efforts by the PE “Communal Hygiene” to repair the dumpsite, deducted with covering with soil and construction waste, without any neither technical, nor biological measurements. The potential for pollution of the environment, caused from the long duration of decay of the organic part of the waste. In the frames of the dumpsite exists loading station, which is used for loading of the larges communal vehicles.



Picture 46: Illegal dumpsite Vardarishte

❖ **Permanent legislation**

- Law for environment (Official registry of RM 53/05)
- Law for waste management (Official registry of RM 68/04)
- Law for communal activities (Official registry of RM 45/97, 13/99)
- Book of regulations for the content of the evidence log for waste management and transport of the waste and the form and the content of the forms for the annual reports for waste management (Official registry of RM 07/06)
- Book of regulations about the program and ways of taking expert's exam for waste management, form of certificate and the height and ways of the supplements for the exam for manager of waste. (Official registry of RM 100/05)
- Book of regulations about the form of the request, for and content of the permit for waste collecting and for transport of communal and other waste, and the minimal technical conditions for performing the activity of collecting and transport of communal waste and other harmless waste (Official registry of RM 08/06)
- Book of regulations 259/93 for export – import of waste, and amendments of the book of regulations 120/97.

❖ **Identification of the problem**

- Inefficient organized system for collection of the waste on the territory of the municipality (74% of the total population);
- Many illegal dumpsites of different capacity which have negative influence on the environment, especially the former dumpsite Vardarishte;
- Inefficient collection of the fees for waste collection, which directly influences the work of the PE "Communal Hygiene";
- No practice for inclusion of private operators for the rural areas and selection and recycling of waste. The law for waste management gives this possibility;
- No data about the quantities and type of waste in the municipality;
- Low equipment of the municipality personnel for monitoring and control of the conditions with waste management according the Law for waste management;
- Low awareness among the population about the problems caused by the improper waste management (lack of integrated system for waste management).

❖ **Key problems:**

- *No reliable data about the quantities and types of waste in the municipality, as grounds for taking activities;*
- *Unorganized collection of communal waste in the rural areas;*
- *Many illegal dumpsites with different capacity as result from the low awareness of the population, and inefficient waste management.*

❖ ***Influence on the environment and human health***

The existence of the illegal dumpsites in the municipality, is the largest danger for the human and environmental health. There are no protection systems, except those on the dumpsite Vardarishte, which are not enough.

The direct and indirect influences refer to the fact that in each dumpsite, because of the organic elements, two types of pollutants are produced: drainages and dumping gases. They are results of the aerobic processes during the decay of the organic elements.

The dumping drainage contains large concentration of organic elements, which during the process of decay have negative influence on the soil and ground waters.

The dumping gas consists of methane and carbon-dioxide and small quantities of other gases. The influence is in the increasing the effect of glass garden, and the pollution of the air.

These dumpsites are sources for diseases, and fires.

❖ ***Recommendations***

According to the analyzes of the conditions with the waste management and the legislation, the following measurements are proposed:

- Implementation of a system for collecting the communal waste from the whole territory of the municipality (rural areas), combined with the near municipalities or independent;
- Establishing dumpsite for internal waste (municipality or regional, public or private) and establishing separate system for collecting this type of waste in the municipality (region);
- Repair of the illegal dumpsites (during the first phase only where organized collection exists – in the urban areas) and especially of the dumpsite Vardarishte;
- Establishing a system for separate collection of the waste, transport and processing;
- Personnel building of the municipality for control and monitoring of the conditions with the waste management (in cooperation with the municipality communal inspection or municipality environmental inspection). Also, they will prepare municipality plans and annual programs for waste management.

2.2.4. Land

The land and the soil are important priorities and economy resources, especially for the sectors of the agriculture, forestry and industry, and the development of the infrastructure. But the influences on the soil by people are

increasing and lead towards land degradation, which has negative socio-economic consequences.

Main threats for the health condition of the soil are: the erosion, local and diffuse contamination, solemnization, certain types of physical-mechanical degradation, etc. they can result in conversion of the land from productive to unproductive. Such conversion is most visible during appropriation of the fertile land into construction sites, t.i. urbanization of the land.

The conditions with the soil can be presented through:

- Erosion of the soil as basic type of land degradation
- Fertile land
- Contamination of the productive soil (inefficient monitoring of the level of the contamination by monitoring and information system);
- Pollution of the soil as a result of usage of fertilizers, pesticides, organic polluting elements and heavy metals;
- Polluting from the communal, industry and harmful waste. But, because of unreliable data the municipality cannot give evaluation of the conditions.

The land appropriation and the uncontrolled construction, is regulated by a preparation of spatial plans according the Spatial Plan of Macedonia.

The lack of human resources and funds for control of the implementation of the regulations, disrespecting the recommendations from the spatial pans, transfer of the authorities during the process of decentralization, are the main reasons for the pressure over the condition with the land, purpose of the land, natural resources, space organization and quality of the environment.

The driving forces, which directly influence the soil and the land in the municipality are: industry, population, agriculture, cattle breeding, waste management, transport sector, and others.

About the pollution of the soil, only approximately data can be given, according the modest, partial science-research and expert works from certain institutions, through the presence of certain poisonous chemical elements in the soil, agricultural and cattle products, and the applied quantities of pesticide and fertilizers in the agriculture.

Table 50 shows the consumption of means for protection of the plants in the municipality for 2005

Table 50: Consumption of means for plant protection in the municipality

Municipality Gazi Baba	Spent in the report unit -kg					Spent in the report unit -litres				
	Total	Fungicides	Herbicides	Insecticides	Rest	Total	Fungicides	Herbicides	Insecticides	Other
State	1.678	1.121	220	336	1	115	95	16	4	-
Private	-	-	-	-	-	-	-	-	-	-
Associated	-	-	-	-	-	-	-	-	-	-
Joint	10.761	-	10.761	-	-	3.028	775	1.477	776	-
State	620	150	450	20	-	-	-	-	-	-
Agro. Associations	-	-	-	-	-	-	-	-	-	-
Total	13.059	1.271	11.431	356	1	3.143	870	1.493	780	-

Source: State Statistics office of Macedonia

The table 50 shows that as a result of the usage of pesticides there is a risk of contamination of the land in the municipality, but the monitoring and information system is inefficient.



Picture 47 and 48: Part of the fertile land in the municipality Gazi Baba

❖ **Permanent legislation**

Except for the Law for utilization of agricultural land (Official Registry of RM 25/98, 18/99 and 02/2000), there are no book of regulations for regulating and sanctioning the issues with the pollution and contamination of soils and for that purpose are used the recommendations from member states of EU.

❖ **Identification of the problem**

- Degradation of the soils (erosion and contamination);
- Land appropriation for other purposes;
- Turning areas into illegal dumpsites;
- Illegal construction in the municipality;
- No monitoring of the soil and data about the soil condition;
- Old and inappropriate technologies and processes in the agriculture and forestry and need for better management with the forests and forest land;
- Forest fires and illegal exploitation of the forests;
- Process of unplanned changes of land appropriation;
- No erosion control;
- (Un)education of the farmers for utilization of agro-chemicals.

❖ **Key problems:**

- *Land appropriation for construction of objects and infrastructure*
- *No reliable data about the condition with the soil and no soil monitoring*

❖ **Influence on the environment and human health**

The land degradation causes degradation of the other components of the environment (water, air). In this case, we regard the soil as a polluter. The contamination of those components can be direct and indirect. The direct is performed by elements produced by the soil, and indirect is by elements brought in the soil by the people.

The contamination of the soil influences the human health, considering the concentration of the used chemical means, the indirect consumption through the vegetation and cumulative effect of some of those elements.

❖ **Recommendations**

- Soil control and the agricultural cultures;
- Production of safe food (promotion of organic production);
- Banning the land appropriation for other purposes;
- Preparation of detailed evidence for the application of the agro-chemicals in the agriculture;
- Education of the farmers about the application of the chemicals in the production;
- Prohibition for construction septic pits near fertile land;
- Processing of the organic waste from the agriculture (production of organic fertilizers according appropriate technology);
- Monitoring of the land quality.

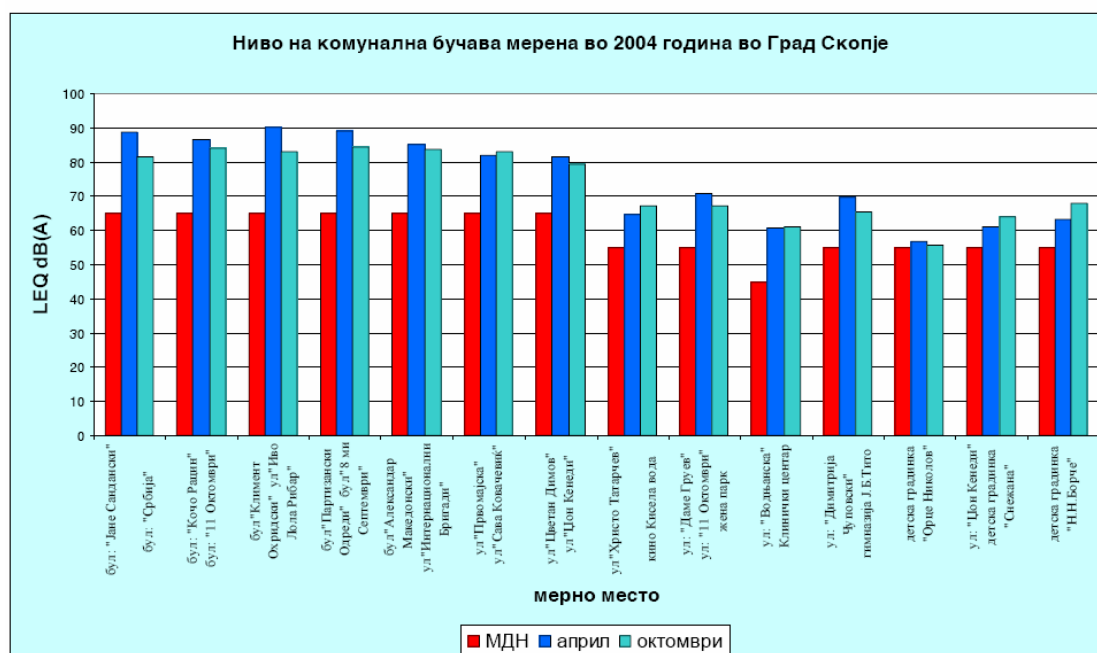
2.2.5. Noise

One of the negative consequences of the technical-technological development is the noise. The influence is present in all spheres of human life and is increasing problem, which demands more attention.

The municipality Gazi Baba, and the city of Skopje, is not left aside from this event, but on the contrary, the level of the noise is increasing.

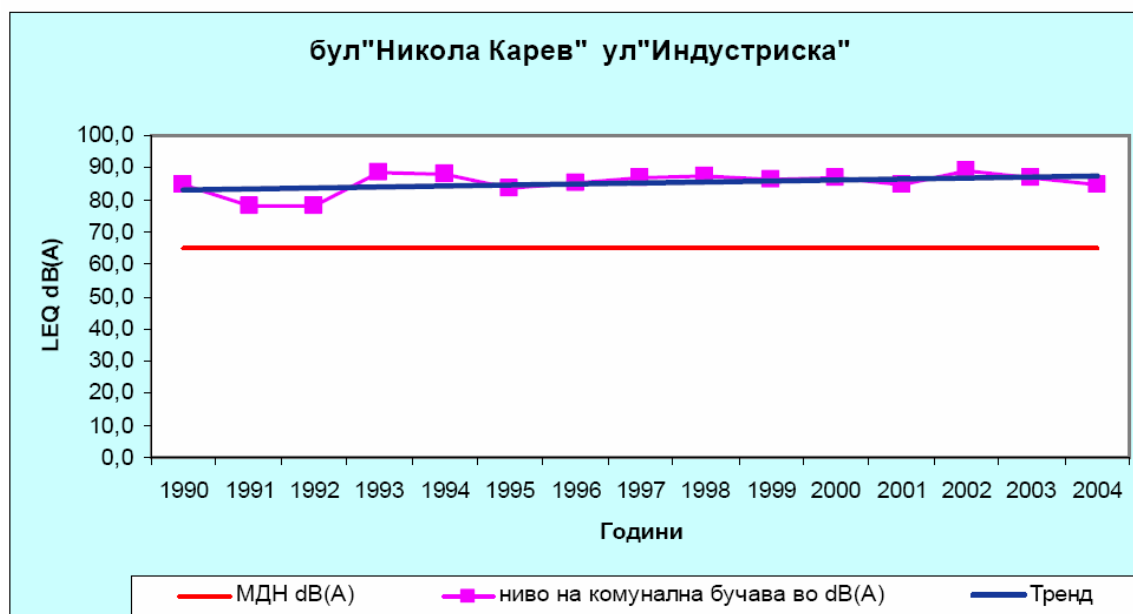
Most common reason for harmful noise (over MDN) is the traffic vehicles and production and service machines and tools. Also, more frequent is very loud music from restaurants and cafes, which the authorities do not penalize.

The public health organization Health Protection Office has established measuring network for noise on 14 points in Skopje, and one of them is located in municipality Gazi Baba on boulevard Alexandar Makedonski (Long $21^{\circ} 27' 54''$, Lat $41^{\circ} 59' 59''$). Fifty measurements of the communal noise are performed twice a year, in April and October. The graph 1 shows the level of the noise in 2004.



Graph 1: Measured levels of noise in 2004

It can be noticed that on all measuring points the level of the communal noise is above the MDN. The unfavorable condition lasts since 1990, what can be seen from graph 2.



Graph 2: level of communal noise

And the last measurements from 2005 show that all measured values (50 in April and 50 in October) are above the Maximal Allowed equivalent Level of communal noise of 65 dB (A). The analyzes of the values show that from 100 values, 2 are from 66 to 70 dB (A), 20 are from 71 to 75 dB (A), etc. the whole review is given in table 51.

Table 51: Measured values of the level of noise above MDN

Level of noise [dB]	Number of measured values oabove MDN
66 - 70	2
71 - 75	20
76 - 80	36
81 - 85	23
86 - 90	13
91 - 95	4
96 - 100	2

Source: PHO Health Protection Office, Skopje, 2006

It can be concluded that there is noise in the municipality above the MDN. The situation is not periodical, and goes back for many years. In addition, with high percentage of probability, it can be estimated that the noise occurs on many different locations than the measuring point, but it is necessary to place more monitoring point for checking the estimation.

❖ **Legislation:**

- Law for prevention of the noise (Official Registry of SRM 21/84)
- Decision for determining cases when and under what conditions, is regarded that the citizen's peace is disturbed (Official Registry of RM 64/93), brought according the law for violations of the public order and peace (Official registry of SRM 25/72, 29/83, 34/83, 51/88, 19/90 and Official registry of RM 26/93);

- Order for obligatory homologation of the motor vehicles with four tires related to the noise (Official registry of RM 16/97)

Standards

- ISO 3746, which defines the basic terms and measurement models for noise and their effect on humans
- ISO P-1999
- DIN 45633
- IEC 179 and 179a

❖ Identification of the problem

- Many locations exposed to the continuous influence of the noise with intensity above MDN
- Insufficient measuring points for the noise, for determination of the most endangered places from the noise.
- No expert analyzes about the influence of the noise on human health at municipality level.
- The noise from the service centers is not monitored
- No penalties from the authorities in case of peace violation

❖ Key problems:

- *Locations exposed to permanent influence of the noise with intensity above the MDN*
- *No expert analyzes about the influence of the noise on human health*

❖ Influence on the environment and human health

The noise can make damaging of the conditions for normal activities, indoors and outdoors, through direct damaging of the peace, health and the workability of the population. The permanent and increased noise can lead to nervous and restless sleep, increased blood pressure and disturbed balance centers. The fake "Adjustment" to the noise can lead to progressive hearing problems.

❖ Recommendations

- Placing enough monitoring stations for noise, according prior plan for locations;
- Preparation of studies about the influence of the communal noise on the human health in the municipality;
- Monitoring of the noise;
- Placing protection noise barriers anywhere possible and necessary.

2.2.6. Natural resources

There are different natural resources in the municipality Gazi Baba: fertile land, rich resources of underground waters, archeological locations, afforested areas, construction sites, picnic areas and others.

2.2.7. Natural values and rarities

The following natural values and rarities are found in the municipality:

- Location Gazi Baba (forest) – characteristic landscape;
- Botanic garden, natural-Mathematics Faculty, Institute for Biology;
- Dendro-park of the Faculty for Agriculture and Forestry, Skopje;
- Archeological findings “Tumba Madzari”
- Arachinovo marsh.
- ❖ ***The location Gazi Baba (forest) – characteristic landscape***
 - Characteristics of the location Gazi Baba

The total area of the location is 102,44 ha, from what 88,24 ha is forest (artificial plantings) or 86,13% from the total area, and 14,20 ha or 13,87% is bare land.

The area defined as characteristic landscape borders with:

- north with Butel II;
- east with Zelezara, metal complex – former Iron plant, and the settlement Avtokomanda;
- south with the facility of the municipality Gazi Baba, Institute of Chemistry at the Natural-Mathematics Faculty, the student's campus „Stiv Naumov” and the Faculty of Forestry;
- West with the settlement Chair.

- *Usage and management with the location Gazi Baba*

Because of protection and arrangement of the location, in 1998 it was declared a characteristic landscape and is a responsibility of PE “Parks and Greens”.

The negative events in this complex is the increased degradation of the terrain and the vegetation, by illegal usurpation of the land, timber and destruction of the habitats (especially of the birds).

- *Characteristics of the forest in the location Gazi Baba*

The forest which is located here is a special phenomenon of this kind, because it is unusual to have such large area in city areas. It was planted artificially, by afforesting of the bare land. (pictures 49 and 50)



Picture 49: Location Gazi Baba – characteristic landscape



Picture 50: Panoramic view of the location Gazi Baba

for better orientation and organization of the works, the surface of the forest is divided into 10 sectors, and each of them to separate sub-divisions.

Within the forest exist many wood types, mostly leaf-types and bushes, as well as evergreen types.

The wood mass is 7.899 m³, or average 77,1 m³/ha. The total annual growth of the forest is 347,86 m³/year, t.i. on unit surface it is from 0,9 to 7,2 m³/ha. The average age of the forest is over 30 years.

Highest value of the forest is its polyvalent function expressed by: cleaning of the air, protection of the soil, regulating the water regime and improving the micro climate. It influences the improvement of the environment.

Unfortunately, in the forest appear phyto-pathologic and ethnomologic illnesses, which result in drying of the trees.

It is necessary to take certain activities for development of the forest and improvement of the biological stability of the vegetation, planning of phyto-sanitary cutting for prevention of the over-growing and conditions for harmful consequences.

❖ **Botanic garden, Natural-Mathematics Faculty, Institute of Biology**

The botanic garden within the Botanic Institute of the Institute of Biology at the Natural-Mathematics Faculty in Skopje.

The initiation for founding the Botanic garden date from 1948, when upon request of the Biology Department at the natural-Mathematics sector of the Philosophy Faculty in Skopje, the management of the City Park in Skopje, allocated about 14 ha for the idea. Later, in 1951 was built the first object – glass house for maintenance of tropical and subtropical vegetation, necessary for the realization of the practical lessons from several botanic disciplines. Since 1951, the botanic garden is updated and filled with new types of plants.

It is unique facility in the city and the republic. Beside the educational and recreational character, it represents space visited by many nature fans, students pupils, botanists.



Picture 51: Artificial lake in the botanic garden

In the botanic garden are introduced and acclimatized over 200 wood and bush plants and over 300 native and foreign grass plants, types interesting from taxonomic, phyto-geographic and ecology aspects.



Picture 52 and 53: Types of plants in the Botanic garden

In the glass house of the botanic garden are kept collections of tropical, subtropical and semi-tropical plants (palms, cactuses and other). The object for acclimatization, growing and reproduction of the endemic, relict rare and medical plants from Republic of Macedonia, offers unique possibility on one small area (450m²) to find part of the vegetation, characteristic with the endemic and rarity values, as with their pharmacological characteristics. In 22 system areas of the object are maintained fragments from the water, marsh, meadow vegetation, the vegetation hilly, mountain and high mountain pastures, fragments from holophyt and step vegetation and others.

Picture 54: Glass house



The botanic garden represents space for:

- Presentation of many flora specimens from Macedonia, Balkan region and other parts of the world;
- Education in botanic disciplines at the Institute of Biology;
- Practice lessons for the primary and secondary students;
- Protection and preservation of endangered types in “ex situ” conditions;
- Recreation and cultural events.

The botanic garden is open for public, organized visits of students and tourists.

- *Mycological collection, Faculty of Natural-Mathematics, Institute of Biology*

The mycological laboratory is opened since 2000. in June 2001 with the donation from KFOR Liaison Press Center from Skopje, the old facility of the botanic garden was renewed and was transformed into Mycological laboratory and fungarium. The same year, by DLR Internationales Buro from Bonn, Germany, was provided assistance in the form of material-technical items, reagents and literature, and was formed modern specialized mycological lab of the Institute of Biology. Within functions the fungus collection (fungarium) with around 10.000 specimen and 8.000 data in the base “FUNGI MAK”.

In the mycological lab is working on the myco-diversity of certain areas of Macedonia, as eco-taxonomy characteristics of certain system groups.

❖ *Dendro-park of the faculty of Agriculture and Forestry, Skopje*

The dendro-park represents live collection of native and foreign trees and bushes, which has specific purpose. Today, on the territory of Macedonia exists only one dendro-park and it is located around the faculty facilities of the

Forestry and Agriculture Faculty in Skopje. Because of different conditions it is in very bad conditions, and it needs revitalization, so that it can gain its true appearance and purpose.

The dendro-park was formed in 1950. Today, there are about 200 different types of trees and bushes and is connected to the location Gazi Baba and the botanic garden. The total surface is 4,05 ha.

There are 642 taxons in the dendro-park. From them 14% are gymnosperm and 86% are angiosperm, and there are 19% evergreen trees. Most found are types from East Asia, South Europe, Mediterranean, North Africa, Europe and Euro-Asian types. There are types from North America, Near East, South-East Europe, Australia.

The dendro-park as a live collection is for educational tool for the students at the faculties of forestry, horticulture and arrangement of space. This object is important for demonstration, is favorable for introduction of the forests and urban spaces. The dendro-collection serve for many bio-ecology monitoring and experiments.

The dendro-park has common knowledge importance, because here can be seen 350 types of trees and bushes from all continents.

Because of that, beside the reconstruction and arrangement of the park, is necessary to define the long term vision for more active usage in the education, research, affirmation, opening to the public, creating conditions for efficient maintenance and management.

❖ Archeological location “Tumba Madzari”

The opening of the archeological location “Tumba Madzari” from the early neolith (3000-4000 b.c.) shows the fact, that these areas were populated since the beginning of manhood. This location is one of the oldest in Macedonia and the Balkan region and is located between the settlements Madzari II and Chento, near the football ground “Boris Trajkovski”.

Most important finding is the ceramic model of house in figure of a woman. It is known under the name “Big mother Goddess” today it is symbol of the Coat of Arms of the municipality.

❖ Arachinovo marsh

One of the important water resources belong to the municipality Gazi Baba – the Arachinovo marsh which spreads over 1 km², south from Arachinovo. The Arachinovo marsh has unique values for the bio-diversity, and the marsh eco-systems are evaluated as most endangered by the NCBAP and the report of Republic of Macedonia for UNFCCC.

❖ Legislation:

- Law for protection of nature, Official Registry of RM 14/2004.

❖ **Identification of problems:**

The location Gazi Baba – characteristic landscape

- Land degradation and destruction of the vegetation by usurpation of the land;
- Illegal timber;
- Destruction of the bio-diversity – habitats of the present animals (especially the birds)
- Degradation of the vegetation in the dendro-park;
- Inefficient protection of the archeological locations.

❖ **Key Problems:**

- *Degradation of the land and vegetation*
- *Increased level of forest degradation in Gazi Baba*

❖ **Influences on the environment and human health**

The location Gazi Baba has positive influences on the environment and human health. The polyvalent function is expressed through: air cleaning, regulating the water regime, soil protection and climate improvement, which influences the environment as a whole.

The potentials for bigger and more active usage is a possibility and obligation for preservation and nourishing, not just by the population and local authorities, but by the City.

❖ **Recommendations:**

Location Gazi Baba (forest) – characteristic landscape:

- Declaration of the location for city park which would bring higher level of protection
- Amendment of the GUP of Skopje, which allows brown areas in the location;
- Preparation of a project for detailed arrangement of the forest and defining the offered zones for Arboretum, scientific researches and recreation and zoo;
- Preparation of plan for protected management of the forest and proper growth;
- Revitalization of the forest funds of the location.

Botanical garden

- Bringing long term strategy for development of the Botanical garden;
- Renewal of the gen-bank and publishing Delectus seminum, which would provide permanent expansion of the vegetation fund
- Forming data base for the present plants in the botanic garden, about their taxonomic, phyto-geographic and ecology characteristics;

- Labeling of the vegetation;
- Preparation of a guide for complete information of the visitors of the botanic garden
- Starting a procedure for gaining a status of a Botanical Garden as monument of the nature.

Dendro-park

- Preparation of documentation for reconstruction, arrangement and management with the park;

Arachinovo marsh

- In cooperation with the municipality Arachinovo, Gazi Baba must make steps towards protection of the last remains of the Skopje marsh
- Declaration of Arachinovo marsh as a protected area according the law for protection of nature.

2.2.8. Possible influences on the quality of the environment and human health

More serious indicators about the influence of the polluted environment on the human health are not noticed. Even though, there is opinion that there is a co-relation between the diseases and the low quality of the air, water, soil and food.

The usage of bad water and the presence of low communal-hygienic conditions are threat for the appearance of diseases, and the possibility of epidemics, which luckily is not noticed on the territory of the municipality.

This deserves special attention for the vulnerable groups: youth and school children. The diseases, intestine and other forms of diseases occur occasionally and are not alarmed.

The defined morbidity in the medicine proves that most important are the disease of the circular and respiratory system. From the chronically diseases highest percentage belongs to the high blood pressure, heart conditions, diabetes mellitus and other. Most frequent from the dependencies is the alcoholism.

The malign diseases are seen in quite high percentage, especially at women. The growth of the malign diseases is directly connected to the low life standard, stress, smoking and pollution, which reduce the immune system.

The stress conditions, low standard and pollution are regarded as causes for the increased number of diabetes.

The anemia, which are increasing, are believed to be result of the low standard (lack of nutritious elements in the body), but also the pollution of the

environment is additional factor. The anemia because of lack of Ferro is very frequent event with children.

Most common reasons for the mortality with the population in the municipality are: cardio-vascular diseases, cerebra-vascular diseases, malign diseases, kidney failure, mind disturbs, traffic accidents, etc.

The experts have the opinion, that because of the presence of the industry zone, are possible unspecific chronic diseases of the respiratory system, caused by the sulfur dioxide, manage oxide and dust from the industrial capacities.

When defining the morbidity in the dentist activity, most frequent is the tooth carries with almost all categories of the population, especially with the youth, what is a signal that the preventions are neglected at the dentist activities.

There is a co-relation between the health condition of the population and the food. During 2005 by the Food Directorate performed supervision over the food production facilities and trade, when were discovered irregularities in 48% of the facilities. Also, samples were taken from the food for analyze of the food safety, from industry, crafts, restaurants and food trade facilities.

From the received data, was found that only 5,4 % are irregular samples, or separately according facilities:

- from the industrial objects, 0,59 % were irregular samples;
- from the crafts objects 1,93 % were irregular samples;
- from the restaurants 2,27 %were irregular samples,
- from the food trade facilities, 0,59% were irregular.

Most common cause for the irregularity of the food samples is: inadequate labeling, labeling the chemical analyze and bacteriological irregularity. In 2005 were not noticed food poisonings in facilities within the municipality.

❖ Recommendations

In the municipality, for the reduction of the diseases, which are connected to the low quality of the environment, is recommended the undertaking of the common and specific prevention measurements:

- Regular waste removal;
- Improvement of the hygiene in the municipality;
- Control and improvement of the water quality;
- Regular vaccination;
- Timely discovering of the sources of diseases;
- Application of suitable therapy;
- Undertaking sanitary-prophylactic and anti-epidemiologic measurements;
- Timely disinfection of the public facilities;

- Preparation of plan of activities for control of the health condition of the population;
- Realization of targeted epidemiological researches from the point of view of air pollution, water quality and food quality;
- Preparation of plan for hygiene improvement in the municipality;
- Establishing health-ecology information system.

3.0. MANAGEMENT WITH THE ENVIRONMENT

The need for permanent protection and improvement of the quality of the environment means proper and efficient management. The permanent institutional capacity is still inefficient for providing management with the environment.

In the directions of creating conditions for successful management, several laws and bylaws were brought. Intensive efforts are made for compliance of the existing legislation to the EU.

With the law for local government, the municipalities gained the authority over the protection of the environment and nature, as well as the need of introducing measurements for prevention and protection of the pollution of the water, land, nature, protection from the noise and non-ionization radiation. The municipalities have authority in the communal sphere, urban and rural planning, and other areas related to the environment.

The municipality doesn't have established monitoring system of the quality of the environment. There are some occasional measurements of different parameters, but they are not enough for complete evaluation of the condition. The decentralization and the new legislation give possibility to the local authorities to act efficient in the improvement of the quality of the environment.

The determined obligations from the Law for local government impose in the municipality the establishing of the system for quality management with the environment. At the same time, it means capacity building of the municipality related to the personnel who would prepare solutions of the daily and priority problems related to the environment. For this, the regular communication and cooperation between the citizens and the municipality is essential.

From these reasons, the municipality Gazi Baba, within its possibilities, and in cooperation with the Ministry of Environment and Spatial Planning, the City Skopje and the citizens of the municipality, will make all possible efforts to maintain and improve the level of the quality of the environment.

The modern approach in the creating the and implementation of the policy for protection of the environment and the planning of the sustainable development, isn't possible without quality, complete and updated information about the sources of the pollution, the conditions in the environment and

space, available technical-technological solutions and economy-finance relations in the phases of investment and realization of the production.

“The ecology” problems, according to their nature are complex, with high interaction activity on the atmosphere and biosphere and depending from the economy and social conditions in the municipality and the region. The chain of the ecology dependencies always starts from the irrational usage of the natural resources, through degradation of the environment, ends with lack of quality food and drinking water and disturbance of the common health and economy social status of the population.

3.1. Institutional frame

The Council of the municipality Gazi Baba is consisted of 27 councilors elected during the local elections in 2004.

The basic Act of the municipality is the Statute of the municipality Gazi Baba brought by the Council of the municipality.

The Statute determines the working bodies of the municipality, and some of them are responsible for the issues related to the environment.

3.2. National and municipal regulative

The protection of the environment is defined by the Constitution of Republic of Macedonia. It represents grounds for the whole regulative of this area and includes 120 law and bylaws.

The main frame is given by the Law for environment. At the moment, several key law are under audit, with main purpose to include new standards and suitable institutional frame for implementation.

The Statute of the municipality Gazi Baba determines the issues from the environment in articles 48, 60, 64, 65, 66, 81, 82, 83 and 93.

The Council of the municipality forms a commission for urbanism, communal activities, traffic and protection of the environment (article 48), which considers the issues for the urban planning, the work of the public services, the communal arrangement of the municipality, as well as issues from the area of protection of the environment and nature.

Articles 64, 65, 66 from chapter V of the Statute regulates the obligations of the organs of the municipality, the commissions of the Council of the municipality and the public enterprises and institutions established by the municipality. Also, they define the conditions under which the citizens are informed about the decisions, proposed and realized activities, which are of direct importance for the life and the work of the inhabitants in the municipality.

Articles 81, 82, 83 regulate the conditions under which can be organized public tribunes, questionnaires and collect proposals from the citizens.

According the Statute of the municipality, the citizens through the forms of the local community take care of the environment and nature (article 93).

Beside the Statute of the municipality, the regulations related to the protection and promotion of the environment are contained in the decisions, which contribute to the improvement of the quality of life in the municipality. Since 2002, functions separate unit for environment, which should become service to the citizens for solving the daily and priority issues related to the environment. This unit has realized several projects and actions, whose end goal was increasing of the quality of life in the municipality. these actions are:

- Action organized by the municipality, in cooperation with the Faculty of Forestry and PE “Parks and Greens” on the occasion of the “Day of Spring and Ecology” which lasted one week, and during which were:
 - The park-forest was cleaned from the mechanical waste;
 - Phyto-sanitary timber of the degraded vegetation was performed;
 - Within the park-forest was constructed pedestrian path;
 - A view-point was constructed for rest of the visitors;
 - High quality plants and bushes were planted.



Pictures 55 and 56: Actions upon the “Days of Spring and Ecology”

- The municipality in cooperation with “Makstill” organized ecology action called “Eco-spring” which was realized in three phases:
 - in April – cleaning of the land in the park-forest Gazi Baba, phyto-sanitary timber of degraded vegetation and planting decoration plants.
 - In May – construction of path and cleaning of the land form mechanical waste;
 - In June – educational talk with the children called “Eco-talks”.



Picture 57: Action "Eco-Spring"

- In May 2006, in the park-forest Gazi Baba camped the scouts from macedonia, Tyrkey, Bulgaria and Serbia and Monte Negro. Organizers of the camp were the municiplaity Gazi Baba and the Scout-Porech unit. Also, the action „Save Gazi Baba” was organized, with competition in waste collection. The scouts continued the cooperation with the municiplaity during the following eco-actions.
- Project: „Red balconies”, March-June 2006. Within the frames of the project, a tribune was organized about the ways of production of good plannting material, nourishment and care of the ornamental plants and the best decorated balcony was elected.
- Project „System of sustainable management of the environment” was realized in cooperation with the unit for protection of the environment of the municipality, the association for information, training and sustainable development (ORT)and external cooperatives from the local communities, and was funded by the Office of the Regional Center for protection of the environment for Central and east Europe (REC) and the Ministry of Foreign Affairs of Holland. The goal of this project is the active participation of the public in the evaluation of the conditions and bringing decisions by the local authorities about issues related to the environment.
- Open ecological mailbox in the municipality yard for compliments, complaints, and suggestions from the citizens of the municipality related to the environment.
- The unit for protection of the environment will prepare data base and list of priority ecologic problems which should be solved

3.3. Public conciseness

The access to the information from the environment and the exchange is regulated by the Law for environment and the Law for local government. Even

though, the participation of the public in bringing decisions about the environment is inefficient.

The public conciseness is from essential importance for the quality of the environment and behavior towards the environment. Unfortunately, the public raises constructive issues only through the NGO-s.

With main goal to contribute for the raising of the public conciseness about the responsibility towards the environment, the Council of the municipality brought the Decision, which enables the media to inform the population, to raise the issues from the area of environment

3.4. NGO-S (Non-Government Organizations)

There are several NGO-s in the municipality whose main activity are issues from the environment and protection of the environment. They are: "Association of citizens of Zelezara", "Ecology association green world", "Association for study and protection of birds in Macedonia", and many others.

There is developed NGO sector in the municipality, which can contribute for the achieving the activities related to the protection of the environment. The proper organization of such NGO-s is additional possibility for the citizens actively to participate with the management with the environment, what is very important. This can lead to raising the public awareness and responsibility among the citizens of the municipality.

One example of the determination of the local authorities to cooperate with the NGO-s is the preparation and adoption of the LEAP, when for the preparation participate some of them.

❖ Permanent Legislation:

- Constitution and Constitutional Law of republic of Macedonia
- Law for environment (Official Registry of RM 53/2005)
- Law fore territorial self-governance (Official Registry of RM 05/2002)
- Law for territorial organization of the local government in Republic of Macedonia (Official Registry of RM 55/2004)
- Law for associations of citizens and foundations (Official Registry of RM 31/1998)
- Law for free access to information from public character (Official Registry of RM 13/2006)
- Statute of the municipality Gazi Baba and other normative and legal acts at municipality level
- Law for construction of investment facilities (Official Registry of RM 15/90, 11/94, 18/99 and 45/02)

❖ Identification of the problems:

- The municipality doesn't have established monitoring over the quality of the environment. There are occasional measurements, but they are inefficient for complete evaluation of the conditions.

With the decentralization and the new legislation, the local authorities can monitor the condition and act effectively in improving the quality of the environment.

- The management with the environment faces with: no established system for that activity, inefficient personnel and institutional capacity of the local government, inefficient information and participation of the population in the bringing of the decisions for the environment; low public awareness about the importance of the health environment.

❖ **Key problems:**

- Inefficiency of the municipality capacities (personnel and institutional) for management with the quality of the environment
- Low level of public awareness for protecting the environment.

❖ **Recommendations:**

- Comply of the municipality regulative with the current legislation, conventions and directives;
- Capacity building of the municipality with expert personnel for protection of the environment;
- Education of the public about the right to information about the environment and participation of the public in bringing decisions;
- Training of the population about the positive habits towards the environment;
- Raising the awareness of the population about the importance of the health environment;
- Capacity building of the NGO sector.

4.0. PRIORITY KEY PROBLEMS IN MUNICIPALITY GAZI BABA ACCORDING THE ANALYZE AND EVALUATION OF THE WORK TEAM

Considering the detailed analyze of the condition with the environment in the municipality Gazi Baba prepared by the expert team – contractor of the LEAP, and considering the public opinion given through the conducted questionnaire, the following list of priority key problem in the municipality was prepared:

❖ **Urban development:**

- Appearance of unplanned constructions in some settlements – illegal construction

❖ **Air quality:**

- Pollution of the air from the industry facilities and traffic.

❖ **Water quality:**

- The quality of the drinking water in the rural part of the municipality
- Incomplete or none fecal sewerage in the rural areas, especially in the low part of the municipality.

- Appearances of floods because of non-functioning of the system for drainage.
- ❖ **Waste:**
 - Unorganized collection of the communal waste in the rural areas.
 - Presence of illegal dumpsites with different capacity
- ❖ **Land:**
 - Land appropriation for other purposes
- ❖ **Noise:**
 - *Presence of permanent noise at certain locations with intensity above the allowed level, determined by the law.*
- ❖ **Natural resources and rarities:**
 - Land degradation and destruction of the vegetation
- ❖ **Health of the population:**
 - Inefficient reliable indicators about the influence of the environment on the human health in the municipality
- ❖ **Management with the environment:**
 - Inefficient municipality capacity for management with the environment
 - Low level of public awareness about the environment

5.0. PARTICIPATION OF THE PUBLIC

5.1. Questionnaire about the ecology condition in the municipality

The public opinion is very important factor in the defining of the priority problems with the environment, and because of that, within the frames of the preparation of the LEAP for municipality Gazi Baba was conducted a questionnaire of the public opinion in the municipality. the goal of the questionnaire was before all, to find out, how the citizens of the municipality range the problems with the environment and at the same time to evaluate the interest of the public in the active participation in the protection of the environment.

The questionnaire lists 1 and 2 were prepared by Tehnolab, doo Skopje, in cooperation with the Local Managing Committee of the municipality. the questionnaire was conducted in June 2006.

The questionnaire 1 contains basic information about the person: gender, occupation, age education, and 7 questions related to the environment. Four questions are answered by circling the correct answer, and the other 3 with gradation of the given answers according the importance.

Questionnaire 2 contains 40 problems and the public should choose 10 problems, they think are priority ones.

There were 1000 questionnaires. 600 were collected and processed. From the questioned people, 64% live in the urban area, 36% in the rural, 305 (51% are female, and 295 (49%) male. Dominant were employed people (55%). According the age, most part of the questioned were from 26 to 40 years old, and according the educational structure, most part were with secondary education (54%).

5.1.1. Results from the analyze of the answers of certain questions from questionnaire 1

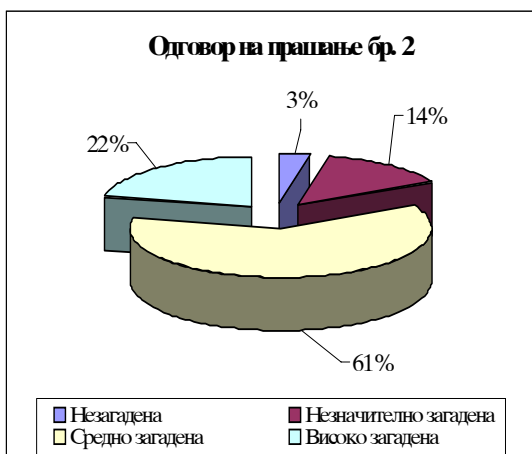
The graph shows the relation in percentages of the received answers according possible options.

On the question:

According the pollution of the environment, municipality is

1. Unpolluted
2. insignificant polluted
3. Medium polluted
4. Very polluted

61% from the questioned people think that the environment is medium polluted, but not insignificant is the percentage of people (22%) who answered it is very polluted– Graph 3.



On the question:

Reasons for the pollution are:

1. low level of ecology awareness
2. bad legislation
3. lack of application of the legislation
4. no engagement of the communal enterprise
5. no technical means (bins, baskets, containers)
6. bad economy

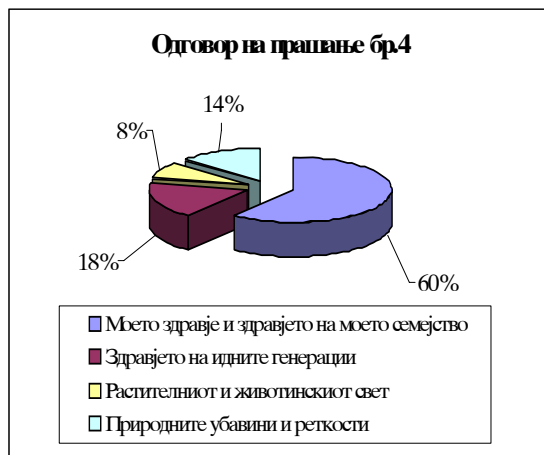


Most part of the questioned think that the low level of ecology awareness is the reason for the pollution followed by the bad economy condition. Least part of the questioned (9%) think that the bad legislation is possible reason for pollution of the environment – Graph 4.

On the question:

Ecology problems in the municipality reflect most on:

1. My and my family's health
2. health of the future generations
3. vegetation and animal world
4. natural beauties and rarities



60% from the questioned answered that the ecology problems reflect on their health and the health of their families– Graph 5.

On the question:

What bothers you the most on the ecology level in your settlement?

1. Waste
2. near distance of the industry (service) facility
3. Unarranged neighbourhood
4. pollution from pesticides
5. Nothign, I feel fine in the settlement
6. Other, what _____



Most of the questioned to this question, answered that they mind the most the waste and the close distance of the industry facilities– Graph 6.

On the question:

Most important ecology values for the municipality are:

1. Human Health
2. protection of the nature and natural rarities
3. repair of the ecology balance
4. slower utilization of the natural wealth
5. production of natural food with geographic origin
6. development of industry with clean technologies
7. measurements for prevention of the noise

The citizens (71%) agree upon this question. They think that the most important ecology value is the human health – Graph 7.



On the question

With which activity would you like to be engaged in the protection of the environment?

1. preparation of ecology projects
2. participation in ecology actions
3. participation in public tribunes, talks and radion and TV shows
4. writing texts for the daily media
5. preparation of advertizing material (posters, booklets, leaflets..)



From the answer we can see that the citizens are always ready to participate in solving problems from the environment and most of them would like to participate in ecology actions and preparation of ecology projects – Graph 8.

5.1.2. Analyze of the answers from certain questions from the questionnaire 2 (about the public opinion about the problems with the environment)

With the main purpose to determine the priorities for solving the problems with the environment in the municipality Gazi Baba, the second questionnaire was about the opinion of the citizens who feel most of the problems.

The questionnaire 2 consists of 40 questions, 5 thematic areas: air, water, waste, nature and soil and land utilization. The questionnaire 2 has introductory text, which explains the reasons for the questionnaire, the importance and short instructions. Also the citizens have the possibility to write some problems not given in the list.

Table 52 gives the list of the problems related to the environment and according the answers of the citizens in the municipality.

Table 52: List of problems related to the environment according the answers from the citizens of municipality Gazi Baba

N ^o	Number in the questionnaire	List of ecology problems according the citizens in municipality Gazi Baba	Points
1.	1	Low level of ecology awareness	517
2.	16	Presence of illegal dumpsites	420
3.	38	Low level of public awareness for the protection of the environment	386
4.	4	No sewerage system	368
5.	40	Inefficient information about the possibility the municipality Gazi Baba to be built as a municipality with "ecology" characteristics	337
6.	7	Air pollution from traffic	307
7.	22	No containers in the settlements	306
8.	2	Uncontrolled urban development	304
9.	6	Air pollution from the industry facilities	299
10.	14	Fecal waters spreading from the septic pits	299
11.	17	No dumpsite for construction waste	294
12.	31	No actions for afforestation (protection of the forest fund)	281
13.	15	Unorganized collection of the communal waste	277
14.	23	No system for recycling and reuse of the waste	234
15.	37	Inefficient capacity of the municipality for monitoring and management with the quality of the environment	233
16.	9	(No) quality of the drinking water	226
17.	30	Increased level of forest degradation	226

18.	13	No purging stations	219
19.	5	Illegal construction	208
20.	26	Soil pollution from chemicals	205
21.	18	Mixing the communal with the harmful waste	186
22.	10	(No) quality of the river waters	181
23.	12	Waste water treatment (communal and industry)	181
24.	20	No organized system for waste division	180
25.	3	Uncoomplete collector system	161
26.	28	Inefficiant utilizaiuton of the fertile land for eco-production	157
27.	21	No habots for redeucing the organic waste in domestic conditions	154
28.	36	Insignificant cultural-archeological locations	143
29.	39	Inefficient information about the danger from the improper applicaiton of agro-chemiocals	141
30.	29	No evidenc about the used fertilizers and proteciton maeans in the agriculture	136
31.	8	Polluted air from house heating	133
32.	32	No data about the col;leciton of medical plants, forest fruits	126
33.	19	Improper treatment of the cattle waste	119
34.	27	Land appropriation (II, III i IV class) for construction	117
35.	25	Improper tratment of the waste waters from the farms	113
36.	34	Unused advantages and possibilities for development of the tourism	110
37.	11	(No) quality of the irrigation water	77
38.	24	Low level of collecting the waste colleciton fee	74
39.	35	Unused geothermal springs for medical purposes amd heating	67
40.	33	No data about the bio-diversity in the municiplaity	59

Source: Questionnaire 2006

▪ **Conclusion from the conducted questionnaire**

With the conducted questionnaire, the citizens of municipality Gazi Baba took active participation in the identification and defining the priority problems in the municipality.

It is clear that the main problems, which the citizens are facing are: the low level of ecology awareness, uncontrolled urban development, lack of sewerage system, illegal construction, air pollution from industry facilities and house heating, low quality of the drinking water, fecal waters spreading over

from the septic pits, as well as the unorganized collection of the communal waste.

Independent from the gender, age, education, socio – economy conditions, and similar, the ecology problems are mainly ranged according their habitat.

6.0. ASSUMPTIONS ABOUT THE REALIZATION AND MONITORING OF THE IMPLEMENTATION OF THE LEAP FOR MUNICIPALITY GAZI BABA

Direct obligation of the local authority is to organize itself in direction of readiness to approach the concrete realization of the obligations determined by the LEAP, expressed through the Action Plan and the precise projects.

For the realization of the LEAP, it is essential to have the dedication of the citizens of the municipality, for improving the quality of the environment.

The local government, the authority and relevant institutions and individuals, have obligation through institutional and legal measurements to provide the necessary preconditions for the implementation of LEAP.

It would contribute if a Office for LEAP implementation is established. If that is not possible, and is a burden for the municipality, this responsibility can be transferred to the Unit for environment, or the municipality body (the commission) responsible for issues related to the problems included in the LEAP.

The conduction of the activity planned with the adoption of the LEAP for the municipality Gazi Baba, should be followed by continuous process of monitoring and evaluation. These activities are in function for permanent updating of the document, which should be regarded as open plan for action, which will be updated and innovated depending from the needs and the problems of the environment

7.0. PLAN FOR IMPLEMENTATION OF LEAP FOR THE MUNICIPALITY GAZI BABA

The plan for implementation of LEAP for the municipality Gazi Baba is prepared on the grounds of most priority problems in the municipality, determined according to the detailed monitoring of the expert team of TEHNOLAB, having in mind the analyzes from the questionnaire and the received answers by the citizens of municipality Gazi Baba.

The problems related to the environment, which are presented in the Plan are grouped in sectors.

7.1. Urban problems

PROBLEM: Inefficient controlled urban development

GOAL: Promotion of urban development, stopping the illegal construction

Tasks	Actions	Relevant institution	Period for realization	Foreseen budget (EUR)	Sources of funding
<ul style="list-style-type: none"> Completing of urban plan documentation (DUP, UP for the villages, UP outside of inhabited places) within the territory of the municipality Urban plan documentation should seriously contain the following problems: <ul style="list-style-type: none"> Construction of local roads; Determination of location and construction of recreational objects; Increasing the green areas, construction arrangement and protection. Forming own inspection service 	Bringing urban plans for all inhabited places	Municipality G.Baba in cooperation with expert institution	2007-2009	400.000	Budget of municipality G.Baba - donations - dotations - other sources
	Determination of priority DUP and UP, their involving in the programs for organization of the construction sites and spatial planning.				
	Bringing the plans.	Municipality G.Baba	Continuous		SS
	Establishing inspection unit at the level of the municipality	Minicipality G.Baba	Continuous		SS
<ul style="list-style-type: none"> Starting initiative to the City of Skopje for amendment and supplement of the GUP related to the purpose and usage of the locations. 	Evidenting the current condition in the municipality and preparation of summary	Municipality G.Baba in cooperation with city of Skoje	2006-2007	15.000	SS, SD and MZSPP
	Audit of GUP		2008	40.000	SS, SD and MZSPP

7.2. AIR

PROBLEM: Air pollution by stationed sources (industrial, business and crafts facilities)

GOAL: Protection of air from the emission of polluting elements from the stationed sources of pollution

Tasks	Actions	Relevant institution	Period for realization	Foreseen budget (EUR)	Sources of funding
<ul style="list-style-type: none"> Emission of polluting elements to maintain in allowed levels. 	<p>Preparation of Cadastre and map of air polluters with zone marking and agglomeration of the pollution of the air.</p> <p>Implementation of the Law regulative "the pollutor pays".</p>	MZSPP/Municipality G.Baba	2006-2007	25.000	Budget of RM, SD
<ul style="list-style-type: none"> Introducing control of emissions of polluting elements in the air by internal monitoring and procedures according the Law for environment (B-permits for integrated prevention and control of the pollution - ISKZ) 	<p>Personnel training for issuing opinions and evaluations for B-permits.</p> <p>Issuing of opinions, evaluations of B-permits for industrial facilities, with draft-measurements for reducing and limitation of the polluting elements in the air.</p>	<p>MZSPP/municipality G.Baba</p> <p>City Skopje / Municipality G.Baba</p>	<p>2006-2007</p> <p>2007-continuous</p>	<p>3.000</p> <p>4.000</p>	<p>Budget of RM, SD</p> <p>SS, SD</p>
<ul style="list-style-type: none"> Rising the public awareness for protection of the air from pollution. 	<p>Organizing campaign for rising the public awareness</p> <p>Printing educational materials.</p> <p>Strengthening the capacities of the municipality</p>	<p>Municipality G.Baba in cooperation with NGO</p> <p>Municipality G.Baba</p> <p>Municipality G.Baba</p>	2007-2008	<p>3.000</p> <p>1.500</p> <p>1.500</p>	<p>SS, SD</p>

PROBLEM: Air pollution by traffic (mobile sources for pollution)

GOAL: Protection of air from the traffic pollution in the municipality (reducing the polluting elements from the mobile sources)

Tasks	Actions	Relevant institution	Period for realization	Foreseen budget (EUR)	Sources of funding
<ul style="list-style-type: none"> Introducing a system for managing with the air pollution from mobile sources vehicles (monitoring the emission with the polluting elements in the air), for undertaking technological and administrative measurements from short term, medium term and long term character 	Preparation of program and plan for protection and improvement of the quality of the air.	Municipality G.Baba in cooperation with expert institution	2007-2008	5.000	SS, SD
	Preparation of inventory of polluting elements in the air from the traffic (mobile sources) for the most frequent roads in the municipality		2007-2008	10.000	
	Continuous data conversion about emission of polluting elements in the air in the municipality		2008-Continuous	6.000 annual	

PROBLEM: Air pollution stationed (industrial, business and crafts facilities) and by mobile sources

GOAL: Protection of air from the emission with polluting elements from stationed and mobile sources of pollution

Tasks	Actions	Relevant institution	Period for realization	Foreseen budget (EUR)	Sources of funding
<ul style="list-style-type: none"> Introducing local network for monitoring the quality of ambience air at the level of the municipality Introducing a procedure for informing the public about the conditions with the pollution and the quality of the ambience air in the municipality 	Expanding the monitoring network to emissions with placing new monitoring stations for monitoring the ambience air in the municipality.	Municipality G.Baba in cooperation with MZSPP	2007-2008	150.000	SD

7.3. WATER

PROBLEM: Inexistence of part of the primary sewerage network and complete secondary network for Stajkovci, Singelich and Indzikovo

GOAL: Sewerage and purging of the wastewaters in the municipality

Tasks	Actions	Relevant institution	Period for realization	Foreseen budget (EUR)	Sources of funding
<ul style="list-style-type: none"> Construction of purging station and collector system for the part from village Indzikovo to the river Vardar 	Preparation of technical documentation Construction of purging station Construction of collector system	City of Skopje and PE "Water supply and sewerage"	2006-2007	3.000.000	City of Skopje and municipality, SD, PE „Water supply and sewerage” and local contribution
<ul style="list-style-type: none"> Construction of regional separation sewerage system in the rural part of the municipality 	Preparation of technical documentation Reconstruction and finalization of the sewerage system	Municipality G.Baba City of Skopje and PE "Water supply and sewerage"	2006-2009	250.000	SD, SS City Skopje and the municipality
<ul style="list-style-type: none"> Construction of systems and treatment of waste waters in the industry capacities 	Research of the quality of the waste waters in the industry capacities Construction of plants for waste water treatment in the industry capacities.	Municipality G.Baba in cooperation with experts institution Business subjects in cooperation with authorised experts institutions	Continuous 2007-2012	3.000 According the technical documentation	Business subjects
<ul style="list-style-type: none"> Construction waterproof septic pits. 	Informing and training of the population about the needs and necessities for construction of the waterproof septic pits.	Municipality G.Baba	continuous	20.000	SS
<ul style="list-style-type: none"> Capacity building of the municipality for implementation of the regulative 	Realization of the training for the employees in the municipality Employment of authorised inspectors.	State organs Municipality G.Baba	2006-2008	10.000	Budget of RM SS

PROBLEM: Low quality of drinking water

GOAL: Providing quality drinking water

Tasks	Actions	Relevant institution	Period for realization	Foreseen budget (EUR)	Sources of funding
<ul style="list-style-type: none"> Finalization of the water supply system in Goce Delcev, Jurumleri, Idrizovo, Bulachani Reconstruction or finalization of water supply systems 	Preparation of technical documentation	Municipality G.Baba	2006-2007	50.000	SD, local contribution, SS S.D. and grants from relevant ministries, local contribution
	Reconstruction of the system Bulachani, Rashtak and Strachinci	Municipality G.Baba	2006-2011	750.000	
	Research of the quality of the drinking water from health aspect	PHO Health Protection Office of Skopje , PE Water supply and sewerage	Continuous	5.000 annual	SS
	Regular inspection monitoring	Municipality G.Baba	Continuous	5.000 annual	SS

PROBLEM: Pollution and reduced flow of the sewerage canals (covered with waste and vegetation)

GOAL: Flow canals and irrigation water from the sewerage canals, protection from floods

Tasks	Actions	Relevant institution	Period for realization	Foreseen budget (EUR)	Sources of funding
<ul style="list-style-type: none"> Providing flow in the sewerage canals 	Cleaning and reconstruction of the existing canals.				
	Construction of new canals.				

7.4. WASTE

PROBLEM: Many illegal dumpsites in the municipality

GOAL: Reducing the number of illegal dumpsites

Tasks	Actions	Relevant institution	Period for realization	Foreseen budget (EUR)	Sources of funding
<ul style="list-style-type: none"> Preparation of plan for closing the illegal dumpsites 	Analyze of the terrain Risk evaluation Evaluation of the funds necessary for closure Ranging the illegal dumpsites according priorities.	Municipality G.Baba (consultant assistance is needed)	2006-2007	3.000	SS
<ul style="list-style-type: none"> Closure of the illegal dumpsites and remediation of the locations. 	Preparation of the technical documentation for closure of the illegal dumpsites and revitalization of the locations. Realization of the works according the technical documentation	Municipality G.Baba Company engaged for realization	2007-2009 2007-2009	15.000 50.000	SS and SD Private operators contribution
<ul style="list-style-type: none"> Establishing monitoring and inspection 	Preparation of plan for regular and periodical monitoring Providing of technical means (equipment and vehicle) for the monitoring Regular inspection - authorised inspector	Municipality G.Baba	2007-continuous	6.000	SS, SD

PROBLEM: Organized waste collection in the rural areas

GOAL: Managing with the communal and other harmless waste

Tasks	Actions	Relevant institution	Period for realization	Foreseen budget (EUR)	Sources of funding
<ul style="list-style-type: none"> Bringing a plan for waste managing in the municipality 	<p>Detail evaluation of the quantities of communal waste according settlements</p> <p>Analyze of the content of the waste</p> <p>Evaluation of the necessary technical means for waste collection in the rural areas of the municipality</p> <p>Evaluation of the necessary funds</p> <p>Bringing an Act for regulating the selection, collection and transport of the communal and other types of harmless waste</p>	Municipality G.Baba (a consultant assistance is needed)	2006-2007	10.000	SS, SD
<ul style="list-style-type: none"> Forming of communal enterprise (public or private) for waste collection in the rural areas of the municipality 	<p>Evaluation of the ways of allocating the task (tender of concession)</p> <p>Evaluation of the proposed technical solutions and the financial offer</p> <p>Selection of the most favorable bidder and monitoring over the works.</p>	<p>Municipality G.Baba</p> <p>Enterprise engaged for realization of the activities</p>	2006-2007	3.000	SS

PROBLEM: Inexistence of legal dumpsite for internal waste (construction waste)

GOAL: Construction of dumpsite for internal waste at the territory of the municipality

Tasks	Actions	Relevant institution	Period for realization	Foreseen budget (EUR)	Sources of funding
<ul style="list-style-type: none"> Providing (construction) of legal dumpsite for internal waste 	Selection of location Defining the technical, ecology and social criteria Selection of technical documentation Preparation of study for EIA	Municipality G.Baba (a consultant assistance is needed)	2007-2008	15.000	SS and SD
<ul style="list-style-type: none"> Appointing a operator of the dumpsite for internal waste 	Defining the work conditions Evaluation of the ways of allocating the task (tender of concession) Evaluation of the proposed technical solutions and the financial offer Selection of the most favorable bidder Establishing of monitoring and control	Municipality G.Baba	2008-2009	1.000	SS

PROBLEM: Inexistence of organized system for separation, recycling and re-usage of the waste

GOAL: Establishing of system for separation, recycling and re-usage

Tasks	Actions	Relevant institution	Period for realization	Foreseen budget (EUR)	Sources of funding
<ul style="list-style-type: none"> Defining the quantities of recycled materials and their manufacturers at municipality level 	<p>Evaluation of generated recycled materials and trend for generating and re-usage of certain types</p> <p>Preparation of list of manufacturers of recycled materials in the municipality</p>	Municipality G.Baba (a consultant assistance is needed)	2007-2008	1.500	SS
<ul style="list-style-type: none"> Realization of the public campaign about the need of separating and recycling the waste 	<p>Education of the population about the necessity of recycling (workshops, public campaigns)</p> <p>Preparation of booklet about recycled materials and their value as secondary raw materials.</p>	Municipality G.Baba (a consultant assistance is needed)	2007-2008	2.000	SS and SD
<ul style="list-style-type: none"> Promotion of a pilot project for separation, recycling and re-usage of certain type of recycled material. 	<p>Selection of recycled material with "easy" technical solutions for separate collection and treatment.</p> <p>Defining the project task</p> <p>Realization of the project (in cooperation with the plants for recycled materials and/or end users)</p>	Municipality G.Baba (a consultant assistance is needed)	2007-2008	10.000	SD

PROBLEM: Inexistence of separation of dangerous waste

GOAL: Separating the dangerous communal waste

Tasks	Actions	Relevant institution	Period for realization	Foreseen budget (EUR)	Sources of funding
<ul style="list-style-type: none"> Preparation of a program for separation of the communal waste from the dangerous one (with emphasise on the medical and industrial dangerous waste) 	<p>Detailed evaluation of the quantities of dangerous waste in the municipality</p> <p>Evaluation of the needed technical means for collecting the dangerous waste in the municipality in cooperation with the MZSPP</p> <p>Initiative for merging the single generators of dangerous waste in the municipality for managing the problem with the dangerous waste</p>	MZSPP	2008-2009	3.000	SS and SD
<ul style="list-style-type: none"> Increasing the public awareness about the danger from the blending the dangerous with the communal waste 	Preparation of work plan for education/ rising the public awareness of different target groups (realization of different campaigns, educational forms)	Municipality G.Baba (a consultant assistance is needed)	2008	2.500	SS and SD

PROBLEM: collecting organic waste in the agriculture

GOAL: Production of organic fertilizers according appropriate technology

Tasks	Actions	Relevant institution	Period for realization	Foreseen budget (EUR)	Sources of funding
<ul style="list-style-type: none"> Defining the problems with the organic waste and construction of plant for production of organic fertilizers for their manufacturing 	<p>Preparation of a project for fertilizer plant</p> <p>Construction of the plant</p> <p>Education of farmers about the collecting the organic waste and applicaiton of the waste for organic production</p>	Municipality G.Baba	2008-2011	20.000	MZSV, SS, SD

PROBLEM: Inexistence of private operators in the communal activity

GOAL: Establishing competition in the communal activity

Tasks	Actions	Relevant institution	Period for realization	Foreseen budget (EUR)	Sources of funding
<ul style="list-style-type: none"> Analyze of the conditions with the managing of the communal and other types of harmless waste and the necessity of private operators in the communal activity 	<p>Defining the crucial points in the service for collecting and transport of communal waste</p> <p>Detailed analyze of the advantages and disadvantages from establishing new competitive operator (private or public enterprise)</p>	Municipality G.Baba (a consultant assistance is needed)	2007	3.000	SS
<ul style="list-style-type: none"> Pilot project for establishing competitive operator in a settlement which hasn't been included in the service for collection and transport of communal waste 	<p>Selection of pilot region for new competitive operator</p> <p>Evaluation of the ways for allocating the task.</p> <p>Evaluation of the proposed technical solutions and financial offer</p> <p>Monitoring over the work</p>	Municipality G.Baba (a consultant assistance is needed)	2008	3.000	SS

PROBLEM: Inexistence of capacities for monitoring the waste in the municipality

GOAL: Establishing monitoring of the waste in the municipality

Tasks	Actions	Relevant institution	Period for realization	Foreseen budget (EUR)	Sources of funding
<ul style="list-style-type: none"> Capacity building of the municipality for waste monitoring 	<p>Appointing responsible personnel in the municipality for monitoring the waste (increasing the number of employees)</p> <p>Realization of regular trainings for the employees in the municipality and the authority in the enterprises who should send reports, according the Law for waste management</p> <p>Providing technical means for realization of the monitoring (vehicle, computer processing and monitoring)</p>	Municipality G.Baba (a consultant assistance is needed)	2007-2008	10.000	SS and SD
<ul style="list-style-type: none"> Preparation of annual review of the condition with the waste in the municipality 	<p>Implementation of the plan for regular and occasional monitoring</p> <p>Analyze of the weaknesses of the plan and the difficulties in the realization</p> <p>Improvement of the plan for regular and occasional waste monitoring</p>	Municipality G.Baba (a consultant assistance is needed)	2007-2008	2.000	SS

7.5. SOIL AND LAND UTILIZATION

PROBLEM: Irrigation of agricultural crops with unknown water quality

GOAL: Protection of the soil and the crops from pollution with harmful elements

Tasks	Actions	Relevant institution	Period for realization	Foreseen budget (EUR)	Sources of funding
<ul style="list-style-type: none"> Control of the water quality from the river Vardar used for irrigation Control of the soil and the agricultural crops 	Preparation of program/project for water control, soil and agricultural crops (content of heavy metals and other harmful elements)	Municipality G.Baba	2008-2010	10.000	MZSPP, SD,SS

PROBLEM: Inexistence of information of the farmers about the damages from irregular application of the agro-mechanization

GOAL: Sustainable agriculture

Tasks	Actions	Relevant institution	Period for realization	Foreseen budget (EUR)	Sources of funding
<ul style="list-style-type: none"> Production of healthy safe food 	<p>Preparation of program for education of the individual farmers and the agricultural associations about the possibilities for production of healthy food</p> <p>Preparation of booklet about the application of the agro-chemicals.</p>	Municipality G.Baba	2008-2010	8.000	SD
<ul style="list-style-type: none"> Preparation of detailed evidence about the application of the agro-chemicals in the production mineral fertilizers, pesticides and other) 	<p>Appointing a person in the municipality responsible for monitoring the agricultural issues and coordination with the relevant ministries.</p> <p>Questionnaire of all farmers in the municipality about the utilization of the agro-chemicals.</p>	Municipality G.Baba	2008-2010	3.000	MZSV, SS, SD

PROBLEM: Appropriation of agricultural land from I, II, III, IV, class of land into construction land

GOAL: Protection of the agricultural land favorable for quality food

Tasks	Actions	Relevant institution	Period for realization	Foreseen budget (EUR)	Sources of funding
<ul style="list-style-type: none"> Sustainable managing with the agricultural land according the Law for agricultural land 	Cadastre defining of the land class (in cooperation with the relevant organs of the City of Skoje and the relevant ministries)	Municipality G.Baba	2006-2008	10.000	SS
<ul style="list-style-type: none"> Promotion of the organic production 	Organizing educational workshops for the farmers about the need for organic production	Municipality G.Baba	2008-2010	8.000	MZSPP, MZSV, SD

7.6. NOISE

PROBLEM: Exposure to continuous influence to noise with intensity over MDK

GOAL: Reducing the noise in the urban area

Tasks	Actions	Relevant institution	Period for realization	Foreseen budget (EUR)	Sources of funding
<ul style="list-style-type: none"> Monitoring of the noise level 	Preparation of a plan for measurement network for noise	Municipality G.Baba	2006-2007	5.000	Municipality G. Baba
	Placing a monitoring stations network for following the intensity of the noise		2006-2007		SS
	Preparation of a study about the influence of the communal noise on the health of the citizens in the municipality		2007-2008	10.000	SS, SD

7.7. NATURAL VALUES AND RARITIES

PROBLEM: Increased level of degradation of forests in Gazi Baba

GOAL: Sustainable management with the forests in Gazi Baba

Tasks	Actions	Relevant institution	Period for realization	Foreseen budget (EUR)	Sources of funding
<ul style="list-style-type: none"> Improvement of the condition with the forest fund in the municipality 	<p>Preparation of project for analyze and evaluation of the condition with the forest degradation and estimation until 2015.</p> <p>Education of the population about the importance of the forests and the need for their protection.</p> <p>Defining locations for afforestation.</p> <p>Organising afforestation activities on erodive areas with native types</p>	Municipality G.Baba in cooperation with experts	<p>2007-2008</p> <p>2007</p> <p>2006-2007</p> <p>Continuous</p>	<p>5.000-10.000</p> <p>2.000</p> <p>1.000</p> <p>2.000 Anual</p>	SS and SD
<ul style="list-style-type: none"> Sustainable management with the forest resources 	<p>Undertaking measurements for prevention of the illegal timbering.</p> <p>Public campaign for rising the awareness of the population for protection of the forests from fires.</p> <p>Preparation of study for estimation of the influence over the forests from the construction of roads, weekend houses and other facilities</p>	<p>MZSV and PE "Macedonian Forests"</p> <p>Municipality G.Baba and NGO-s</p> <p>Facility investors</p>	Continuous	2.000 Annual	SS and SD Funds of the investors
<ul style="list-style-type: none"> Establishing of appropriate monitoring system and penalty system 	<p>Appointing a person in the municipality (forest inspection)</p> <p>Preparation of a plan for regular and occational monitoring</p> <p>Implementation of measurements according the legislation</p>	Municipality G.Baba	<p>2007</p> <p>2007-2008</p> <p>2007-continuous</p>	5.000	SS

PROBLEM: Un-integrity of the aspects of nature and bio-diversity in the other sectors

GOAL: Establishing integral system for protection of nature and the bio-diversity

Tasks	Actions	Relevant institution	Period for realization	Foreseen budget (EUR)	Sources of funding
<ul style="list-style-type: none"> Integrating of the aspects of nature and bio-diversity in the process of plans and programs preparation in the municipality 	<p>Introducing aspects of the nature and bio-diversity during preparation of urban and other development documents</p> <p>Identification of potential areas and preparation of plans for managing with the protected areas</p> <p>Valorization and re-valorization of the protected areas</p> <p>Capacity building (personnel) in the municipality for preparation and bringing plan documents</p>	Municipality G.Baba in cooperation with experts and MZSPP	Continuous	20.000	SS and SD
<ul style="list-style-type: none"> Integrating of aspects of nature and bio-diversity during the preparation of EIA studies and in the process of issuing IPPC permits 	<p>Implementation of the legislation.</p> <p>Determining measurements for protection of endangered species or habitats.</p>	MZSPP / Municipality G.Baba	Continuous		SS

PROBLEM: Inefficiency of data about the conditions with the bio-diversity in the municipality

GOAL: Establishing data base about the conditions with the bio-diversity

Tasks	Actions	Relevant institution	Period for realization	Foreseen budget (EUR)	Sources of funding
<ul style="list-style-type: none"> Preparation of monitoring system about nature and bio-diversity Establishing data base about the condition with the nature and the bio-diversity 	<p>Determining of parameters and indicators for monitoring of the condition of the nature and the bio-diversity</p> <p>Forming data base.</p> <p>Preparation of a study about the conditions with the nature and the bio-diversity in the municipality</p> <p>Establishing control over the collection of medical plants and animals.</p> <p>Control over the expansion of allochthonous types</p>	Municipality G.Baba, MZSPP in cooperation with experts	2008 - 2010	<p>1.000 annual</p> <p>10.000</p>	SS and SD

7.8 RISING OF THE PUBLIC AWARENESS

PROBLEM: Low level of the public awareness about the protection of the environment

GOAL: Rising the public awareness

Tasks	Actions	Relevant institution	Period for realization	Foreseen budget (EUR)	Sources of funding
<ul style="list-style-type: none"> Rising the public awareness for promotion of the environment 	<p>Organizing camps and educational workshops.</p> <p>Promotion of education and advertising material.</p> <p>Organizing public tribunes about the problems in the environment.</p> <p>Promotion of NGO sector for environment.</p> <p>Support to the NGO – sector for environment (facility, funds, equipment)</p>	Municipality G.Baba and NGO-s	2007-2008	25.000 Annual	SS and SD

8.0. MONITORING AND EVALUATION PLAN

To provide efficient and timely implementation of the measurements and the actions from the LEAP, it is necessary to make monitoring and evaluation of the process of implementation, and the level of the implementation, that is the level of achieved results. For that purpose, the municipality should form a body for implementation and monitoring, as a mechanism through which the implementation of the measurements and the actions would be monitored and evaluated, and to prepare reports about the process flow. The report should be available to all interested parties, especially for the public.

The process of implementation of the document means: providing, collecting and submitting relevant data; managing with the data and the reports; evaluation of the improvement by monitoring of the indicators for success, and frequency of the measurements, preparation and submitting of reports to the relevant institutions (MZSPP) and other.

8.1. Urban development

GOAL: STOPPING THE ILLEGAL CONSTRUCTION

Measurements	Actions	Outputs	Success indicators	Frequency of monitoring the indicators
<ul style="list-style-type: none"> Preparation of plan documentation (DUP, UP for the vaillages, UP outside of inhabited place) accros the municipality. <p>Forming own inspection service</p>	<p>Determinig of priority DUP and UP, their implementation in the programs for arranging of the construction sites and spatial planning.</p> <p>Bringing the plans.</p> <p>Establishing regular control and implementation of measurements for proper implementation of the plans.</p>	<p>Management with the construction sites according the plan documentation.</p>	<p>Number of brought plans.</p> <p>Foremed inspection and number of inspectors.</p> <p>Number of implemented controls and measurements.</p>	<p>Four times a year/quartille</p> <p>/</p> <p>Once a month</p>
<ul style="list-style-type: none"> Starting initiative to the City Skoje for amendments and supplements of the GUP related to the purpose and usage of the facilities. 	<p>Evidencing the current condition of the municipality</p> <p>Preparation of a study.</p> <p>Audit of the GUP</p>	<p>Proper usage of the locations.</p>	<p>Amended GUP</p>	<p>Once during the amending and supplementing of the GUP</p>

8.2.Air

GOAL: PROTECTION OF THE AIR FROM EMISSION OF POLLUTING ELEMENTS FROM STATIONED SOURCES OF POLLUTION

Measurements	Actions	Outputs	Success indicators	Frequency of monitoring the indicators
<ul style="list-style-type: none"> Introducing control of the emissions of polluting elements in the air through internal monitoring and procedures according the Law for environment (B-permits) 	Training of personnel for preparation of opinions and evaluations for B-permits.	Trained personnel for realizaiton of the ISKZ	Number of issued B- permits	Once a month
	Issuing B-permits. Preparation of inventory of polluting elements in the air from stationed sourced in the municipality and permanent updating.	Established system for monitoring and control of the emission of the polluting elements in the air. Prepared inventory of polluting elements in the air.	Number of stationed sourced included in the inventory	Once a month

GOAL: PROTECTION OF AIR FROM TRAFFIC IN THE MUNICIPALITY (REDUCING THE EMISSION WITH POLLUTING ELEMENTS FROM MOBILE SOURCES)

Measurements	Actions	Outputs	Success indicators	Frequency of monitoring the indicators
<ul style="list-style-type: none"> Introducing a system for managing the air pollution from motor vehicles (monitoring the emission of polluting elements in the air)for undertaking technical and technological administrative measurements from short term, medium term and long term character. 	Preparation of program and plan for protection and improvement of the quality of the air	Established system for monitoring of the polluting elements in the air.	Prepared program and plan for protection and improvment of the quality of the air	Twice a year
	Preparation of inventory of polluting elements in the ait from traffic. Permanent evidence of the data for emission of polluting elements in the air within the municipality.		Prepared inventory of polluting elements in the air from mobile sources.	Once a month
<ul style="list-style-type: none"> Introducing local network for monitoring of the quality of the air at municipality level 	Expanding the monitoring network for emissions with placing new monitoring station for recording the quality of the air in the municipality	Established system for monitoring the quality of the air at municipality level.	The monitoring station was placed on the location in the municipality	Once a year

GOAL: PROTECTION OF AIR FROM EMISSION OF POLLUTING ELEMENTS FROM STATIONED AND MOBILE SOURCES OF POLLUTION

Measurements	Actions	Outputs	Success indicators	Frequency of monitoring the indicators
<ul style="list-style-type: none"> Introducing local network for monitoring of the quality of the air at municipality level Introduction of a procedure for informing the public about the conditions with the pollution and the quality of the air in the municipality 	Expanding the monitoring network for emissions with placing new monitoring station for recording the quality of the air in the municipality	Established system for monitoring of the polluting elements in the air.	Prepared program and plan for protection and improvement of the quality of the air	Twice a year

8.3. Water

GOAL: SEWERAGE AND PURGING OF WASTE WATERS IN THE MUNICIPALITY (PRIORITY PURGING STATION AND COLLECTION SYSTEM IN THE AREA OF INDZIKOVO TO RIVER VARDAR)

Measurements	Actions	Outputs	Success indicators	Frequency of monitoring the indicators
<ul style="list-style-type: none"> Construction of purging station and finalization of the collector system Indzikovo to the river Vardar 	<p>Preparation of technical documentation</p> <p>Construction of purging station</p> <p>Finalization of the collector system</p>	Purged waste waters in the municipality	<p>Prepared technical documentation</p> <p>Constructed collector system</p> <p>Constructed purging station</p>	<p>During the preparation of the technical documentation</p> <p>During the construction of the system</p> <p>During the construction of the purging station</p>
<ul style="list-style-type: none"> Construction of regional separation sewerage system in the rural part of the municipality 	<p>Preparation of technical documentation</p> <p>Reconstruction and finalization of the sewerage system</p>	Complete system for collecting and sewerage of the rural waters in the municipality	<p>Prepared technical documentation</p> <p>Constructed sewerage system at municipality level</p>	<p>During the preparation of the technical documentation</p> <p>During the construction of the system</p>
<ul style="list-style-type: none"> Construction of systems and treatment of waste waters from the industrial capacities 	<p>Construction of stations for treatment of the waste waters from the industrial capacities</p> <p>Research of the quality of the industry waste waters.</p>	<p>Established treatment of the industry waste waters.</p> <p>Monitoring the quality of the industry waste waters.</p>	<p>Number of constructed systems for waste water treatment in the industry facilities</p> <p>Number of samples of industry waters Waste water for analyze</p>	<p>Once a month</p> <p>Once a month</p>
<ul style="list-style-type: none"> Construction of waterproof septic pits 	Informing and training of the population about the need of waterproof septic pits	Constructed waterproof septic pits	Number of constructed waterproof septic pits	Four times a year
<ul style="list-style-type: none"> Capacity building of the municipality for implementation of the regulative 	<p>Organizing training for the employees in the municipality</p> <p>Employment of authorised inspectors</p>	Trained authorised inspectors in the municipality	Number of employed inspectors	Twice a year

GOAL: PROVIDING QUALITY DRINKING WATER

Measurements	Actions	Outputs	Success indicators	Frequency of monitoring the indicators
<ul style="list-style-type: none"> Construction of water supply systems in Goce Delchev, Jurumleri, Idrizovo, Bulachani Reconstruction or finalizaion of the water supply systems 	Preparation of technical documentation	Provided good drinking water in Goce Delchev, Jurumleri, Idrizovo, Bulachani	Prepared technical documentation	During the preparation of the technical documentation
	Reconstruction of the system Bulachani, Rashtak and Strachinci		Reconstructed or finalized water supply systems	During the construction of the system
	Research of the drinking water from health point of view		Number of water samples for analyze	Once a month
	Regular inspection monitoring		Number of inspection insights	Once a month

GOAL: SPILWAY CANALS AND IRRIGATION WATER FROM THE SEWERAGE CANALS, PROTECTION FROM FLOODS

Measurements	Actions	Outputs	Success indicators	Frequency of monitoring the indicators
<ul style="list-style-type: none"> Cleaning of the canals for sewerage and providing good flow 	Preparation of program/project for cleaning	Provided clean canals for irrigation	Cleaned and reconstructed canals	Continuous
	Cleaning and reconstrucion of the existing canals	Protection from floods	Number of constructed new canals	Continuous
	Construction of new canals			

8.4. Waste

GOAL: REDUCING THE NUMBER OF ILLEGAL DUMPSITES

Measurements	Actions	Outputs	Success indicators	Frequency of monitoring the indicators
<ul style="list-style-type: none"> Preparation of plan for closing the illegal dumpsites 	<p>Analyze of the terrain</p> <p>Risk evaluation</p> <p>Funds evaluation necessary for the closure</p> <p>Ranging of the illegal dumpsites according priority</p>	<p>Established part of the system for waste managing at municipality level</p>	<p>Provided funds</p> <p>Prepared plan for closure of the illegal dumpsites</p>	<p>During the provision of the funds</p> <p>During the preparation of the plan</p>
<ul style="list-style-type: none"> Closure of the illegal dumpsites and remediation of the locations 	<p>Preparation of the technical documentation and closure of the illegal dumpsites and revitalization of the locations</p> <p>Realization of the works according the technical documentation</p>	<p>Reduced number of illegal dumpsites at municipality level</p>	<p>Prepared technical documentation</p> <p>Number of illegal dumpsites</p> <p>Number of remediations</p>	<p>During the preparation of the technical documentation</p> <p>Once a month</p> <p>Once a month</p>
<ul style="list-style-type: none"> Establishing of monitoring and inspection 	<p>Preparation of a plan for regular and occasional monitoring</p> <p>Providing technical documentation (equipment and vehicle) for the monitoring</p> <p>Regular inspection – authorised inspector</p>	<p>Established monitoring and inspection</p>	<p>Prepared plan</p> <p>Provided technical means for the work of the inspectors</p> <p>Number of insights</p>	<p>During the preparation of the plan</p> <p>During the provision of the funds</p> <p>Twice a month</p>

GOAL: MANAGING WITH THE COMMUNAL AND OTHER HARMLESS WASTE

Measurements	Actions	Outputs	Success indicators	Frequency of monitoring the indicators
<ul style="list-style-type: none"> Bringing plan for for waste management in the municipality 	<p>Detailed evaluation of the quantities of the communal waste per settlement</p> <p>Analyze of the content of the waste</p> <p>Evaluation of the needed technical means for waste collection in the rural parts of the municipality</p> <p>Evaluation of the funds</p> <p>Bringing an Act for regulating the selection and transport of the communal and the other types of harmless waste</p>	<p>Prepared grounds for waste management in the municipality</p> <p>Established system for waste management in the municipality</p>	<p>Prepared plan for dealing with the communal waste</p> <p>Number of analyzes</p> <p>Number of received data</p> <p>Prepared Act</p>	<p>During the preparation of the plan</p> <p>Once a year</p> <p>Four times a year</p> <p>Twice during the preparation of the Act</p>
<ul style="list-style-type: none"> Forming a communal enterprise (public or private) for collecting waste in the rural parts of the municipality 	<p>Evaluation of the ways of allocating the task (tender or concession)</p> <p>Evaluaiton of the proposed technical solutions and financial offer</p> <p>Selection of most favorable bidder</p> <p>Supervision over the work</p>	<p>Established system for waste management in the rural parts of the municipality</p>	<p>Number of bidders and proposed technical solutions</p> <p>Appointed communal enterprise for waste collection in the rural paart of the municipality</p> <p>Number of insights</p>	<p>Once during the selection</p> <p>Once during the selection</p> <p>Once a month</p>

GOAL: CONSTRUCTION OF DUMPSITE FOR INTERNAL WASTE AT THE TERRITORY OF THE MUNICIPALITY

Measurements	Actions	Outputs	Success indicators	Frequency of monitoring the indicators
<ul style="list-style-type: none"> Construction of legal dumpsite for internal waste 	Selection of the location Defining the technical, ecology and social criteria Preparation of the technical documentation Preparation for study for EIA	Selected location Prepared technical documentation	Number of determined criteria Prepared EIA study	Once during the criteria determination Twice during the study preparation
<ul style="list-style-type: none"> Appointing an operator with the dumpsite for internal waste 	Defining the work conditions Evaluation of the ways for allocation of the task (tender or concession) Evaluation of the proposed technical solutions and financial offer Selection of the most favorable bidder Establishing of monitoring and control	Established system for waste management	Number of defined conditions and technical solutions Appointed operator with the waste dumpsite	Once during the defining of the conditions and the technical solutions Once a month

GOAL: ESTABLISHED SYSTEM FOR SEPARATION, RECYCLING AND REUSAGE

Measurements	Actions	Outputs	Success indicators	Frequency of monitoring the indicators
<ul style="list-style-type: none"> Defining the quantities of recycled materials and their processor at municipality level 	<p>Evaluation of the generated recycled materials and trend of generating and the re-usage of certain types</p> <p>Preparation of a list of processors of recycled materials at municipality level</p>	Reducing the quantities of waste	<p>Number of processors at municipality level</p> <p>Determined quantity of separated waste of recycled materials</p>	<p>Twice a year</p> <p>Twice a year</p>
<ul style="list-style-type: none"> Realizaiton of the public campaign for the need of separation and recycling waste 	<p>Education of the populaition about the need of recycling (workshops, public campaigns)</p> <p>Preparation of booklet about the recycled materials and their value as secondary raw materials</p>	Rising the awareness about the need of recycling and separating	<p>Number of included population and target groups</p> <p>Prepared booklet</p>	<p>Twice during the campaign</p> <p>Once during the preparation of the booklet</p>
<ul style="list-style-type: none"> Promotion of the pilot project for separation, recycling and reusage of certain types of recycled materials 	<p>Selection of recycable material with „easy” technical solutions for separated collection and treatment</p> <p>Defining the project task</p> <p>Realization of the project (in cooperation with the processors of the recycled materials and/or end users)</p>	Promoted sustainable ways for waste management	<p>Number of included citizens</p> <p>Number of included NGO-s</p> <p>Realized pilot project for separation, recycling and reusage</p>	Once during the realizaiton of the project (for all three indicators)

GOAL: SEPARATING THE HARMFUL FROM THE COMMUNAL WASTE

Measurements	Actions	Outputs	Success indicators	Frequency of monitoring the indicators
<ul style="list-style-type: none"> Preparation of a program for separation of the communal from the harmful waste (especially the medicine and industrial harmful waste) 	<p>Detailed evaluation of the quantities of harmful waste per generator in the municipality</p> <p>Evaluation of the needed technical means for collection of the harmful waste in the municipality in cooperation with the MZSPP</p> <p>Initiative for joining of individual generators of harmful waste at municipality level for managing the problem with the harmful waste</p>	Prepared program for separation of the communal from the harmful waste	<p>Number of analyzed samples</p> <p>Number of merging of the individual generators for separation</p> <p>Level of provided technical means</p>	<p>Twice during the program preparation</p> <p>Once during the program preparation</p> <p>Once during the program preparation</p>
<ul style="list-style-type: none"> Increased level of the public awareness about the mixing of the harmful with the communal waste 	Preparation of the work plan for education/ rising the public awareness of different target groups (realization of different campaigns, educational forms)	Increased level of public awareness about the dangers from mixing the harmful with the communal waste	Number of included population and target groups	Once during the campaign

GOAL: PRODUCTION OF ORGANIC FERTILIZERS ACCORDING APPROPRIATE TECHNOLOGY

Measurements	Actions	Outputs	Success indicators	Frequency of monitoring the indicators
<ul style="list-style-type: none"> Defining the problems with the organic waste and construction of plant for their processing 	<p>Preparation of project for the plant</p> <p>Construction of the plant</p> <p>Educaiton of the farmers about the processing of the organic waste and applicaiton of the waste for organic production</p>	<p>Determined conditions for organic produciton</p>	<p>Number and level of defined critical points</p> <p>Realized pilot project for construction of the plant</p> <p>Constructed plant – organic production</p>	<p>Once during the realization of the project (reffers to the three indicators)</p>

GOAL: ESTABLISHED COMPETITION IN THE COMMUNAL SPHERE

Measurements	Actions	Outputs	Success indicators	Frequency of monitoring the indicators
<ul style="list-style-type: none"> Analyze of the conditions with the management with the communal and other harmless waste and the need of private operators in the communal activity 	<p>Defining the critical points in the service for waste collection and transportation</p> <p>Detailed analyze of the advantages and the disadvantages from introducing new competitive operator (private or public communal enterprise)</p>	Determined need for competition in the communal sphere	<p>Number and level of defined critical points</p> <p>Number and level of prepared analyzes of advantages and disadvantages</p>	<p>Once during the defining of the points</p> <p>Twice during the preparation of the analyze</p>
<ul style="list-style-type: none"> Pilot project for introducing competitive operator in a settlement which hasn't been included with the waste collection service 	<p>Selecion of pilot region for the competitive operator</p> <p>Evaluation of the ways for allocating the task</p> <p>Evaluation of the proposed technical solutions and financial offer</p> <p>Supervision over the work</p>	Improved waste management at municipality level	Number (%) of population included with the organized collection of communal waste and included operator	Once during the project

GOAL: ESTABLISHING MONITORING OF WASTE AT MUNICIPALITY LEVEL

Measurements	Actions	Outputs	Success indicators	Frequency of monitoring the indicators
<ul style="list-style-type: none"> Capacity building of the municipality for waste monitoring 	<p>Appointing person in the municipality responsible for waste monitoring (increasing the number of employees)</p> <p>Realization of regular trainings for the employees in the municipality and the authority in the companies who are supposed to send reports, according to the Law for waste management</p> <p>Providing technical means for realization of the monitoring (vehicle, computer processing and surveillance)</p>	Capacity building of the municipality and established waste monitoring system	<p>Number of appointed personnel</p> <p>Number of trainings</p> <p>Quantity of provided technical means</p>	Twice a year (refers to all three indicators)
<ul style="list-style-type: none"> Preparation of annual review about the condition with the waste in the municipality 	<p>Implementation of the plan for regular and occasional monitoring</p> <p>Analyze of the weaknesses of the plan and the difficulties in the realization</p> <p>Improving of the plan for regular and occasional monitoring (increasing the activities included in the monitoring)</p>	Received data about the annual review for the conditions in the municipality	<p>Prepared annual review about the condition with the waste in the municipality</p> <p>Audit of the review</p>	<p>Four times a year</p> <p>Four times a year</p>

8.5. Soil and utilizaiotn of the land

GOAL: PROTECTION OF THE SOIL AND AGRICULTURAL CULTURES FROM POLLUTION

Measurements	Actions			Outputs	Success indicators	Frequency of monitoring the indicators
	<ul style="list-style-type: none"> Control of the water quality from the river Vardar used for irrigation Soil control and control of the agricultural crops 	Preparation of program/project for control of the water, the soil and the agricultural crops (content of chemicals and other harmful elements)	Reduced level of pollution of the soil and the agricultural crops	Number of prepared studies for control of the water, the soil and the agricultural crops Prepared study for protection of the soil and the agricultural crops Established permanent monitoring		Twice a year

GOAL: SUSTAINABLE AGRICULTURAL PRODUCTION

Measurements	Actions	Outputs	Success indicators	Frequency of monitoring the indicators
<ul style="list-style-type: none"> Production of healthy safe food 	Preparation of a program for education of the farmers about the possibilities for health food production Preparation of a booklet about the applications of agrochemicals	Promoted sustainable agricultural production	Prepared program Prepared booklet	Twice during the preparation of the program and the booklet (refers to all indicators)
<ul style="list-style-type: none"> Preparation of detailed evidence about the applications of the agrochemicals in the agriculture (mineral fertilizers, pesticides and other) 	Appointing person in the municipality responsible for monitoring the problem from the field of agriculture and coordination with the relevant ministries Questionnaire of all farmers in the municipality about the usage of agrochemicals	Prepared evidence for application of the agrochemicals in the agriculture Reduced utilization of agrochemicals	Number of questioned farmers Reduced quantities of agrochemicals per unit area	Twice a year

GOAL: PROTECTION OF AGRICULTURAL LAND FAVORABLE FOR PRODUCTION OF HIGH QUALITY FOOD

Measurements	Actions	Outputs	Success indicators	Frequency of monitoring the indicators
<ul style="list-style-type: none"> Sustainable management with agricultural land according the Law for agricultural land 	Cadastre deffining of land class (in cooperation with the relevant organs of City of Skopje and the relevant ministries)	Promoted sustainable agricultural production	Number of included farmers Prepapred evidence of land classes	Six times a year Twice a year
<ul style="list-style-type: none"> Promotion of organic produciton 	Preparation of a study for promotion and possibilities for organic production in the municiplity Organizing educational workshops for the farmers about the need of organic produciton	Promoted organic production	Prepared study Number of educated farmers	Once during the study preparation

8.6. Noise

GOAL: REDUCING THE LEVEL OF NOISE IN THE URBAN PART

Measurements	Actions	Outputs	Success indicators	Frequency of monitoring the indicators
<ul style="list-style-type: none"> Monitoring of the level of the noise 	<p>Preparation of plan for measurements of the noise</p> <p>Placing a network of monitoring stations for monitoring the intensity of the noise</p> <p>Preparation of study about the influence of the communal noise on the health of the citizens in the municipality</p>	<p>Established system for monitoring the intensity of the noise</p>	<p>Prepared plan and program for protection and reducing the level of noise</p> <p>Prepared study for the influence of the communal noise on the health of the population</p>	<p>Twice a year</p> <p>Updating once a month</p>

8.7. Natural values and resources

GOAL: SUSTAINABLE MANAGEMENT WITH THE FOREST FUNDS IN THE MUNICIPALITY

Measurements	Actions	Outputs	Success indicators	Frequency of monitoring the indicators
<ul style="list-style-type: none"> Improvement of the condition with the forest fund in the municipality 	<p>Preparation of the project for analyze and evaluation of the condition with the forest degradation by 2015</p> <p>Educaiton of the populaiton about the importance of the forests and the neccesity for protection</p> <p>Defining the locaitons for afforesation</p> <p>Organizing activities for afforesation of erodive areas with native types</p>	Sustainable management with the forest funds in the municipality	<p>Number of prepared analyzes/projects</p> <p>Included trained population</p> <p>Number of defined locations</p> <p>Number of afforesed erodive areas</p>	Twice during the prepapration of the analyze/project (reffers to all indicators)
<ul style="list-style-type: none"> Sustainable management with forest resources 	<p>Undertaking measurements for prevention of illegal timber</p> <p>Public campaign for rising the awareness of the citizens for proteciton the forests from fires</p> <p>Preparation of studies for evaluation of the influence over the forests from the construcion of roads, weekend houses and other facilities</p>	<p>Risen level of public awareness</p> <p>Prevented illegal timber</p> <p>Sustainable utilizaiton of the forest resources</p>	<p>Quantities of cut trees</p> <p>Number of fires in the municipality</p> <p>Number of studies</p>	Six times a year (reffers to the three indicators)
<ul style="list-style-type: none"> Establishing monitoring and system for penalties 	<p>Appointing person in the municipality responsible (forest inspection)</p> <p>Preparation of plan for regular and occational monitoring</p> <p>Implementation of measurement according the legislation</p>	<p>Established monitoring of the forests</p> <p>Established system for penalties.</p>	<p>Appointed responsible person</p> <p>Prepared plan</p> <p>Number of measurements</p>	Once a month (reffers to all indicators)

GOAL: ESTABLISHING INTEGRAL SYSTEM FOR PROTECTION OF NATURE AND BIO-DIVERSITY

Measurements	Actions	Outputs	Success indicators	Frequency of monitoring the indicators
<ul style="list-style-type: none"> Integration of the aspects of nature and bio-diversity in the process of plans and programs in the municipality 	<p>Introducing aspects of nature and bio-diversity during the preparation of urban and other developing documents.</p> <p>Identification of potential areas and preparation of plans for management with protected areas.</p> <p>Valorisation and re-valorisation of protected areas.</p> <p>Capacity building (personnel) in the municipality for preparation and bringing of the plan documents.</p>	<p>Integrated management and protection of the nature and bio-diversity at municipality level.</p>	<p>Number of expert personnel</p> <p>Number of prepared documents and implemented measurements for protection of nature and bio-diversity</p> <p>Prepared vegetation map</p>	<p>Six times a year (refers to all indicators)</p>
<ul style="list-style-type: none"> Integrating the aspects of the nature and the bio-diversity during the preparation of EIA studies and in the process of issuing IPPC permit 	<p>Implementation of the legislation</p> <p>Managing with measurements for protection of endangered species or habitats</p>	<p>Determined measurements for protection of the nature and bio-diversity</p> <p>Conducted process of EIA and ISKZ</p>	<p>Number of measurements</p> <p>Number of protected species or habitats</p>	<p>Once a month</p> <p>Four times a year</p>

GOAL: ESTABLISHED DATA BASE ABOUT THE CONDITION WITH THE BIO-DIVERSITY

Measurements	Actions	Outputs	Success indicators	Frequency of monitoring the indicators
<ul style="list-style-type: none"> • Construcion of monitoring systems for the nature and the bio-diversity • Establishing data base about the condition with the nature and the bio-diversity at municipality level 	<p>Determining parameters and indicators monitoring the conditions of nature and bio-diversity.</p> <p>Forming data base</p> <p>Preparation of study about the condition with the nature and bio-diversity in the municipality</p> <p>Establishing control over the collection of medical plants and animals.</p> <p>Control over the expansion of the native types</p>	<p>Established monitoring of the conditions with the nature and the bio-diversity</p> <p>Established data base and monitoring of the conditions with the nature and bio-diversity</p>	<p>Number of collected data</p> <p>Formed data base</p> <p>Number of realized projects</p> <p>Number of collected illegal plants and animal species</p> <p>Number of evidenced native types</p>	<p>Once a month (reffers to all indicators)</p>

8.8. Public awareness

GOAL: RISING THE PUBLIC AWARENESS

Measurements	Actions	Outputs	Success indicators	Frequency of monitoring the indicators
<ul style="list-style-type: none"> Rising the level of public awareness for protection of the environment 	<p>Organizing campaigns and workshops.</p> <p>Promotion of educational and advertising material.</p> <p>Organizing public tribunes about problems with the environment.</p> <p>Promotion of NGO in the sector for environment.</p> <p>Support to the NGO-s in the sector for environment (space, means, equipment)</p>	<p>Higher level of public awareness</p>	<p>Number of educated population</p> <p>Promoted educational materials</p>	<p>Once during the campaign</p>

9.0. DRAFT-ACTION PLAN FOR SOLVING THE PRIORITY KEY PROBLEMS

On the grounds of the performed reviews of the most important problems in the municipality Gazi Baba from the field of protection of the environment, and having in mind the opinions of the citizens and the associations of the non government sector, the experts teams – the contractor of LEAP, defined the key problems and proposals for overcoming with draft-time frame and needed funds, as well as source for funding given in the following tables:

9.1. Urban development

Key problems	Draft-measurement for overcoming	Draft projects	Time frame for realization	Needed funds (EUR)	Source for funding
Appearance of unplanned construction of facilities in part of the settlements – illegal objects	Finalizaition of the complete urban documentation (Urban Plans, DUP) for the whole territory of the municipality.	Evidencing the unp[lanned objects in the municipality	2007	400.000	Budget of the municipality Gazi Baba - donations - dotations - other sources
	Legalization of the unplanned objects, which would be complied in the urban plans.	Program for solving the disputes on relation: owners of the objects and the municipality, with time frame for realization	2007 - 2008		SS
	Implementation of the activities for prevention of unplanned construction (regular field controls, acting upon complaints)		Constant		SS

9.2. Air

Key problems	Draft-measurement for overcoming	Draft projects	Time frame for realization	Needed funds (EUR)	Source for funding
Pollution from air by the industry capacities and traffic	Introducing a system for emission control of polluting elements from the industry and traffic	Preparation of Cadastre and Map of polluters of the air with determination of zones and agglomerations of the polluteness of the air in the municipality	2007	25.000	Budget of RM,SD
		Preparation of the inventory of polluting elements in the air from the industry capacities and traffic (mobile sources) for the most frequent roads in the municipality.	2007	10.000	SS, SD

9.3. Water

Key problems	Draft-measurement for overcoming	Draft projects	Time frame for realization	Needed funds (EUR)	Source for funding
Quality of the drinking water in the rural part	Preparation of the needed technical documentation for providing quality drinking water	Finalizaion of the water supply systems in Goce Delchev, Jurumleri, Idrizovo, Bulachani	2006-2007	50.000	SD, local contribution, SS
		Reconstruction of the system in Bulachani, Rashtak and Strachinci	2006-2011	750.000	SD and grants from the relevant ministries, local contribution
		Research of the drinking water from health aspects	continuous	5.000 annual	SS
Incomplete or none sewerage in the rural areas especially in the lower parts of the municipality.	Preparation of the needed technical documentation for separate sewerage system	Construction of regional separate sewerage system in the rural part of the municipality	2006-2009	250.000	SD, SS City of Skopje and the municipality
Inefficiency of the canal system for sewerage in the lower part of the municipality	Regular cleaning of the sewerage canals and providing water flow.	Preparation of technical documentation for solving the problem with the sewerage canals and cleaning the canal network	2007	20.000	Relevant institutions

9.4. Waste

Key problems	Draft-measurement for overcoming	Draft projects	Time frame for realization	Needed funds (EUR)	Source for funding
Unorganized collection of communal waste in the rural part	Introducing a system for organized collection	Preparation of inventory of waste for the municipality	2007	20.000	Budget of RM,SD
			permanent	5.000 annual	SS
Existence of many illegal dumpsites with different capacity	Closure of the illegal dumpsites and remediation of the locations	Preparation of draft-plan for closure of the illegal dumpsites	2007	3.000	SS
		Preparation of the technical documentation for closure of the illegal dumpsites and revitalization of the locations	2007-2009	15.000	SS and SD Contribution of private operators

9.5. Soil and land utilization

Key problems	Draft-measurement for overcoming	Draft projects	Time frame for realization	Needed funds (EUR)	Source for funding
Appropriation of the agricultural land for other purposes	Prohibition for appropriation of the agricultural land for other purposes Consistent implementation of the control for issuing permits for utilization of agricultural land which are responsibility of the municipality	Preparation of the Inventory of the agricultural land in the municipality	2007 - 2008	7.000	SS, SD, MZSPP

9.6. Noise

Key problems	Draft-measurement for overcoming	Draft projects	Time frame for realization	Needed funds (EUR)	Source for funding
Presence of continuous noise at certain locations with intensity over the allowed level defined by Law.	Removing the sources of noise	Preparation of project-plan for examination of the noise at endangered locations and draft measurement for sanitation of the condition	2007	3.000	Municipality G. Baba

9.7. Natural values and resources

Key problems	Draft-measurement for overcoming	Draft projects	Time frame for realization	Needed funds (EUR)	Source for funding
Degradation of the terrain and destruction of the vegetation	Sanctioning the illegal timbering	Analyze and evaluation of the conditions with the degradation of the forests	continuous	5.000	SS and SD
	Defining locations for afforestation		2007	1.000	SS and SD
	Educating the population about the importance of the forests and the need of their protection (timber, fires)		2007	2.000	SS and SD
	Organizing activities for afforestation of erodive areas with usage of native types		continuous	2.000 annual	SS and SD

9.8. Health of the population

Key problems	Draft-measurement for overcoming	Draft projects	Time frame for realization	Needed funds (EUR)	Source for funding
Inefficiency of qualified (accurate) indicators about the influence of the environment on the health of the inhabitants in the municipality	Analyze of the health condition of the populaiton in cooperation with the medical services at least once a year	Monitoring of specific diseases which according to HEZAP are in co-relation with the quality of the environment	Continuous	10.000	SS and SD

9.9. Managing with the environment

Key problems	Draft-measurement for overcoming	Draft projects	Time frame for realization	Needed funds (EUR)	Source for funding
Inefficiency of the municipality capacities (institutional and personnel) for managing with the quality of the environment .	Institutional and personnel equipping of the municipality for environmental issues	Construction of system for quality managing with the environment. Further equipping of the unit for environment. Strengthening the legal services for support of the implementation of the legislation for protection of the environment Introducing municipality inspection for environment	2007 – 2009	15.000	SS, SD, Budget of RM, SS
			2007/2008	5.000	
			2007/2008	5.000	
			2008/2009		
Low level of awareness of the citizens for protection of the environment	Established system for data access about the environment to all citizens. Direct proactive participation of the citizens in decision about the environment.	Preparation of separate annex for environment in the local publications (obligatory page dedicated to the environment) Organization of actions for improvement of the quality of the environment (afforestation, waste cleaning, cleaning the green areas). Education of the population about the Aarhus convention Organizing public tribunals, gatherings for direct declaration of the citizens about issues for the environment.		10.000	

USED LITERATURE AND DATA

1. **Law for territorial organization of the local government in Republic of Macaедonia and Law for the City of Skopje**, Official Registry number 55 from 2004.
2. **Statistic Yearbook**, State Statistical Office, 2003.
3. **Organization, utilizaiton and space protection until 2020.**, Spatial Plan of Republic of Macedonia, Ministry of Urbanism, Civil Construction and protection of environment, 2004.
4. **Socio-economy disparity between the municiplaities in Macedonia (for environment – indicators)**, Study by the Ministry of Local Government, November 2005
5. **Strategy for cultural development of municipality Gazi Baba**, Center for Performance Arts MULTIMEDIA, April 2006.
6. **Draft-program for maintenance of public green areas in the municipality Gazi Baba for 2006**, Public Enterprise "Parks and Greens", Skopje, December 2005.
7. **Program (experts grounds) for maintenance and promotion of the forest Gazi Baba for 2006, as characteristic landscape of the City of Skopje, 2000.**, University "St. Cyril and Methodius" Skopje, Faculty of Forestry, 21.04.2000.
8. **Technical documentation for promotion and development of the dendropark at the Faculty of Forestry and Agriculture Skopje, 2002.**, University "St. Cyril and Methodius", Faculty of Forestry, Skopje, 2002.
9. **Botanical garden, Skopje, 1951-2001**, University "St. Cyril and Methodius", Faculty of Natural-mathematics, Institution for biology, September 2001.
10. **Reports for performed activities**, local comunity Jurumlery, 2006.,
11. **Draft-program for street ligths**, Council of the municipality Gazi Baba, Skopje, November 2005.
12. **Annual report for noises from 2004**, Ministry of Enhvironment and Spatial Planning, 2005.
13. **Annual report for air from 2004**, Ministry of Environment and Spatial Planning, 2005.

14. ***Annual report for water 2004***, Ministry of Environment and Spatial Planning, 2005.
15. ***Annual report for water from 2004***, Ministry of Environment and Spatial Planning, 2005
16. ***Annual report for soil from 2004***, , Ministry of Environment and Spatial Planning, 2005
17. ***Encyclopedia of the villages in Republic of Macedonia (geographic, demographic and agrar characteristics)***, Mitko Panov, Skopje, 1998.
18. ***Analyse of the health condition and the health protection of the population on the area of Skopje in 2004***, P.H.O. Health Protection Office Skopje, Unit for social medicine, 2005.
19. ***Data for the consumption of funds for protection of plants and review of the total area for 2005 (category of used land)***, State Statistics Office, 24.08.2006.
20. ***Report for the sanitary-hygienic conditions of the ground waters***, P.H.O. Health Protection Office Skopje, 23.08.2006.
21. ***Report for monitoring the condition of the water supply and the quality of the drinking water***, P.H.O. Health Protection Office Skopje, 23.08.2006.
22. ***Decree for declaring the Decision for determining the highways and venue streets in the City of Skopje***, "Official registry" number 5, 16.03.1998.
23. ***Report about the content of metals in the air***, P.H.O. Health Protection Office Skopje, 2006.
24. ***Report about the number and the characteristics of the electro-energy facilities (conduct and transformer stations)***, EVN Macedonia, 15.09.2006
25. ***Statute*** of the municipality Gazi Baba, 2006.
26. ***Data about the water***, municipality Gazi Baba, unit for water and sewerage, 2006.
27. ***Information about GUP, DUP and urban plan***, municipality Gazi Baba, urbanism unit, 2006.

**ASSOCIATION OF CITIZENS OF ZELEZARA
SKOPJE**



TEHNO LAB doo Skopje
Protection, technology, ecology, nature

QUESTIONNAIRE 1
of the public opinion of the citizens in municipality Gazi Baba about the problems
with the environment

Basic data about the questioned person						
Sex:	<input type="checkbox"/> Male			<input type="checkbox"/> Female		
Status:	<input type="checkbox"/> Employed	<input type="checkbox"/> Unemployed	<input type="checkbox"/> Retired	<input type="checkbox"/> Student	<input type="checkbox"/> Pupil	
Living place (local community):						
Age limit:	<input type="checkbox"/> 07 - 14	<input type="checkbox"/> 15 - 18	<input type="checkbox"/> 19 - 25	<input type="checkbox"/> 26 - 40	<input type="checkbox"/> 41 - 65	<input type="checkbox"/> Over 65
Education:	<input type="checkbox"/> Primary	<input type="checkbox"/> Secondary	<input type="checkbox"/> Higher	<input type="checkbox"/> University	<input type="checkbox"/> Unknown	

Questions

1. Where do you live:	1. Urban environment 2. Rural environment (Circle the number)
2. According to the level of the contamination of the living environment, municipality is:	1. Unpolluted 2. Low contamination 3. Medium contamination 4. High contamination (Circle the number)
3. Causes for the contamination are:	1. () Low level of the ecological mind 2. () Bad legal regulative 3. () No implementation of the legal regulative 4. () unengagement of the communal enterprise 5. () No technical equipment (baskets, bins, containers) 6. () Bad economic condition (Mark it with numbers from 1 to 6 according to the importance. For example: less important with 1, more important with 2.. .. the most important with 6)
4. Ecological problems in the municipality effected on:	1. () My health and the health of my family 2. () The health of the next generations 3. () Flora and fauna 4. () Natural resources and rarities (Mark it with numbers from 1 to 4 according to the importance. For example: less important with 1, more important with 2.. .. the most important with 4)
5. What does bother you the most in your environment about the ecology?	1. The big polluteness 2. Close distance of the industrial (service) object 3. Untidy neighborhood 4. Pollution from pesticides 5. Nothing, I feel fine in my environment 6. Other, what _____ (Circle the number)
6. The most ecological values for the municipality are:	1. () The health of the people 2. () Protection of the nature and the natural rarities 3. () Renewing the damaged ecological balance 4. () Slower utilization of the natural resources 5. () Production of natural food with geographic origin 6. () Developing industry with clean technology 7. () Measurement for noise protection (Mark it with numbers from 1 to 7 according to the importance. For example: less important with 1, more important with 2.. .. the most important with 7)
7. What kind of activity you will take for protection of the living environment?	1. Making some ecology projects 2. Participation in ecology actions 3. Participation in public tribunes, conversations and radio and TV programs 4. Writing text for daily informative mediums 5. Making advertizing material (posters, broshoures, leaflets..) (Circle the number)

QUESTIONNAIRE 2

for ranging the problems with the environment

With purpose to determine priorities for solving the problems with environment in Municipality Gazi Baba, it is necessary to question the opinions of the citizens, which directly and mostly influence them. Because of that, please look at the list of problems and pick 15 problems which according to you are the biggest and you would like them to be priority for finding a solution. **Mark it with sign X.**

Num.	PROBLEM	Mark it please
1.	Low level of ecology awareness	
2.	Presence of illegal dumpsites	
3.	Low level of public awareness for the protection of the environment	
4.	No sewerage system	
5.	Inefficient information about the possibility the municipality Gazi Baba to be built as a municipality with "ecology" characteristics	
6.	Air pollution from traffic	
7.	No containers in the settlements	
8.	Uncontrolled urban development	
9.	Air pollution from the industry facilities	
10.	Fecal waters spreading from the septic pits	
11.	No dumpsite for construction waste	
12.	No actions for afforestation (protection of the forest fund)	
13.	Unorganized collection of the communal waste	
14.	No system for recycling and reuse of the waste	
15.	Inefficient capacity of the municipality for monitoring and management with the quality of the environment	
16.	(No) quality of the drinking water	
17.	Increased level of forest degradation	
18.	No purging stations	
19.	Illegal construction	
20.	Soil pollution from chemicals	
21.	Mixing the communal with the harmful waste	
22.	(No) quality of the river waters	
23.	Waste water treatment (communal and industry)	
24.	No organized system for waste division	
25.	Incomplete collector system	
26.	Inefficient utilization of the fertile land for eco-production	
27.	No habits for reducing the organic waste in domestic conditions	
28.	Insignificant cultural-archeological locations	
29.	Inefficient information about the danger from the improper application of agro-chemicals	
30.	No evidence about the used fertilizers and protection measures in the agriculture	
31.	Polluted air from house heating	
32.	No data about the collection of medicinal plants, forest fruits	
33.	Improper treatment of the cattle waste	
34.	Land appropriation (II, III i IV class) for construction	
35.	Improper treatment of the waste waters from the farms	
36.	Unused advantages and possibilities for development of the tourism	
37.	(No) quality of the irrigation water	
38.	Low level of collecting the waste collection fee	
39.	Unused geothermal springs for medical purposes and heating	
40.	No data about the bio-diversity in the municipality	

Which is the biggest problem from the environment in your habitat? _____

Thank you for the cooperation.

Local Managing committee for preparation of LEAP for Municipality Gazi Baba