



Municipality of Gracanica

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Government of Sweden

**STRATEGIC ENVIRONMENTAL ASSESSMENT**  
**for**  
**MUNICIPAL DEVELOPMENT PLAN**  
**of Gracanica**



April 2013

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This SEA report (Report) was developed by the independent Consultant Ana Petrovska that has been assigned by the UN-Habitat in line with the scope defined in the contract. The findings and recommendations set in this Report may not be taken as an official attitude of the UN-Habitat, Governemnt of Sweden or the municipality Gracanica.

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# 1. INTRODUCTION

## 1.2 Strategic Environmental Assessment – Definition and Purpose

The Strategic Environmental Assessment (SEA) is generally defined as a systematic and anticipatory process, undertaken to analyse the environmental effects of proposed plans, programmes and other strategic actions and to integrate the findings into decision-making.

The purpose of SEA is to ensure that environmental considerations are integrated into strategic decision-making in support of environmentally sound and sustainable development. In particular, the SEA process assists authorities responsible for plans and programmes, as well as decision makers, to take into account:

- The key environmental trends, potentials and constraints that may affect or may be affected by the plan or programme.
- The environmental objectives and indicators relevant to the plan or programme.
- The likely significant environmental effects of proposed options and the implementation of the plan or programme.
- The measures to avoid, reduce or mitigate adverse effects and to enhance positive effects.
- The views and information from relevant authorities, the public and — as and when relevant — potentially affected neighboring countries (when transboundary impacts are identified).

## 1.2 Coordination between the Plan and SEA

SEA process was coordinated with the development of the Municipal Development Plan (MDP) for the Gračanica municipality. Thus the SEA for the Municipal Development Plan— the subject of this Report - was the first one conducted in Kosovo together with the plan development. It ensured that provided inputs into the MDP with the aim to integrate the environmental considerations during the planning process.

In the following figure the coordination and correlation between the MDP and SEA development process is presented.

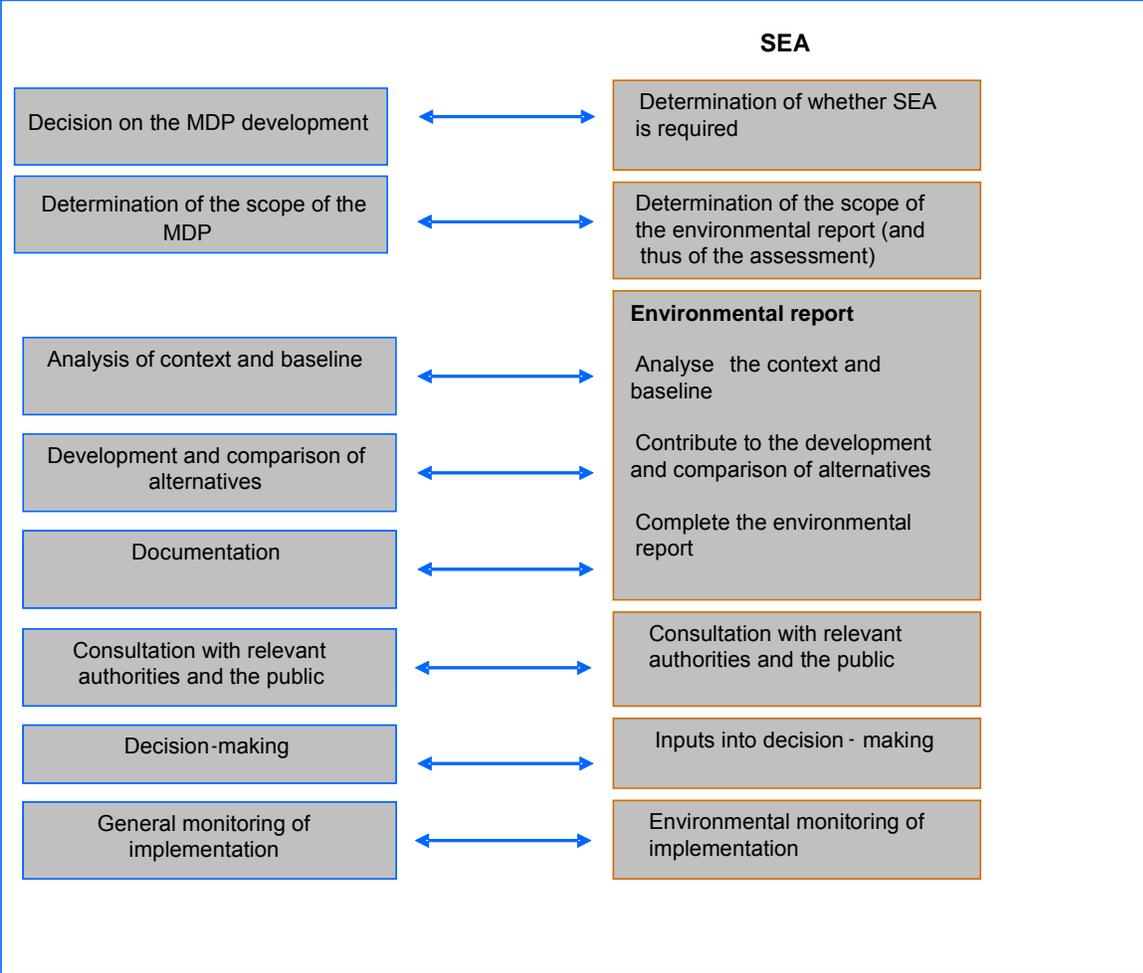


Figure 1: Integration of the MDP and SEA processes

Source: Simplified Resource Manual to Support Application of the Protocol on Strategic Environmental Assessment, United Nations Economic Commission for Europe, draft for consideration by the editorial group, January 2012

The SEA process started in March 2012 immediately after the draft profile of the municipality of Gracanica was developed. A kick off meeting with the project beneficiaries – the municipality of Gracanica and the Ministry of Environment and Spatial Planning was held to introduce the working methodology. From the analyses of the current Law on SEA it became clear that the decision to undertake the SEA for the MDP by the relevant authority (in that case the municipality of Gracanica being in charge of the MDP development) was not taken appropriately, namely the screening checklist was not filled out.

The kicks off meetings were used to collect available information regarding the environmental baseline. During these initial meetings two major issues emerged: the “Kisnica” mine tailings dam and the associated environmental impacts as well as the alignment of the ring road for Pristina which would pass through the territory of the municipality of Gracanica. Given the lack

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of influence by the municipality of Gracanica in the national plans related to the remediation of industrial hotspots (such as the “Kisnica” mine tailings dam) and in planning of national transportation system (including highways) it was discussed to establish a steering committee gathering the responsible ministries which would ensure that the national plans are not working against the local policies and vice versa. There were no objections to this proposal but in reality the steering committee did not work out. Nevertheless, during the execution of the SEA process there were a number of representatives that attended meetings with the municipal staff that came from national institutions, such as the Hydro-meteorological Institute, Ministry of Agriculture etc.

At this stage the Consultant in charge of the SES development executed a field trip in the immediate surroundings of Gracanica settlement. The visit of the “Kisnica” tailings dam revealed that this site represents a “hotspot” which impacts cumulatively the environment and public health.

The municipality of Gracanica was supplied with a screening checklist soon after the meetings were held and the municipal staff conducted the screening exercise based on which an official decision to undertake the SEA was taken. Also, the municipal staff, next to finalizing the municipal profile, developed the vision, goals and objectives of the plan. The public presentation of the MDP was organized in June 2012: the preliminary SEA findings were presented during this event as well. The SEA objectives were set during this period as well while the MDP goals and objectives were tested against them. As a result there were some minor changes of the MDP objectives: they were mainly clustered to avoid duplication and reformulated to improve their clarity.

In July the planning scenarios were set during a two days workshop. The environmental Consultant participated and provided some guidance to the planners regarding the possibility to establish an “ecological network”, to design an “inter-modal” transport system, to assign a pilot area for organic agriculture etc. Also, the environmental objectives were used to assess the sustainability of the MDP scenarios.

During the mission in June several field trips were conducted: visits were paid to all settlements, archeological sites, business zone etc. Also representatives of the regional water supply enterprise, the company in charge of the waste collection and several owners of warehouses and manufactures were met. Based on desk research and conducted field visits the environmental baseline report was produced in August 2012.

In October 2012 the Consultant presented the environmental considerations associated with the plan scenarios. The major suggestions to the planners were: to minimize the area for new business zones in order to protect the agricultural land, to equip the existing business zones with relevant infrastructure, to avoid setting any municipal landfill for municipal waste and to set an organized (and fenced) site for a safe disposal of construction and demolition (C&D) waste; it

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was also discussed to combine the public transport – railway and bus station and to enable renting bicycles at the transport nodes. After the meeting the Scoping Report was completed.

The discussion on the plan scenarios was continued in November 2012. The environmental impacts deriving from specific concepts defined in the anticipated three scenarios were analyzed in view of the environmental objectives. All the conflicts between the plan and the environmental objectives were identified in order to influence the changes in the MDP or the select suitable mitigation measures. During this meeting the environmental targets and indicators were jointly set to allow for sound monitoring after the plan adoption.

In March 2013 the planning framework and action plan were set. The environmental Consultant was present in order to point out any environmentally unfriendly action or any action that is not in line with the principles of sustainability. At another meeting organized soon after the joint workshop, the environmental Consultant presented the environmental report: the environmental impacts that derive from the adopted planning framework and specific actions as well as mitigation measures in order to minimize the effects onto the environment and public health.

The reaction to the suggestions and recommendations of the environmental Consultant were positive. The municipal staff realized that the agriculture, accompanied with the manufacture, shall be the main economic driver; still, they acknowledged that any new zoning outside the boundaries of existing settlements shall be subject to SEA, and that any structure that is associated with any type of pollution shall undergo EIA.

### **1.3 The SEA process**

All six stages of the SEA process are documented in this report in specific chapters as follows:

#### ***Stage 1: MDP profile***

A brief description of the MDP profile serves a basis for the assessment of the environmental issues in the municipality of Gracanica. The SEA in this part of the process was focused on data gathering to feed into the subsequent stages. Environmental data provided in the MDP derived from the “Green Agenda” of the municipality of Gracanica.

#### ***Stage 2: Setting the context and establishing the baseline***

This part of the process / report presents the existing environmental circumstances and the policy framework in the municipality of Gracanica. The environmental and socio-economic data provided in the MDP was complemented with information gathered by the Consultant through a desk and field research.

The key output of these analyses was the identification of the environmental challenges. In addition, the baseline without the MDP was analysed along with the testing of the MDP objectives against the SEA objectives.

#### ***Stage 3: Deciding the scope of SEA***

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Deciding on the scope of the SEA involved the identification of a full range of environmental issues which were then analysed in view of the implications deriving from the plan's alternative scenarios. Three alternative scenarios were analysed in view of the relative contribution of each alternative to meeting of the environmental objectives. Synergies but also potential conflicts were explored in support to the selection of the best planning scenario.

***Stage 4: Assessing the effects of the plan***

Using the information gathered in the first two stages of the process, SEA assesses the likely impacts of the plan. The process at this stage suggested back to the MDP certain adjustments in order to avoid the need to implement mitigation measures.

***Stage 5: Consulting on the draft plan and environmental report***

The findings and recommendations of the SEA report were taken into account during the MDP development. The consultation on the SEA took place at two levels: national level representatives were briefed about the SEA; in addition the local authorities could comment on the draft SEA Report. Some suggestions of SEA Report might be considered in finalising the MDP.

***Stage 6: Monitoring the effects of implementing the plan on the environment***

The SEA report sets environmental objectives, targets and indicators which should all ensure a proper monitoring regime. In the absence of precise environmental data the monitoring system to be undertaken by the local authorities in cooperation with national institutions shall measure the progress in rough percentages. The monitoring should provide sound material for the next MDP review process.

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## 2. MDP CONTENT SUMMARY

### 2.1 Content summary

The Municipal Development Plan (MDP) for the municipality of Gracanica is prepared in accordance with the Law on Spatial Planning (No. 2003/14) and the amendments to the Law on Spatial Planning (No. 03/L-106).

In the present legal framework the municipalities (as the basic territorial units of local government) are assigned to undertake activities in urban and rural planning within their territory i.e. to prepare Development Plans (municipal and urban) and urban regulatory plans<sup>1</sup>.

Based on the framework for the process of drafting the MDP, there are 4 phases as follows:

- I. Profile of the municipality;
- II. Strategic vision, goals and objectives;
- III. Spatial Development concepts, and
- IV. Implementation strategies.

The Profile describes the situation of spatial development in the municipality of Gracanica. An MDP summary is provided below.

### 2.2 Description of the MDP

The MDP Profile is providing an overview of the present development status of the municipality and the challenges that need to be addressed upon the next planning stages through the alternative development concepts and implementation strategies. In the following lines some highlights of the major topics elaborated in the MDP Profile are given:

#### ***1. The municipal development planning and the administrative structure of the municipality***

The Municipality of Gračanica is a young agglomeration of territories, which were part of the municipality of Prishtina, Lipljan and Kosovo Polje until 2009. It was established on 29.12.2009 as of the constitutional session of the Municipal Council. The policy planning process, although inevitably containing legacy components, is to be drawn up to serve the developmental needs of a newly fledged, medium-sized municipality.

The municipal administration is organised in several departments (directorates), in line with the local authorities: general administration, budget, urban planning and cadastre, social welfare and public health, public services, agriculture and forestry as well as the inspectorate. Bearing in mind the inter-disciplinary character of the MDP process, most of the above listed departments were actively involved in its drafting and development.

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<sup>1</sup> Article 10 of the Law on Spatial Planning No. 2003/14.

## 2. The MDP in relation to the higher level spatial planning and deriving planning concepts

The Spatial Plan for Kosovo (2010-2020) defines the framework for the spatial development of the entire territory, including the municipality of Gracanica. Due to its proximity to the economic centre of Kosovo – its Capital Pristina and the presence of main transport corridors, municipality of Gracanica belongs to the zone assigned for intensive economic development. Bearing in mind the local conditions, i.e. the availability of high quality agricultural land, a balanced approach is needed to protect the soil quality as an important economic resource, on the one hand, and to develop new zones accommodating industry and corresponding services, on the other.

## 3. Geography and climate

The municipality is positioned in the central part of Kosovo stretching alongside the eastern edge of the Kosovo valley, where the slopes of Veletin mildly elevate at an altitude of 874 m, continuing on to the somewhat steeper slopes of Stazevac at 796 m. and onwards to Glasnovik. Its territory is divided on 16 cadastre zones and settlements. The territory of municipality of Gracanica covers the area of 121,10 km<sup>2</sup>.

The figures below illustrate its geographical position and cadastral division.



Figure 2. Geographical location

Source: Municipal development Plan, 2012

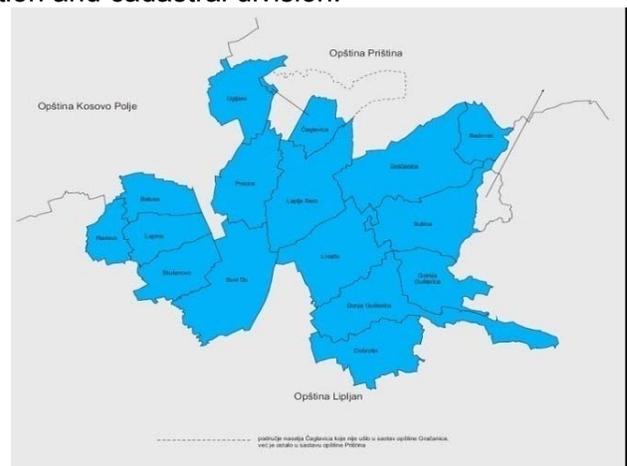


Figure 3. Cadastral division

Source: Municipal Development Plan, 2012

The climate in Kosovo is continental, at certain places exposed to adriatic-mediterranean and alpine influences. The annual precipitation equals 596 ml/m<sup>2</sup>. The average annual temperature amounts to 10°C. The minimal temperature varies between -17°C and -23°C, while the maximum temperature is 39°C. The summers are warm, with an average temperature of 23°C. December and January are the coldest, while July and August are the warmest months in the year. October and December see the greatest amounts of precipitation. Snowfall is typical of the period between November and March.

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#### **4. Socio-economic features**

##### Demographic features

Gracanica had 18.642 inhabitants as measured in the census of 2008, while assessments and projections performed by the Municipality place the current number at around 25.000 in 2011. In 2010 the annual population growth amounted to 1.5%, while in 2011 it had increased to 1.88%. The official figure from the Census in 2011, however, is 10,675 inhabitants<sup>2</sup>. The official figures from the Census in 2011 are far too low, while the municipal figure is far too high, when compared to the figure as of 2008. Given the political situation in Kosovo it is not possible to adopt any figure for comprehensive analyses and in absence of any trustful source the analyses will operate with an average 18,000 inhabitants.

According to the municipal records the Municipality is home to 4.500 households. Having in mind the average number of family members of 4,3 and the estimated number of inhabitants of 18,000, the number of households is assessed at 4,100.

The Municipality of Gracanica is a multiethnic municipality, comprised of 85.7% Serbs, 3.7% Albanians and 10.6% Roma, Ashkali, Egyptians etc.

##### Housing

Individual housing is predominant, amounting to 3.250 individual domiciles, (according to the preliminary census results provided by the Department of Statistics). Collective housing (high rise buildings) is emerging and has been included in future plans. Having in mind the differing figures on population in official statistics and municipal records, one can not assess the housing needs realistically.

Following the recovery of the economy the housing situation improves. The problem remains related to the resettlement and refugees who are coming back. If the number of dwellings is compared to the number of households, one can observe the deficit which implies that the municipality should extend the housing capacity. Thus, the authorities, supported by international organizations, are investing into erection of residential areas to shelter returned families. These efforts are still not sufficient and plenty of families, who reside temporarily into improvised camps, suffer a very low quality of life. There are two refugee camps (people live in containers) located in "Vocar" and "Padaliste" where 65 people found their shelter. In addition 69 persons are displaced in houses that were given to them for temporary stay and 847 people live in rented houses or were sheltered by their relatives<sup>3</sup>.

##### Healthcare

In the Municipality of Gracanica primary and secondary healthcare is provided to the inhabitants. Tertiary healthcare is, however, obtained either in Pristina, or in Serbia.

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<sup>2</sup> <http://esk.rks-gov.net/eng/images/files/ESTIMATION%20of%20Kosovo%20population%202011.pdf>

<sup>3</sup> [http://www.kirs.gov.rs/docs/lap/lap\\_pristina\\_gracanica.pdf](http://www.kirs.gov.rs/docs/lap/lap_pristina_gracanica.pdf)

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In spite of the fact that the available facilities are plagued by a lack of equipment and other amenities, the medical staff manages to perform a large number of deliveries, specialist examinations as well as surgeries. There are also private hospitals emerging to respond to the rising needs.

The municipality intends to establish a diagnostic centre in Gracanica and hire the existing as well as additional highly qualified medical staff for the operation of the state of the art diagnostic equipment that was recently granted by international aid through the national government (in the absence of appropriate conditions for their installation this equipment is stored in the hospitals). Also a new hospital near the village Susica is under construction.

### Education

In the Municipality of Gracanica primary and secondary education is provided to the inhabitants; there are also a number of preschool facilities. The classes are taught in Serbian, with the exception of Kishnica and one class in Sushica, where they are taught in Albanian.

After 1999, Serbian language secondary schools from Prishtina, Lipljan and Kosovo Polje were transferred to the territory of Gracanica and are currently operating within the premises of existing primary schools, under difficult working conditions (the classes of the secondary school go to the first and the classes of the primary school go to the second shift). The municipality, realising the importance of proper education for citizens, starts to invest into refurbishment of these facilities. There are plans to erect a new building for a high school; in addition, a college may be established in the municipality to prevent the migration of the student's population. The municipality shall cooperate with the central government in their endeavors to improve the education.

Two preschool buildings were built by the funds of the municipality at the end of 2010 in Laplje Selo and Dobrotin. It is deemed that the existing pre-school capacity is sufficient.

### Social Welfare

The Center for Social Work safeguards social protection rights and handles the provision of social welfare to the inhabitants. It targets marginalized and risky groups, such as children and youth with problematic family relations, children and youth with learning disorders, persons with impaired mental function and/or with impaired psycho-physical functions, adults with behavioral disorders etc.

There are four associations of disabled persons on the territory of the Municipality: The Association of Dystrophics, the Association of the Disabled, the Alliance of the Blind and Visually-Impaired and the Association of Civilian War-Invalids. The associations face issues such as lack of office space and facilities for adequately engaging disabled persons.

### Culture

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Most settlements in the Municipality possess a House of Culture, used for various cultural activities and accomodating local libraries. Gracanica, Laplje Selo, Donja Gushterica, Dobrotin, Kishnica and Batuse have active Houses of Culture.

### Sport

There are currently sports facilities in every village with the exception of Radevo. Existing sports facilities in the Municipality are undergoing reconstruction and renovation. Since the establishment of the new Municipality, Gracanica has started construction works on a new sports complex consisting of tennis courts, a basketball and volleyball court and a fully-equipped football stadium. A tennis school has also been opened.

The recently opened sport courts and play grounds are exploited by young population. There is a need to increase the number of such public spaces. There isn't any entity that is assigned to maintain these areas. It is perceived as a risk that the installed equipment will deteriorate if not properly preserved.

## **5. Economic Development**

### Businesses

Officially, the largest number of people is employed in the public sector, most notably in education, healthcare and municipal administration, provided here in order of magnitude.

There are 496 registered private enterprises on the territory of the Municipality of Gracanica. These predominantly small and micro-enterprises mainly work with trade, catering and manufacturing.

There are between 992 and 1488 inhabitants employed in the private sector, according to data supplied by businesses in Gracanica. The MDP Profile states that the official numbers are lower than the actual number of people that are engaged in the private sector.

The industries are located along the national roads branching off Pristina. The industrial plants located therein produce mainly construction material, paints and varnishes and some furniture; there are also plenty of warehouses supporting the trade activities. In the following figure the industrial zone stretching along a north-south direction in the municipality is shown.

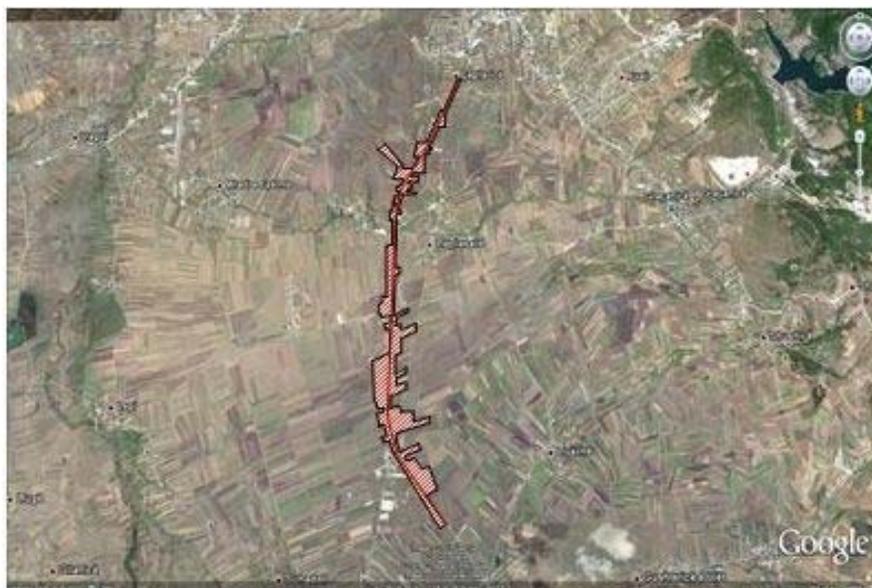


Figure 4. The longitudinal shape of the industrial zone in the municipality of Gracanica

Source: Municipal Development Plan, 2012

### Tourism

The main tourist attractions are the valuable historical and cultural artifacts found at the Monastery Gracanica and the archeological site – Ulpijana. There are a number of churches that may also be of interest to tourists.

The Gracanica Lake is a popular fishing spot. Also a fishing pond exists in the area westward from the village Batuse. The concession for the use of the pond is recently renewed: this status of the pond may contribute to the restoration of the adjoining area which is presently not in a shape congruent for maintaining and improving biodiversity.

The area alongside the Gracanica Lake is abundant in wildlife and can be organized as hunting resort. There are other areas that may be promoted into hunting resorts in both the eastern and western part of the municipal territory. In the lowlands fox and rabbit are seen while in the hills wild boar can be met.

### Agriculture

Gracanica is primarily a rural municipality, economically bound to agricultural production. The arable land found on its territory maintains a quality of the first and second category.

The two most typical agricultural branches – land operation and animal husbandry also take up the greatest part of the agricultural activities in Gracanica. The Municipality of Gracanica possesses approximately 8.700 hectares of arable land, which takes up 71% of its territory. Meadows and pastures are also counted under this estimation. The main crops are grains and corn, but also barley and sunflower. There are orchards and vineyards in the hilly terrain shaping the eastern boundary of the municipality; some orchards are present in the western part

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of the municipality as well. Meadows are dominating the land that borders with the banks of the river Sitnica.

Animal husbandry is a widespread activity in the Municipality of Gracanica. There are 19 registered farmers in the Municipality according to the Department of Food and Veterinary Practice, with around 160 milking cows. Unfortunately this number is declining. The reasons for that are various, some of which are rooted in weak security conditions and resulting forced appropriation of livestock.

Agricultural producers have been subsidized by the Ministry of Agriculture and forestry through the municipality, aiming to stimulate the development of bee keeping, fisheries, growing of medicinal plants and fungi as well as for diversifying the agricultural production and erecting orchards and vineyards. The farmers keeping livestock have an access to subsidies as well.

### Forestry

Forested areas cover 1.300 ha, both under private and public ownership and comprising 9.9% of the total surface area of Gracanica. The forested areas are found in the northeast (in the area of Gracanica Lake) and southeast of the Municipality (nearby the village Gornja Gushterica). Black and white pines, as well as oak are the most common tree species. There have been some efforts to revitalize deforested areas by the Municipal Department for Agriculture and Forestry in co-ordination with the Ministry of Agriculture and Forestry and the Forestry Agency of Kosovo, having covered 8 hectares of land with black pine saplings.

## **6. Public Utilities and infrastructure**

### Transport

The roads are the main mode of transport in the municipality of Gracanica. There are three international roads that connect Kosovo with Albania, Macedonia and Serbia which all transit through the territory of Gracanica. The local roads that connect the settlements are in relatively good shape (most of them being asphalted). The road Gracanica – Laplje Selo – Preovce is deteriorated; also streets inside the settlements need improvement. The spontaneous and organic erection of houses without previous urban planning makes difficult the conduction of an efficient and logical network of streets and therefore of water supply and sewerage systems.

Public transport is underdeveloped in the municipality. There are some free lines between Pristina and Gracanica, which are subsidized, but the citizens claim that they are not sufficient as the daily migrations between Pristina and Gracanica are rather intensive. Private agencies provide transport by mini vans and there is one taxi company. The transport between Gracanica and other settlements in Kosovo, as well as the international transport is not possible as there is no bus station on the territory of the municipality.

The railway in Kosovo and particularly in Gracanica comprises of two lines: one heading from Pristina to Skopje (thus intersecting the western part of the municipal territory and passing by the villages Batuse, Radevo, Lepina, Suvi Do etc.) and the second one connecting Kisnica,

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Gracanica, Laplje Selo and Lepina. While the first one, despite the need for refurbishing, is still in operation, the second one was active by 2003. Its original purpose was the transport of ore and after ceasing the operations in the Kisinica mine it has been used for a while for transport of citizens. There was a railway station operating in the area of Preovce but it has been closed down.

The Pristina Airport is around 22 kilometers distanced from the municipal centre western direction (towards the Batuse village). It provides relatively good connections with the main European centres and other destinations of interest in the region.

### Water Supply

The main sources for water supply in the municipality are the Gracanica Lake and the systems operating in the neighboring municipalities Kosovo Polje and Lipljan – parts of which have been submerged with the municipality of Gracanica. At maximum capacity, the Gracanica Lake is 3.5 kilometers long and 500 meters wide, its maximum depth is 30 m and its total volume is 26 million cubic meters of water. A filter station purifies the water from the Lake prior to its intake into the water supply network. The entire water supply network, including the filter station requires reconstruction as some of its parts are rather deteriorated.

The water supply in the municipality of Gracanica is provided by the public utility “Regional Water Supply” from Pristina. Apart from the Regional Water Supply system, there are five settlements which are supplied with potable water predominantly from own wells; this water is drunk without filtering and the quality of this water is not as good as the one that is taken from the Gracanica Lake and purified at the filter station. The water quality of the wells is randomly measured but given the presence of septic tanks and wells in the yards, sometimes at a relatively small distance, one can doubt the bacteriological suitability of water.

### Wastewater collection and discharge

The sanitation is not sufficiently developed in the municipality. After the establishment of the municipality some sewers have been built in all settlements except for Batuse, Lepina and Radevo. Due to the phased construction of sewers there are some gaps in the networks that cause free drainage of wastewater into ditches along the roads (e.g. between the villages Donja and Gornja Gushterica) which in summer results in nuisance for the local population.

There is no treatment of the wastewater. A design for a wastewater treatment plant for Gracanica is presently under development. According to certain analyses, four wastewater treatment plants may be sufficient to treat the wastewater arising from the entire municipal territory. A study on managing the wastewater is being developed with the aim to tender out the construction and operation of these plants. A memorandum of understanding is being signed by the municipality and a German company which is studying the most feasible treatment technology and locations of the plants. The municipality challenges the results of the feasibility

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study as the data used in the analyses are rough and derive from approximations and not from sampling and measurement.

### Electricity Supply

The territory of the Municipality of Gracanica boasts near-complete electrical grid coverage. Electricity is generated in the thermo-power plant Obilic. The electrical company KEK is responsible for supplying the Municipality. During winters, electricity restrictions are typical, disrupting both the daily lives of the inhabitants as well as the activities of businesses situated there. Although there is a high percentage of regular electricity bill payment among the inhabitants, due to the is not satisfactory payment of bills in certain areas, winter blackouts are a part of the daily lives of the inhabitants of Gracanica.. Also, the operator strived to replace the electricity meters where they were outdated and/or worn out which was not accepted well in certain areas. The awareness raising may be necessary in order to improve the situation with regard to the electricity supply.

### **7. Environment, natural and cultural heritage**

The Profile of the municipality of Gracanica identifies the following **environmental problems**:

- Toxic by-products from the Kishnica mine represent the most serious environmental issue in the Municipality, posing a constant threat to the surrounding area. The leaking from the tailings` deposit and the erosion driven migration of pollutants during rainfall causes pollution of the soil and water. Especially the water of Gracanka River is polluted by the leakages and erosion deposits from the tailings dam of the Kisnica mine. Gracanka River transports the pollutants into Sitnica River which significantly worsens after the confluence.
- Water pollution due to the wastewater discharge from settlements without any treatment into the recipients: Gracanka, Zegovka Janjevka Susička River, Pristinka, Sitnica as well as into irrigation canals; the pollution of groundwater is also caused by the percolation of wastewater through the (permeable) septic tanks.
- Public health related problems due to poor water supply in five settlements.
- Pollution of water, soil and diminishing of the landscape due to insufficient waste management. 25 illegal landfills have been identified. The largest volume of accumulated waste, around 100m<sup>3</sup>, is found nearby Gracanica (locality “Padaliste”, the waste tipped over the tailings dam Kisnica and nearby the village Donja Gushterica); the other illegal dumps are significantly smaller (10-50m<sup>3</sup>) and can be closed and remediated with no excessive costs. The majority of illegal dumpsites, though, have been created by dumping of construction and demolition waste; thus no pollution is released at these locations and cleaning them up can be easily executed in both financial and technical terms.
- Some healthcare waste was deposited inappropriately (mixed with municipal waste) within the municipal territory, i.e. over the tailings dam and elsewhere, whereby healthcare services are provided.

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- Air Pollution due to exhaust gases emitted by the aged light duty vehicles having no catalysts installed; in addition, the air quality is severely worsened by floating dusts from the tailings dam of the Kisnica mine. During winter the air quality is impacted by the point sources – individual houses that use mainly firewood (rarely coal) for heating. During temperature inversions and under wind blowing from north, some pollutants originating from the thermal power plant in Obilic are propagated in the territory of the municipality of Gracanica.

### Cultural and historical heritage

The cultural heritage is represented via the major sacral monument the Monastery of Gracanica and the archeological site Ulpijana. There are other sacral structures which are less known, but they are also worth seeing and visiting. The majority of those are not under protection.

The Gracanica monastery, dedicated to the Virgin Mary, is part of the legacy of King Milutin, his wife Simonida and his son Stefan. It was erected in 1321 in the place of an older church which used to be the seat of the Lipljane episcopate. The Law of zones under special protection No. 03/L – 039 from 2008 states that the surround area of the Gracanica monastery falls under the category of zones under special protection.

Ulpijana (lat. Ulpiana) or Justiniana Secunda (lat. Iustiniana Secunda) used to be a Roman and early-Byzantine town in the province of Upper Mezia. Its remains are found over a surface area of 70 hectares between Prishtina, Gracanica and Lipljan, at an approximate distance of 1 km from the Gracanica monastery. Archeological excavations started in 1954 and are ongoing. As they progress the boundaries of the protection zone are corrected.



Photo 1: The area of archeological investigations in Ulpijana

According to recent findings, the core of the excavations is in the middle of the protection zone while the area approaching to Laplje Selo is poor of artifacts due to which it obtains a less stringent status. It is anticipated that in 2-3 years the new boundaries of the protection zone will

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be defined to allow for construction activities in areas where the probability to discover archeological artifacts is low.

### **2.2.1 Goals and objectives of the MDP**

The MDP in its present status sets various objectives to meet the overall vision which is: „The municipality of Gracanica, protects and maintains its antique and medieval cultural heritage, applies modern production technologies as well as promotes and improves its nature and biodiversity while citizens are empowered to claim and enjoy their rights and freedom“

The goals and objectives in the MDP are presented below. The MDP objectives are segregated along the lines of the identified sectoral development challenges.

#### ***SOCIAL INFRASTRUCTURE, POPULATION AND DEMOGRAPHY***

AC1- Expansion of housing facilities and improvement of services in the area of health, education, social services, culture, sport and recreation.

AO1.1- Strengthening the capacities of staff and improvement of the conditions of the facilities

AO1.2- Providing adequate and quality services.

AC2 – Improvement of the living standard of citizens through proper planning of settlements and housing facilities.

AO2.1- Development of human settlements and enforcement of relevant legislation

AO2.2- Expansion of housing capacities through construction of collective and individual residential facilities.

#### ***ECONOMIC DEVELOPMENT***

BC1- Improvement of an economic development through the development of agriculture production and tourism

BO1- Stimulation of sustainable agricultural production

BO2- Development of market for local products

BO3- Provision of modern agricultural equipment

BO4- Awareness raising on sustainable agriculture

BO5- Encouraging and stimulating local family businesses

BO6- Prevention of illegal use and exploitation of publicly-owned agricultural land

BO7- Development and promotion of local tourism (cultural, religious, rural, sport and entertainment)

#### ***INFRASTRUCTURE, TRANSPORT AND PUBLIC SERVICES***

CC1 – Improvement of Public Services

CO1.1- Coverage of the whole territory of the Municipality with adequate water supply and sewage networks

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CO1.2- Improvement of the electricity network

CO1.3- Coverage of the whole territory of the Municipality with telecommunication networks

CO1.4 – Improvement of solid waste management

CC2 - Improvement of the Transport in Gracanica Municipality

CO2.1 – Reduction of traffic congestion in the centre of Gracanica

CO2.2 – Improvement of public transport and public spaces, as well as pedestrian and cycling mobility

CO2.3 – Creation of green corridors along the roads whenever possible

CO2.4 – Improvement of the local road network

***NATURAL RESOURCES, ENVIRONMENT PROTECTION AND CULTURAL HERITAGE***

DC1- Protection of Environment and Natural Resources

DO1.1 - Protection of agricultural land against chemical influences (agro-technical products)

DO1.2 - Protection of agricultural land against illegal construction

DO1.3 - Prevention of illegal logging and forestation of barren areas

DO1.4 - Awareness raising on environment protection

DO1.5 – Utilising of renewable energy sources

DO1.6 – Promotion of energy efficiency

DC2- Protection and Promotion of Cultural Heritage

DO2.1 - Protection of cultural heritage (architectural, vernacular, archaeological, cultural landscapes, spiritual heritage)

DO2.2 - Promotion of cultural heritage values (tangible and intangible)

DC3 - Decrease of risks & improve management of negative impact to environment caused by natural disaster or human driven activities

DO3.1 - Awareness raising and capacity building on cultural heritage

DO3.2 - Reducing negative environmental impacts in areas prone to natural disasters

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## 3. CONTEXT (BASELINE)

### 3.1 Socio-economic baseline

Kosovo is one of the poorest countries in Europe, with widespread and persistent poverty and as a post-conflict country it faces the need to build and rebuild its governance structures while transitioning to a market economy. Socially owned enterprises are still being privatized<sup>4</sup>, and governance and public service institutions are being developed.

Large number of people is still displaced. Land records are either nonexistent or unreliable. The cadastre system is being reconstructed and updated, and courts are resolving property claims, under a slow pace.

Kosovo has achieved steady, 4% per annum economic growth since the end of the conflict. The country remains a largely traditional, patriarchal society. Despite new formal laws pronouncing gender equality, women's rights to property are limited<sup>5</sup>.

The most advanced newly created municipality, the Municipality of Gracanica, has progressed in building its administrative and financial capacities; however, some older problems, such as competition by parallel Serbian government funded institutions have remained. Moreover, new challenges have been created with the increase in the number of competences and responsibilities in the municipality<sup>6</sup>.

It is observed that the municipality of Gracanica will soon become the biggest urban centre for Kosovo Serbs, especially those south of Ibar River. Gracanica is also the main municipality in which local businesses – especially the construction sector has shown interest in expanding their local investments. This has allowed Gracanica to generate greater own source revenues<sup>7</sup> and thus initiate and implement projects that benefit its citizens<sup>8</sup>. The development, however, brings forward environmental issues that require particular attention.

As presented in the MDP Profile, the municipality of Gracanica is a rural medium sized municipality that has significant prospects for development due to its vicinity to the Capital Pristina and the presence of the main transport corridors that connect Kosovo with its neighbours. The high quality arable land, the availability of lead and zink ore, some coal

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<sup>4</sup> There is an initiative to privatize the mine Kisnica. There is a risk that the environmental liabilities will not be resolved upon the privatization if the Ministry of Environment and Spatial Planning is not sufficiently involved in the process. There are also gaps observed in the law on Environmental Protection regarding the environmental liability; in addition, there are no rules defined for the Environmental Audit and Due Diligence to be carried out in parallel with the privatization process as required by the EU legislation.

<sup>5</sup> Source: Kosovo Economic Performance Assessment, USAID, May 2008

([http://egateg.usaidallnet.gov/sites/default/files/Kosovo\\_Economic\\_Performance\\_Assessment.pdf](http://egateg.usaidallnet.gov/sites/default/files/Kosovo_Economic_Performance_Assessment.pdf))

<sup>6</sup> Source: Decentralization, FES, May 2011 – *Kosovo Local Government Institute* ([http://www.fes-prishtina.org/wb/media/Publications/2011/KLG%20-%20Decentralisation%20Three%20Years%20On%20%20\(English\).pdf](http://www.fes-prishtina.org/wb/media/Publications/2011/KLG%20-%20Decentralisation%20Three%20Years%20On%20%20(English).pdf))

<sup>7</sup> Source: Diagnosis report on the own source revenue of Municipality of Gracanica, USAID, February 2012

([http://www.demi-ks.org/repository/docs/Diagnosis\\_report\\_on\\_the\\_own\\_source\\_revenue\\_of\\_Municipality\\_of\\_Gracanica\\_Eng.pdf](http://www.demi-ks.org/repository/docs/Diagnosis_report_on_the_own_source_revenue_of_Municipality_of_Gracanica_Eng.pdf))

<sup>8</sup> Source: [http://www.fes-prishtina.org/wb/media/Publications/2011/KLG%20-%20Decentralisation%20Three%20Years%20On%20%20\(English\).pdf](http://www.fes-prishtina.org/wb/media/Publications/2011/KLG%20-%20Decentralisation%20Three%20Years%20On%20%20(English).pdf)

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(lignite), the archeological and cultural heritage, all create an excellent potential for sustainable growth.



Photo 2: view on the hill “Padaliste” and surrounding high quality arable land

The principle according to which settlements develop in the Municipality of Gracanica is shaped by several infrastructural, environmental and economic factors. Historically, the predominantly agricultural settlements were organized into tight clusters of households for the purpose of freeing up as much high-quality arable land as possible. The favorable climate and high quality soil pulled the majority of the population into farming – a situation that endures in the western portion of the Municipality of Gracanica, where stagnating traditional settlements continue to function in much the same way as they have done for generations.

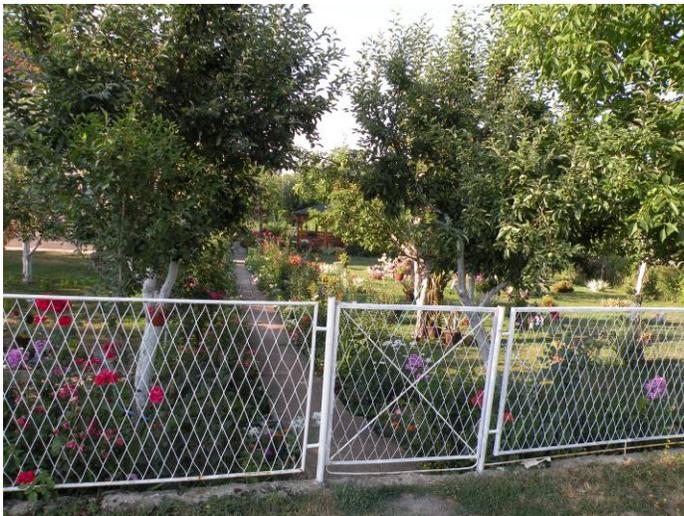


Photo 3: Outlook of a garden in Gracanica

On the flipside of stagnation, these settlements largely retain an archaic appearance that may potentially prove interesting for revitalization and development into eco-villages, provided that

many currently absent public utilities and environmental standards are constructed and implemented, respectively. The concept of eco-villages was suggested in the MDP Profile; after the field visits this proved to be possible under an assumption that the householders obtain support in terms of technical assistance and suitable incentives.

Some new private investments are seen in accommodation capacity accompanied with restaurants. One with the most appealing exterior and interior is the “Markov Konak” structure in Gonja Gushterica. It accommodates domestic and foreign guests who are looking for a calm area where they can get enjoy traditional and organic food.



Photo 4: The garden (left) and the hotel (right) within the premises of “Markov Konak”

The portion of the Municipality of Gracanica most subjected to urbanizing pressures is found in the north, affected both by the proximity of such a major economic center as Prishtina, as well as good infrastructural connections that reinforce economic activity and foster exchange between the two territorial units. As commerce intensifies in the group of settlements bordering with Pristina, it begins to compete with and eventually wins over agricultural pursuits of the local inhabitants.

With the gradual dissolution of the prior rationale for settlement planning – namely agricultural production and efficient use of arable land, and furthermore, in the absence of coherent spatial planning policies as a result of the institutional gap between the armed conflicts and an only recently re-introduced system of issuing construction permits (1999), the northern settlements are growing in a haphazard and arbitrary manner. This creates difficulties with resolving the local infrastructural network that can be overcome only through consistent application of heretofore neglected principles of sound municipality of Gracanica planning.

An improvement in the ability of the citizens of Gracanica municipality to access Kosovo services is observed. Some reports<sup>9</sup> ground this improvement in the fact that the majority ethnic group in the municipality of Gracanica is the Serbs. Namely after the conflict in 1999, the community established local institutions of government and service provision with financial

<sup>9</sup> Kosovo Communities Profiles, 2010, OSCE

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support from the Republic of Serbia in almost all the municipalities where Kosovo Serbs resided (including Gracanica). Despite high unemployment, Kosovo Serbs are relatively better off than other communities due to the subsidies that they receive from Belgrade, Kosovo institutions and international donors in the form of pensions, social welfare and donations.

There are brand new settlements erected either by the municipality or by private initiatives. An example of an organized new settlement is the one near the village Susica, positioned on a hilly terrain with beautiful views towards the valley.



Photo 5: The new settlement erected near Susica

### Employment

45% of Kosovo nationals are unemployed, 37% live below the national poverty line, and 15% live in extreme poverty, unable to meet basic nutritional needs. Extreme poverty is disproportionately high among children, the elderly, households with disabled members and female-headed households. An estimated half-million Kosovars live and work outside the country. Forty-percent of the population relies on an agriculture sector that is dominated by subsistence farming. Plot sizes are small, and farmers lack technical expertise and inputs.

The rate of unemployment in the municipality of Gracanica is relatively high, as it is throughout entire Kosovo. While the unemployment rate in Kosovo is assessed at 45,3% in 2011<sup>10</sup>, there aren't any official figures on the unemployment rate in the municipality of Gracanica. A significant part of the local community is engaged in the Serbia-run institutions: schools, healthcare facilities, police and local administration. Some vulnerable households, but also others, receive minimum salary reimbursements from the former socially owned enterprises or pensions.

However, a number of elderly people receive pensions from the Kosovo budget, while others are employed by the Kosovar public sectors.

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<sup>10</sup> <https://www.cia.gov/library/publications/the-world-factbook/geos/kv.html>

A number of families rely on agriculture as a form of income. In most vases, however, the agricultural production is kept at a level to satisfy only own needs.

Emerging businesses are engaging some labor force as follows:

**Table No. 1: Employments generated in the private sector**

No.	Company	Activity	Location	No. of Employees
1.	"Anton" Sh.P.K	Sales of paints, china and glass	Laplje Selo	20+seasonal
2.	"Relux" Sh.P.K	Production of paints and vanishes	Laplje Selo	10
3.	"Kosova Kolor" Sh.Pk	Sales of paints and vanishes	Laplje Selo	5
4.	"Elnor" Sh.P.K	Production of furniture	Laplje Selo	39+9 seasonal
5.	"Hib" Sh.P.K	Petrol station, hotel and restaurant	Laplje Selo	26
6.	"Inter Qadra" Sh.P.K	Production of tents	Livađe	7+7 seasonal
7.	"Kema" Sh.P.K	Production of construction material	Laplje Selo	21
8.	"Orbico" Sh.P.K	Food and cosmetics sales	Laplje Selo	17
9.	"Ebc Company" Sh.P.K	Sales of cosmetics	Laplje Selo	19
10.	"Porshe" Sh.P.K	Auto Hall	Laplje Selo	32

Source: LEAP for the municipality of Gracanica

Gracanica is the fourth municipality in Kosovo, where Kosovar Business Alliance, has opened the "Kosovo Stock Employment 2012" project. This traditional project is realized under the patronage of the Government of Kosovo and the Ministry of Labour and Social Welfare. Within the scope of this project it is planned for hundred citizens from this municipality to acquire their employment. The project is intended to connect the people seeking jobs and the employers who want to select appropriately qualified personnel for their business.

The existing business zones are not equipped with necessary infrastructure. The owners of plants and warehouses located in the business zone(s) manage on their own regarding the water supply, wastewater collection & discharge and waste management. The industrial waste is predominantly dumped and/or burned in winter into boilers (as part of their heating systems). The wastewater (household like or industrial – predominantly non - organically polluted) is drained into the stormwater drainage system constructed along the road that adjoins the business zone. The potable water is taken from the regional system (mainly deriving from the

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Gracanica Lake but also from the system of the municipality of Lipljan) while technical water is extracted from own wells.



Photo No 6: The premises of the furniture manufacture “Elnor”

It is obvious that the emerging business bring various benefits in the municipality, including the improvement of the employment situation. However, an increased area and/or density of such facilities may generate adverse environmental impacts.

To address these impacts, the municipality may limit the future (uncontrolled) expansion of business zones. In addition, EIA process for the new developments can be used as a tool to mitigate these impacts. The EIA is seen to work in synergy with sufficient enforcement measures. The observations made during the drafting of the baseline report show that neither EIA nor enforcement measures are sufficient thus additional mitigation measures might be needed to protect the already deteriorating environment.

#### Security and return of displaced citizens

Security issues appear mainly in Laplje Selo, Caglavica and Kisnica in the form of assaults, desecrating graveyards and robbery, thus undermining the freedom of movement. The Kosovo police station in Gracanica municipality has 57 police employees, 48 police officers and nine (9) civilian staff. Nineteen (19) of them are Kosovo Albanians, 37 Kosovo Serbs and one (1) Kosovo Bosniak. Out of all 57 police staff, nine (9) are female. As for the international military presence Swedish KFOR is in charge of the area (source: Kosovo police).

Nearly 2000 people (predomantly Serbs) remain displaced in Gracanica and surrounding villages in the southern part of Pristina. Two collective centres provide accommodation for displaced persons in Gračanica. The majority of the families in these collective centres are vulnerable, relying on assistance from the Serbian Commissariat for Refugees. Few displaced persons returned to Lipjan recently while in 2010, within the framework of the returns project to Laplje Selo, the Ministry for Communities and Returns handed over the keys of flats to 33

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families, including 19 families displaced outside of Kosovo and 14 families displaced within Kosovo.

The quality of life in these collective centres is very low, as the communal services are irregular and the electricity supply disruptions are common.

#### Healthcare and education

The healthcare is mainly provided by the Serbia-run institutions in a general hospital in Gracanica (secondary healthcare), special hospital for internal diseases in Laplje Selo, while the primary healthcare is provided in Healthcare institutes in Gracanica, Ugljare and Donja Gusterica and in Ambulatories in Čaglavica, Preoce, Lepina, Suvi Do, Livadje, Gornja Gušterica, Batuse, Sušica, Dobrotin and Laplje Selo. A small health centre in Kisnica village with three (3) medical staff is administered by the Pristina municipality. There are three privately owned hospitals.

There are problems with the functioning of the healthcare system which lacks modern equipment, professional staff and suitable conditions in the hospitals` premises.

The municipality invests into a new hospital near the village of Susica (see the photo below).



Photo No 7: The foundations of the new hospital near Susica

Education in Gracanica municipality is mainly provided by Serbia-run schools following the Serbian curriculum. There are three (3) pre-primary schools with 510 pupils and 34 teachers; eight (8) primary schools with 2,237 students and 204 teachers; and eight (8) secondary schools with 1,549 pupils and 310 teachers. There is only one (1) Pristina municipality - run primary school in the Kosovo Albanian inhabited village of Kisnica which has a satellite school in Susica village (source: municipal directorate of education). There are also three kindergartens. A number of kindergartens run into private houses that are rented by the municipality.



Photo No. 8: Kindergarten in Gracanica situated in a private house

The situation with regard to the pre-school, school and high school capacity is insufficient while the learning conditions are not appropriate. Serious investments are needed to ensure proper conditions for both the teachers and the students.

## **3.2 Environmental baseline**

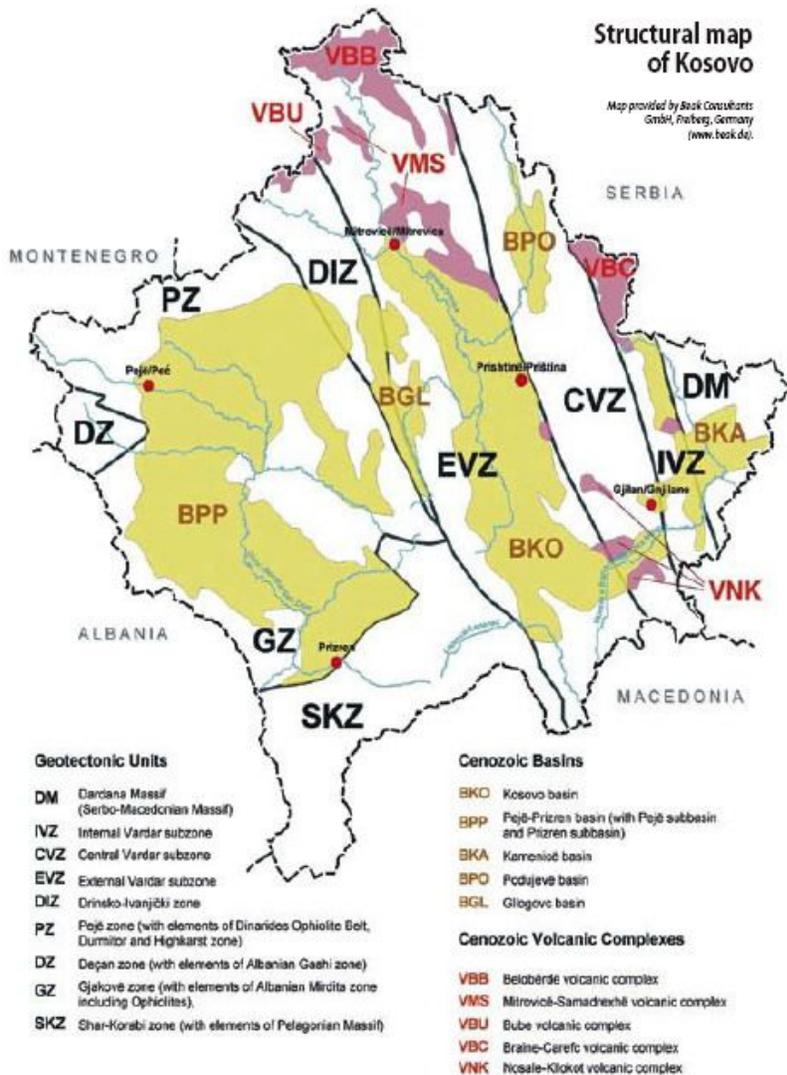
The environmental baseline comprises of the nonliving components (geology, hydro-geology and hydrology, climate etc.) and the biological resources (including forests and biodiversity). An overview of the environmental baseline in the municipality of Gracanica is presented below.

### **3.2.1 Geology and hydro-geology**

From geological point of view, Kosovo is placed in a very interesting territory because it is characterised by a variety of geological formations. Among these there are rocks ranging from old crystalline Proterozoic to Quaternary age comprising sedimentary and magmatic types together with rather less frequent metamorphic rocks.

The Kosovo area can be divided into different geotectonic units. Structurally, Kosovo is geologically divided into two roughly equal-sized halves (the Vardar Zone to the east and the Drina – Ivanjica / Korabi – Pelagonian Zone to the west) by the NNW-SSE trending suture between the Serbo-Macedonian Geological Belt in Kosovo and the Dinaric Geological Belt of Albania.

In the following figure these geotectonic units are shown.



Source: Source: Independent Commission for Mines and Minerals, Kosovo<sup>11</sup>

The area of the municipality of Gračanica belongs to the Vardar Zone.

- Vardar zone (VZ) comprises of a complex with the Internal Vardar subzone (IVZ), the Central Vardar subzone (CVZ) and the External Vardar subzone (EVZ):

Short characterisation IVZ

- Neoproterozoic to Lower Palaeozoic basement of the SMM,
- Oligocene to Miocene-Pliocene sedimentary basins (Kamenicë basin),
- Andesitic-dacitic-latitic and pyroclastic volcanism (Volcanic complex of Braine-Carefcë).

Short characterisation CVZ

- Low to medium grade metamorphic rocks – Palaeozoic basement,

<sup>11</sup> (<http://www.kosovo-mining.org/kosovoweb/en/mining/tectonics.html>)

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- Upper Jurassic ophiolite complexes,
  - 800 to 1,000 m thick Cretaceous flysch,
  - Intensive compression tectonics,

#### Short characterisation EVZ

- Low grade metamorphic rocks – Palaeozoic basement,
- Low grade metamorphic Triassic, Upper Jurassic ophiolite complexes,
- Cretaceous flysch,
- Oligocene to Miocene-Pliocene sedimentary basins (Kosovo basin).

### 3.2.2 Mining and ores

Kosovo has an abundance of coal, lead, zinc and other mineral resources. Despite of the immense potential for Kosovo to produce and export energy generated from coal to the rest of southeastern Europe, the coal extraction and energy-generation techniques are not “clean”<sup>12</sup>. The existing coal run thermal power plant in Obilic emits significant quantities of CO<sub>2</sub>, SO<sub>2</sub>, NO<sub>x</sub> and particulate matters. Under worsened weather conditions the pollution is distributed in the territory of the municipality of Gracanica.

The Vardar Zone (please see the description of the geological conditions above) is economically important as it hosts the Trepca lead-zinc-silver deposits. These deposits vary from carbonate-hosted skarns and karst fillings to vein deposits.

At the territory of the municipality of Gracanica the lead-zinc-silver deposits were not exhausted. Still, the existing installation (“Kisnica” mine) is not operational. There are some attempts to revitalize and privatize the Kisnica mine. The existing technology is outdated while the present owner of the mine (“Trepca”) is only maintaining the area. Risks from hazards are still present.

Its re-starting can be associated with uncertain impacts regarding the potentially high costs for technology upgrading and the environmental effects deriving from the processes (e.g. continuous dumping of tailings sediments over the existing dam).

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<sup>12</sup> Source: <http://usaidlandtenure.net/index.php?q=country-profiles/kosovo>



Photo No. 9: View on the Kisnica Mine

In case the Kisnica Mine would be privatized the environmental liability for the remediation of the polluted soil, removal of the tailings dam as well as the cleaning of the polluted groundwater should be clarified and appropriate measures to stop further pollution should be undertaken.

### 3.2.3 Climate

Kosovo lies in the south of the northern hemisphere, under Mediterranean-continental and European-continental climatic influences. The main macro climatic factors which influence its climate are: positioning of land masses (Eurasia and Africa), aquatic masses (Atlantic Ocean and Mediterranean Sea), aerial masses (tropical and arctic-maritime or continental) and position of baric systems (maximum of Azores and minimum of Iceland). The main factors influencing Kosovo's climate are: relief, waters, terrain and the vegetation. (Source: *Hydro-Meteorological Institute of Kosovo*).

Kosovo's climate is moderate continental with warm summers and cold winters. In the plains and adjacent hilly areas, where there is a continental climate, air temperature may range from minus 20 °C in the winter to +35 °C in the summer. In the Kosovo plain about 170-200 days per year are frost-free and the mean annual rainfall is about 650 mm. In the Dukagjini plain, the annual rainfall is higher (about 780 mm) and the frost-free period is longer (up to 225 days), indicating a pronounced Mediterranean climate influence in the western part of Kosovo. Overall the average annual rainfall is up to 700mm but its distribution is not very good.

In Eastern Kosovo and the lowlands of Kosovo, Llapi, Drenica and Ana-Morava it is a little colder compared to Dukagjini (western part). Average annual temperature is 9.5°C, with fluctuations from 19.2°C for July and -1.3°C (January).

**Table No. 2. Main meteorological indicators for Kosovo**

Parameter	2002	2003	2004	2005	2006	Average
T max °C	14.7	16.5	16	15.6	16.4	15.8

Parameter	2002	2003	2004	2005	2006	Average
T min °C	5.2	6.1	5.6	5.6	5.2	5.5
T Avg °C	10.6	11.2	11	11.1	11	11.0
Humidity, %	86	72	73.7	72.7	73.7	75.6
Wind m/sec	1.7	1.7	1.4	1.3	1.4	1.5
Precipitation, mm	722.7	667.5	762.6	739.1	689.9	716.4

Source: Hydro-meteorological Institute, 2009

Precipitation is mainly as rain in valleys and snow in higher, mountainous regions (Bjeshkët e Nemuna and Sharri).

In Eastern Kosovo (where the municipality of Gracanica is situated) the average precipitation is over 600 mm, while in the west it exceeds 700 mm.

In the Bjeshkët e Nemuna mountains there are cases of 1 750 mm precipitation. Snowfall is common during the colder period of the year. In the lowlands there is an average of 26 days with snow, while in mountain areas there are more than 100 days.

Total precipitation looks almost satisfactory, but due to very big fluctuations between months, agricultural production in regions with no irrigation often faces droughts or floods. See Figure 6 below which shows the five year (2002-2006) average, minimum and maximum values of precipitation.

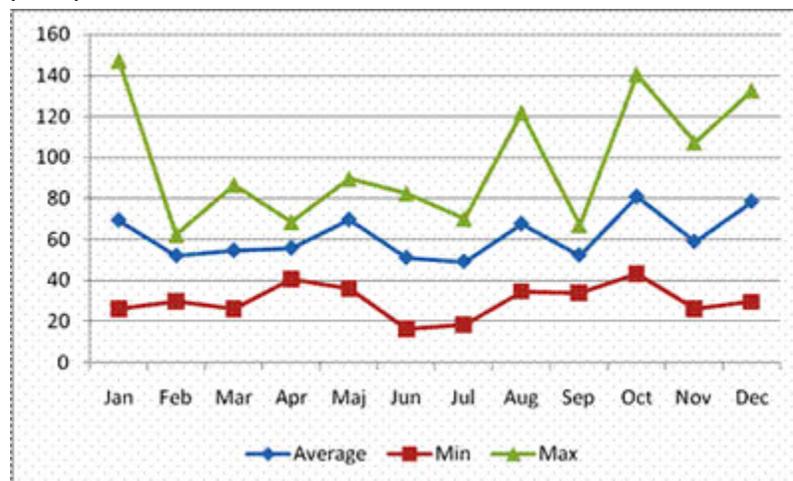


Figure 6. Precipitation variability in Kosovo (2002-2006)

Source: Country Pasture/Forage Resource Profile, FAO, 2009<sup>13</sup>

<sup>13</sup> <http://www.fao.org/ag/AGP/AGPC/doc/Counprof/kosovo/Kosovo.htm>

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Average wind speed fluctuates between 1.3 m/sec (in Peja) to 2.4 m/sec (in Ferizaj). Maximum wind speed reaches 31 m/sec usually during March and April. Kosovo has insolation levels of 2 066 hours during the year and 5.7 hours per day<sup>14</sup>.

### **3.2.4 Water Resources and water management**

Kosovo's main rivers are Drini i Bardhë (122 km), Sitnica (90 km), Bistrica e Pejës (62 km), Morava e Binqës (60 km), Lepenci (53 km), Ereniku (51 km), Ibri (42 km) and Bistrica e Prizrenit (31 km). There are 5 lakes larger than 2.5 square km. Rivers predominantly flow from Kosovo to the Adriatic, Black and Aegean Seas<sup>15</sup>.

#### Institutional Framework

The Ministry of the Environment and Spatial Planning (MESP), which has central authority for water resources, sets water policy and implements water-related legislation. MESP includes a Department of Environmental Protection, the Hydrometeorologic Institute, Water Department, and the Water and Waste Regulatory Office (WWRO). WWRO is responsible for monitoring water companies; issuing, amending, extending, and revoking service licenses; setting up and enforcing service standards; setting up or approving tariffs payable by customers; regulating the mutual rights and obligations of service providers and their customers; and protecting customers (particularly ethnic minorities and other vulnerable groups) from discrimination in the provision of services. Six regional publicly owned water companies cover municipal water supply.

The Water Authority of Kosovo is the country's advisory body on water resource management issues. The Water Law also contemplates establishment of River Basin District Authorities to implement the Water Law and any relevant regulations. The municipality of Gracanica would belong to the River Basin District for Ibar River to be established.

Delivery of drinking water and water for irrigation has been irregular, causing periods of water shortages.

#### Water supply

There are presently three water supply systems that provide potable water to 11 settlements:

- The regional Gracanica Lake System
- The regional System supplying the municipality of Lipljan
- The regional System supplying the municipality of Kosovo Polje

Majority water supply needs are covered by the System of the Gracanica Lake.

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<sup>14</sup> <http://www.fao.org/ag/AGP/AGPC/doc/Counprof/kosovo/Kosovo.htm>

<sup>15</sup> [https://www.cimicweb.org/cmo/ComplexCoverage/Documents/Kosovo/Current%20Documents/The%20State%20of%20Water%20in%20Kosovo\\_2010.pdf](https://www.cimicweb.org/cmo/ComplexCoverage/Documents/Kosovo/Current%20Documents/The%20State%20of%20Water%20in%20Kosovo_2010.pdf)



Photo No. 11: The system for purification of the water from the Gračanica Lake

The existing filter station in the scope of the Gračanica system is relatively well managed. Chlorine and aluminium sulfate are used to remove impurities in sedimentation basins. This substance is deemed carcinogenic and replacements for chlorine and aluminium sulfate using ultra violet systems in purification methods are envisaged.

As part of the efforts to improve the present water supply, it is planned to install a new filter station. This new filter station will incorporate state of the art purification methods which will positively reflect upon the overall quality of potable water. Also, a new reservoir capacity is under development, thus, the existing system will be phased out after the completion of these new facilities.

It is evident nowadays that the existing water supply system using the water of the Gračanica Lake is not sufficient to respond to the growing needs. Even in the eighties the provision of continuous water supply was questionable thus construction of channels for delivering additional water quantities from the area of Gazivode to regional supply system was undertaken; the system complementing the Gračanica Lake system is, however, no longer in operation. Also, as a result of the deposits of silt from the surrounding terrain, the basin of Gračanica Lake is attenuating.

The donors, including the EU, provide grants to improve the water supply system for Pristina and Gračanica. Overall, the water supply for Pristina will be provided from a new system (Ibar – Lepenec System) that is planned to be completed in 2015, while the Gračanica System, serving a broader region, will be restricted to use in Gračanica municipality only.

Apart from the lack of water, the existing distribution network is obsolete; it is true in particular for the secondary network which needs to be refurbished as to allow for the replacement of mostly asbestos pipes. Another water distribution line is being installed with sufficient capacity which will be put in full operation after the completion of the new filter station which is in its initial stage of development. This line is partially used at present for the water supply of the hospital in Pristina.

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Unfortunately, the quality of water supply is disbalanced because the existing water supply systems do not cover all settlements with water of controlled quality. Namely, five villages use drinking water from their own wells. There is no regular monitoring of the quantity and quality of the water, and sporadic analysis indicates instability in terms of quantity and quality. Measured quality parameters are not in line with the required standards.

#### Wastewater collection

RVK „Pristina“ manages the existing separate sewerage network. The network covers 679 households and 450 industries/commercial establishments. Total length of the sewage network is cca 10 037 m whilst the storm water networks length is cca 2 495m. During the rain periods, as a result of the insufficient storm water coverage, storm water flows into the sewerage system causing clogings and frequent overflows of the wastewater. The wastewater is distributed by gravity to the main recipients river Gracanka, the irrigation channel „Ibar - Lepenac“ and Prištevka which is the main collector of the city of Pristina. The waste water is then discharged (mostly by gravity) in the river Sitnica.



Photo No. 12: Algae in Sitnica River indicate for significant organic loads

Wastewater collection coverage in the rural areas is very low especially in Batuse, Lepina, Radevo where the sewerage system is either partly constructed or it doesn't exist. The wastewater is discharged into primitive septic tanks, and as the absorption capacity of the soil is rather high it causes serious ground water pollution. This is a very serious health issue having in mind that inhabitants in this villages use their own wells for water supply.

Industries/business facilities constructed in the „Business zone“ and villages are not equipped with wastewater treatment plants. Thus, both wastewater from households and industries is discharged untreated in the recipients, causing serious pollution and health problems as untreated water is frequently used for irrigation of the fertile land.

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## Water Quality

Water resources in Kosovo are stressed by increasing demand and weak or nonexistent infrastructure. Surface and groundwater resources are polluted by sewage and industrial waste.

The state of the rivers is not satisfactory for the reasons of environment pollution. Gracanka and Sitnica Rivers (the latter after the confluence of Gracanka) are the rivers loaded with chemical pollution (heavy metals). In addition, the Pristevka River brings predominantly organically polluted wastewater discharged via the sewers in Pristina.

Over a longer period of time River Gracanka was affected by wastewaters from the Kisnica main, and its river bed is heavily deposited with different hazardous metals with harmful health effects. Generally, the river bed is in a very bad condition, covered with reeds and with unregulated river banks.

Additionally, the untreated wastewater from households and industries discharged in r. Gracanka poses serious threat to the ecosystem as a whole and to the wellbeing and health of the citizens in Gracanka.



Photo No. 13: The polluted area around the Kisnica Mine

The measurements conducted by the Hydro Meteorological Institute of Kosovo, in 50 measuring points in all rivers, were used to get the following physical and chemical parameters: according to the results, all rivers in Kosovo exceed EU standards as regards water color, especially in the areas around the middle and the end as a result of industrial water and sewage discharge (app. 1500 l/s are discharged in the eastern part of Kosovo alone). Based on the measurements and chemical parameters cyanide, nitrates, zinc and phenols, are present in greater quantities from time to time, when compared to EU determined standards. Based on these analyses conducted in the rivers of Kosovo, only the river Sitnica turned out to have values at a dangerous level.

Water pollution is increased by the sewage, which is discharged in the water, as well as garbage, use of sand and gravel and land being washed. Plants used to process urban sewage do not exist in any settlements. Assessment for the needs of this SEA was made to understand the organic load in rivers. The analyses are presented in the table below.

Table no. 3: Estimated BOD load in rivers in the municipality of Gracanica

Villages	Housholds	Recipient	BOD load (kg/day)
Gračanica	1500	Gračanka	378
Dobrotin	300	Žegovački potok	75.6
G. Gušterica D. Gušterica	550	Janjevka	138.6
Kišnica	120	Gračanka	30.24
Novi Badovac	170	Gračanka	42.84
Laplje Selo	400	Gračanka	100.8
Preoce	200	Gračanka	50.4
Lepina	95	Sitnica	23.94
Radevo	70	Sitnica	17.64
Skulanevo	100	Sitnica	25.2
Suvi Do	150	Sitnica	37.8
Batuše	90	Sitnica	22.68
Sušica	180	Sitnica	45.36
Livađe	100	Sitnica	25.2
Čaglavica	100	Sitnica	25.2
TOTAL			1 039.5

Source: The State of Water in Kosovo, 2010, *Kosovo Environmental Protection Agency*

The information presented in the above table can be used for the selection and dimensioning of the wastewater treatment technology during the next planning stages.

Another permanent risk is rainfall, which impacts the water level, increasing it and making it flood large areas of land.

There are certain attempts to regulate the Gracanka River. The design of the regulation is not considering the environmental issues and as such it captures the river while the natural coastal habitat is entirely lost. In that manner the erosion retention potential of the river is minimized, the riparian flora and fauna is diminished.



Photo No. 14: Regulated riverbed of Gracanka River: the riparian habitat wins the battle with the stone

### Irrigation

The water from Gračanica Lake is also used for irrigation of 2260 ha of arable land near Gračanica, Čaglavica and Laplje Selo. The existing irrigation scheme from the lake to Dobrega is out of function.

### **3.2.5 Air Quality**

Based on the information obtained from the responsible institution for monitoring of the air pollution (Hydrometeorological Institute Priština) there are no available monitoring data on air pollution for Gračanica.

Despite this, air pollution in the municipality is evident in winter, as the main heating source both for households and industry is solid fuel (coal and wood). For the time being no alternatives to redirect the present heating practice towards renewable energy resources exist, although the area of the municipality has a great potential to use biomass as alternative energy source.



Photo No. 15: Piles of coal and firewood ready for winter

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The air quality is impacted by the floating dust from the Kisnica tailings area, traffic and individual heating using firewood and coal. In addition, under worsened weather conditions the pollution originating from the thermal power plant in Obilic is distributed over the municipal territory.

### Vehicles

The majority of vehicles in Kosovo are old models that emit large quantities of GHGs through their exhaust systems. Newer cars and trucks include technology to reduce such emissions. Global estimates account 10% of all GHGs to vehicles. Unofficial estimates by the Kosovo Environment Protection Agency suggest that approximately 5.5 million tons of CO<sub>2</sub> is emitted by Kosovo's vehicles each year.

While the Ministry of Transport and Telecommunications (MTT) and the Ministry of Environment and Spatial Planning should be responsible for obtaining data on emissions by Kosovo's approximately 220,000 registered vehicles, a representative from the MTT stated that relevant emission data is not available. In addition, in 2002, about 30,000 tons of diesel and 25,000 tons of petrol were imported with limited quality control check<sup>16</sup>.

### **3.2.6 Soil Quality**

There are no data on the use of fertilizers on grasslands and pastures but data from Agency for Finance in Kosovo (AFS) (2006) gives a general idea on this issue.

The most frequently used fertilizers are mixtures of Nitrogen, Phosphorus and Potassium, traditionally known as NPK fertilizers and in at least 90% of cases the content of these nutrients is 15:15:15. NPK fertilizers are generally used for basal dressings during land preparation. If applied to grasslands and meadows they are usually used in late winter or early spring. The other fertilizers used are nitrogen fertilizers NAG (Calcareous Ammonium Nitrate) with a declared content of 27% Nitrogen and Urea with a declared content of 46% Nitrogen. These fertilizers are used for top dressing during spring: February-March in arable lands sown with winter cereals, but mostly during April-May for perennial grasses.

The use of mineral fertilizers depends on weather conditions. Statistics of AFS show that NPK fertilizers are used by 67.4% of small farmers and 80.3% of big and specialized farms, NAG 23 and 38%; Urea 37.3 and 43% other fertilizers 3.4 and 1.5 and organic fertilizers (manures) 38 and 54.7% for respective types of farm.<sup>17</sup>

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<sup>16</sup> BIRN, Kosovo and Climate Change, 2009, <https://wiki.rit.edu/download/attachments/68166747/Climate+Change+Report.pdf?version=1&modificationDate=1349820226330>

<sup>17</sup> Pasture.Forage Resource Profile, 2009, <http://www.fao.org/ag/AGP/AGPC/doc/Counprof/kosovo/Kosovo.htm>

**Table no. 6. Average use of mineral fertilizers during 2006 (AFS, 2006)**

MINERAL FERTILIZER, kg/ha						
Crop	Area, ha	NPK	NAG	UREA	Other	TOTAL
Cereals	109 989	239	86	98	1	424
Vegetables	16 006	307	175	84	100	666
Forages	96 766	82	20	30	2	134
Fruits	4 109	124	34	32	139	329
Other	111	2	1	0	0	3
Total/Mean	226 982	151	63	61	48	315

Source: Statistical Office Kosovo (SOK), *Agricultural Household Survey (AHS), 2006*

The highest amount of mineral fertilizers per hectare is used for vegetables (see Table 6 above), but because of the bigger planted area the highest total amount (46 000 tons or 65% of the total) is used for cereals, followed by forages with 13 000 tons or 18%.

The use of organic fertilizers is shown in Table x below.

**Table No. 7. The use of organic fertilizers (manure) in Kosovo during 2006 (AFS, 2006)**

ORGANIC FERTILIZERS (MANURE)			
Plant	Area, ha	Tonnes	kg/ha
Cereals	109 989	101 263.0	920.7
Vegetables	16 006	62 778.7	3922.3
Forages	96 766	140 063.0	1447.4
Fruits	4 109	7962.2	1937.6
Other	111	nr	nr
Total	226 982	312 066.9	*1 374.9

The use of manure is decreasing due to the declining trends in the livestock figures.

Source: Statistical Office Kosovo (SOK), *Agricultural Household Survey (AHS), 2006*

### 3.2.7 Waste Management

#### Institutional Framework

So far, the Ministry of Environment and Spatial Planning has established the needed legal structure for waste management (the Law on waste and a series of administrative instructions that regulate this field). Also, based on its legal responsibilities the MESP has started preparation of the Strategic Plan for Waste Management. Apart the fact that the role of MESP was focused on legislative preparation activities, it has done continual efforts for improving the waste management system.

Local authorities are responsible for municipal waste management. Waste management includes collection, transportation, recycling, treatment and disposal of municipal waste. The Law on waste management (No. 02/L-30) requires the local authorities to develop a local waste management plan; there isn't a local waste management plan in the municipality of Gračanica.

### Waste Management Service

In Kosovo operates a number of enterprises that deal with waste collection, treatment, recycling and transport.

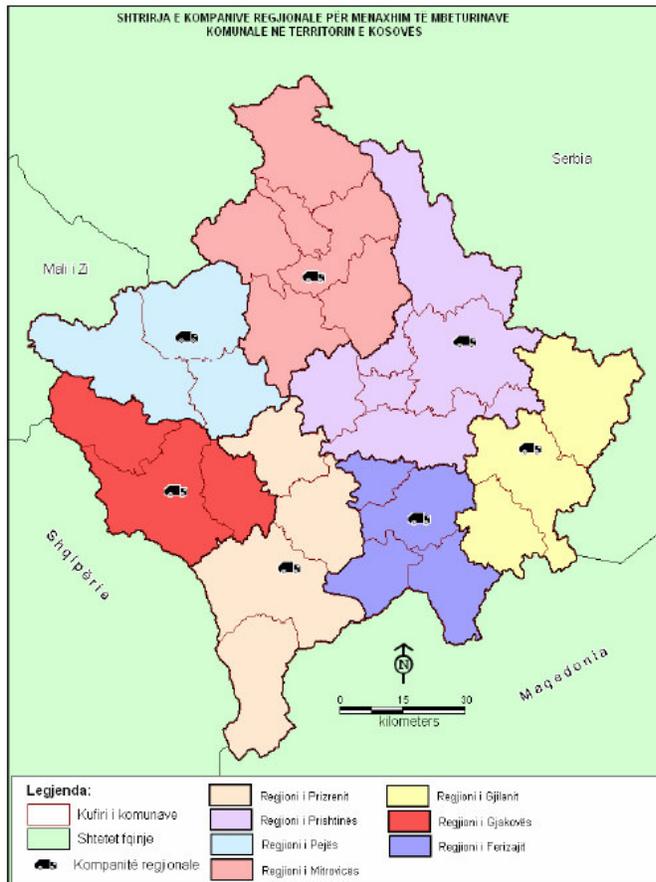


Figure No. 7: Spread of regional waste companies

Source: Source: The State of Waste in Kosovo 2008 Report, *Kosovo Environmental Protection Agency*<sup>18</sup>

The municipal administration is setting the waste management high on the agenda and therefore an agreement between the municipality of Gračanica and the Regional Company PASTRIMI was concluded. With the project financed by the USAID DEMI, which provided a refuse truck and 300 containers to the municipality, the problem with household waste collection and the problem with illegal dumpsites is partially solved through delegation of this services to the regional communal enterprise.

<sup>18</sup> ([http://www.ammk-rks.net/repository/docs/6State\\_of\\_Waste.pdf](http://www.ammk-rks.net/repository/docs/6State_of_Waste.pdf))

The waste collection is carried out in all 16 villages. Two trucks are running and collecting the bins / containers once a week. In Gracanica the collection frequency is higher.

Every household is covered by a regular waste management service, however, the legal persons including the commercial establishments and businesses are reluctant to initiate the service. Therefore certain containers / bins are overfilled because the unserved costumers are depositing illegally their wastes elsewhere. An organized and joint action to be conducted by the municipal inspectors and the operator is necessary to improve this situation.

The waste collected is transported to the landfill so called Miras. According to the info provided from the company Pastrimi, the environmental conditions at the landfill are rather poor. Furthermore, there are some thermal mineral waters found in the area where the landfill is located. The poor landfilling conditions are, however, not under the responsibility of the municipality of Gracanica.

There is no reliable data on the waste generation and composition in the municipality of Gracanica. According to the info obtained from the operator, around 9 tones a day are collected. In the table below some approximation for the waste generation and composition is provided.

**Table No. 8: Waste generation and composition in the municipality of Gracanica**

<b>Waste generation and composition</b>	<b>%</b>	<b>kg/day</b>
Paper and cardboard	8	1 440
PET	15	2 700
Metals	6	1 080
Glass	17	3 060
Textile	10	1 800
Organic	26	4 500
Packaging	4	720
Hazardous waste	1	180
Construction and demolition waste	14	2 520
Total waste generation	100	18 000

Source: LEAP for the municipality of Gracanica

The quantities estimated in the LEAP for the municipality of Gracanica seem to be rather high. In any case, on top of the 9 tons collected daily by the company Pastrimi, there is an excess quantity that is collected and dumped over the tailings dam by the Serbia run Public Enterprise for waste management.

### Recycling

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The recycling in the municipality of Gracanica and in Kosovo overall is within the domain of the informal sector. Aluminium cans are the most attractive recyclable that is collected by Roma families.



Photo No. 16: Collection of recyclables by Roma families

Apart from the aluminium cans, some plastics is collected separately and purchased by a company in Kosovo Polje. This company is then exporting the plastics in Macedonia and from there on to China.

### Healthcare Waste

Healthcare waste is mixed with municipal waste as there are no special containers for segregated collection of this waste stream. Additionally, the awareness about the consequences deriving from inappropriate treatment of the medical waste is rather low. There is no data on healthcare waste quantities that are generated in the numerous health institutions in Gracanica. It is obvious that the issue of proper healthcare waste treatment is among priorities in this municipality. It is of utmost importance to align national policies regarding healthcare waste with the relevant standards set by the World Health Organization and the European Union.

### **3.2.8 Cumulative Pollution Kainica tailings dam**

The Kainica mine belongs to the Trepca Group of companies. The shareholder situation and the legal situation of this Group are unclear. The re-start of production or initiation of privatisation towards the provision of the required investments is planned but the chosen policy is not known yet as well as its implementation schedule. The enterprise known as Trepca is a conglomerate of some 40 mines and factories, located mostly in Kosovo, but also in other locations in Serbia and Montenegro. Its activities include chemical processing and the production of goods based on the minerals mined such as batteries and paint. The Kainica Processing Plant, situated to the west and in another valley (Gracanica River), served as the treatment facility for the Artana/Novo Brdo ore mined in the recent years during underground exploration and development work. This production generated the revenues to pay the salaries of the miners.

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Tailings from Pb/Zn mining are placed nearby the banks of the Gracanica River. The drained precipitation is continuously eroding the tailings and transporting the contaminated material downstream thus contaminating the river and the flood plains and causing contamination of drinking water. Furthermore, the river is adversely affected by acidic and contaminated seepage from the tailings.

Possible environmental hazards associated with the tailings impoundment include:

- contamination of groundwater due to seepage and further downhill from the impoundment by metals leaching from the tailings
- contamination of sediments and surface water from tailings materials eroding from the faces of the tailings impoundments
- contamination of air by dust blown from the tailings during high wind events in dry weather periods
- contamination of agricultural soil by deposition of suspended dust from tailings impoundments
- contamination of residential soil by deposition of suspended dust from tailings impoundments
- contamination of surface water and sediments from contaminated groundwater discharging to streams

### **3.2.9 Noise**

Traffic is the main and only generator of noise. Still, some measurements conducted in Gracanica nearby the Monastery show relatively high noise levels.

There isn't any organized measurement of noise levels in the municipality. Whenever sensitive recipients are affected by noise the measurements should be more frequent in order to obtain valid results.

### **3.2.10 Natural Environment and Biodiversity**

Kosovo is extraordinarily rich with plant species, considering its relatively small surface. Are identified 13 species of plants that grow only in Kosovo and approximately 200 species are grown in Balkan. Total number of plant species is larger than in some European countries. This diversity is a result of complexes activities of physical factors, as the soil and climate that create diversity of habitats and conditions for growth of plants. In territory of Kosovo are around 24 species of threatened plants as a result of human activities. These are mainly concentrated in mountain areas but also in field areas.

Factors which create favorable conditions for these species of plants in Kosovo indicate a high level of diversity of animals within this relatively small territory. Approximately are around 46 species of mammals in Kosovo, majority of them with regional and global importance. Some

species of water birds have lost as a consequence of wetland destruction, pollution and degrading of rivers. Hunting was very high during the years of 1990, and now there are reports for reduction of illegal hunting, with what it is thought, that had impacted in increase of endangered animal populace from illegal hunting.

The location of the biodiversity “hotspots” in Kosovo is presented in the figure below.

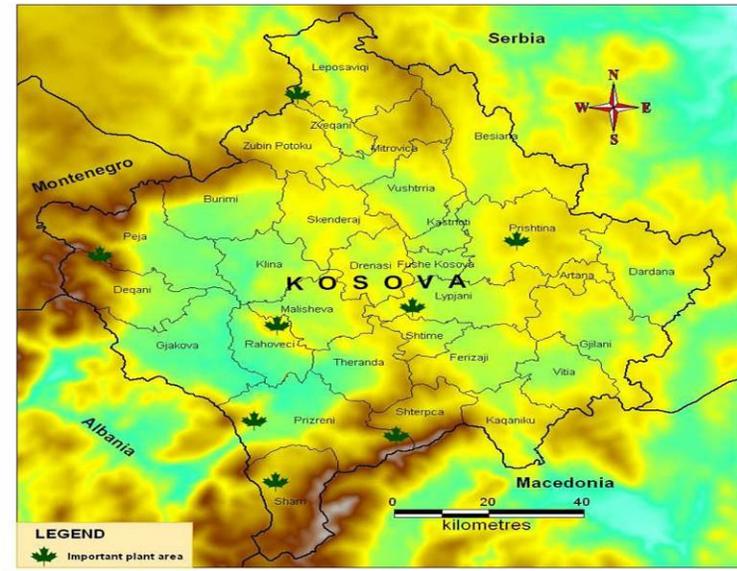


Figure No. 8: preliminary identification of Natura 2000 sites in Kosovo,

Source: Strategy and Action Plan for Biodiversity (2011 – 2020), *Kosovo Environmental Protection Agency*<sup>19</sup>

As it can be seen in the figure there aren't any significant plant and/or fauna species present in the territory of the municipality of Gracanica.

Suburban greenery in the municipality, as the core area for the maintenance and enhancement of the biodiversity, is presented with different types and categories. According to the vegetation types the greenery could be forest greenery, meadow greenery, crops and orchards. According to the function green areas are divided as follows

- agricultural,
- forest,
- protective greenery
- recreational zones

### Forests

Overall, the forest sector has lacked a central strategy and leadership, and new programs to manage forest resources will require clarification of roles at the central and municipal levels.

<sup>19</sup> ([http://www.ammk-rks.net/repository/docs/Strategy\\_and\\_Action\\_Plan\\_for\\_Biodiversity\\_2011-2020.pdf](http://www.ammk-rks.net/repository/docs/Strategy_and_Action_Plan_for_Biodiversity_2011-2020.pdf))

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Forests are emerging onto a limited area in the municipality of Gracanica. While the predominantly degraded oak forests around the Gracanica Lake are not excessively used, in the area of Gornja Gushterica illegal logging is observed.

The forest potential at national level is 41.8% with cca 455 000 ha. In the municipality of Gracanica forests cover the area of 389,79 ha, either private or state owned, which represents approximately 3,22% of the total area of the municipality. Forest is located on the north –east and south – east side of the municipality. Most abundant forest species are black and white pine and shrubs. In 2011, the agricultural and forestry department together with the Ministry for agriculture and forestry and Forestry Agency from Kosovo, afforested 10ha in the municipality of Gracanica with black pine (*pinus nigra Arnold*).



The forestry administration issued permits for transportation of wood and have right to confiscate illegally logged quantities. Last year cca 10 m<sup>3</sup> of wood were confiscated.

The major biodiversity hotspots in the municipality are:

- the hilly terrain under degraded forest surrounding the Gracanica Lake
- the riverbed of Sitnica River prior to the confluence of Gracanka River
- the fish pond located between the village Batuse and the airport

These are illustrated in the photos below.



Photo No. 17: The Gracanica Lake, the Sitnica riverbed and the fishing pond near Batuse.

While the areas near the lake and fishing pond act as ecological cores, the riverbed of Sitnica plays a role of ecological corridor. Together with the forests nearby Gornja Gushterica, these

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biodiversity hotspots are building the existing ecological network that is of utmost importance for the maintenance and strengthening of the local biodiversity and landscape.

### Hunting<sup>20</sup> and fisheries

Kosovo is a rich region with fauna species to the geographical position and the preserved environment in the elevated areas. Due to anthropogenic impacts some animal species are getting the status of endangered species.

By analyzing data over species and the number of wild animals in Kosovo, it is observed that the majority of animal species are in a very low number; some are in average number, while only the population of wild pigs has increased.

The area surrounding the Gracanica Lake possesses potential for organizing a hunting area; some areas near the village Livadje are also seen to have potential for organizing of a hunting area. There is, however, no interest in obtaining concession for hunting, most probably because the hunting is not perceived as a commercial activity.

Since a sustainable hunting means use of animal species and habitats in a manner that the rate of long-term loss of biodiversity is limited, organizing of a hunting area may contribute to an improved wildlife situation, provided that the number and composition of species are maintained appropriately.

The considerable potential of sweet waters in the municipality of Gracanica is seen in the development of the sport - recreative fishing.

Development of aqua-culture in Kosovo dates from years of '60. The quantity of production of fish in ponds of fish is minimal around 300 tones/per year. By made analyses from Ministry of Agriculture Forest and Rural Development, considering also the local production of fish in existing pond and also in fish export and import of fresh frozen fish, fish meat consume per year is 0.8 kg/habitants, comparing with regional countries and wider the consume of fish meat is under the average.

The fish stock is not managed and improved based in any managing plan.

As stated earlier, the fishing is mainly organized in the area of Gracanica Lake. Fishermen obtain licenses which are provided by the Kosovo fishermen federation (it has a status of a non-governmental organization). It is not known whether there is any limit to the number of issued licenses. There are, however, periods when the fishing is forbidden.

There were some fishing areas on Gracanka River but due to its excessive pollution they are abandoned.

Another fishing area is the pond located nearby the Batuse village. A concession is granted to a person that issues fishing licenses. On the other hand, instead of one pond there were three successive ones, two of which were dried out by the local population which collected fish

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<sup>20</sup> Source: [http://www.gapmonitor.org/data/Image/SAPB\\_final\\_English.pdf](http://www.gapmonitor.org/data/Image/SAPB_final_English.pdf)

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remaining after this illegal activity was performed. The local biodiversity and fisheries would benefit from the restoration of the original shape of the pond(s).

It is observed that the fisheries presently do not bring any significant economical benefit. However, it can work in synergies with other local attractions to reinforce the tourism.

### **3.2.11 Landscape**

The rural landscape dominates in the territory of the municipality of Gracanica. The agricultural land uses differ by crops and agronomic systems, from intensively managed monocultures, to more organic systems involving annual or perennial crops. The monocultures are, however, vanishing as a result of the new land ownership pattern denominated by private land plots. Also, due to the declining numbers of livestock, the mineral fertilizers and pesticides are replacing the manure and natural pest control methods.

The monocultures (grains, corn, sunflower etc.) are not beneficial for the natural environment and biodiversity. Also, the borders between individual plots are rarely marked by linear greenery. Abandoned land is worsening additionally the situation with biodiversity.



Photo No. 18: Abandoned land in the area of the railway heading to Skopje

The lack of ecological corridors being created by hedgerows, inner-crop and grasslands is adversely impacting the biodiversity and the possibility for the wildlife to migrate.

Apart from the agricultural landscape, there is also a landscape of degraded forest shaping the buffer around the Gracanica Lake and Gornja Gusterica village. The land use in forestry is prone to limited human interventions.

The landscape is threatened by the littering and illegal dumping of waste.



Photo No. 19: Dumpsite of demolition waste nearby the railway heading to Skopje

Littering happens along the roads and rivers. Careless throwing away of waste diminishes the scenic character of the landscape. Construction waste is thrown into the river Gracanka when the works on regulation take place.



Photo No. 20: careless release of construction waste (gravel) into the newly regulated riverbed of the Gracanka River

### **3.2.12 Conclusions Environmental Baseline**

The following conclusions derive from the SEA analyses:

- The population data are not reliable and it is difficult to carry out any projections for housing, public services and infrastructure; the municipality in cooperation with the national authorities should conduct a survey to assess accurately the number of inhabitants, the growth rates, the anticipated number of displaced people that may return to the municipality of Gracanica etc.

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- Public services are mainly sponsored by the Serbian institutions; although their capacities may satisfy the needs, the buildings in which these services are performed should be refurbished and maintained appropriately further on;
  - The air quality is worsened as a result of the floating dusts from the “Kisnica” tailings dam; under special climate conditions the air pollution from the “Obilic” power plant is propagated at the territory of the municipality of Gracanica;
  - The “Kisnica” tailings dam is a source of cumulative pollution: floating dust during windy periods is blown to distant areas; leachate from the dam percolates into the ground polluting the soil and groundwater while by the erosion sediments is transported into the Gracanka River;
  - When it comes to mineral resources, one should have in mind the (negative) environmental consequences of the potential restart of the existing mine “Kisnica”.
  - Agricultural land, water and lead-zinc ore are the most important resources in the municipality. While the agricultural land with high quality is available, there are various pressures for its conversion into non productive purposes. Soil quality is not sufficiently studied in the municipality. Protection of agricultural land in conjunction with the preservation of the high quality soils should be one of the most important priorities of the municipality.
  - Water resources are not mapped out adequately: there aren't data on the average, maximum and minimum river flows, nor is there information about the groundwater aquifers (water table, abundance, discharge etc.). Further analyses are required in order to define the future water supply and irrigation policies in the municipality. In addition, knowledge about the hydrology of rivers is important to decide on the best regulation methods of rivers as part of the future policies on flood protection. Only after a study on water resources is furnished the municipality can decide on the best ways of securing water supply and irrigation sources.
  - Biological resources are pretty scarce: limited and economically not valuable forests, declining fish stock due to the low quality of rivers, wildlife being not monitored nor protected also in spite of the municipal plans to establish a hunting resort; it implies that the municipality should work on restoration of biological resources in an organized way.

## 4. SCOPING OF SEA

The scoping process included the analyses of the goals and objectives of the MDP, setting of SEA objectives and testing whether these mutually support each other or work in divergence.

In the paragraphs presented below the analyses of the development challenges of the MDP, the Environmental Objectives and the relationship between the MDP and SEA objectives are described.

### ***4. Development Challenges of the MDP***

The prospects and deficiencies of the municipality were screened using SWOT analyses for the sectors of the society covered in the MDP Profile. These deficiencies and threats, which are seen as a basis for the formulation of the MDP challenges and thus of goals and objectives, are summarized below:

**Table No. 9: Overview of sectoral weaknesses and threats in the municipality**

<b>Sector</b>	<b>Deficiencies and threats<sup>21</sup></b>
Social infrastructure, housing and demography	Insufficient healthcare facilities, inadequate housing including the poorly urbanized informal settlements; lack of cultural facilities including a museum for archeological and cultural heritage; lack of: secondary and high education, hotel accommodation and nurseries for children without parental care;
Infrastructure, public services and transport	Lack of a ringroad to convey the traffic out of the protection zone of the Gracanica Monastery; access roads and streets into settlements in poor condition; poor and/or non existing public transport; lack of proper water supply system in several villages; deteriorated distribution water supply network and partially pipes made of asbestos; not existing municipal public service providers; insufficient electricity supply in winter; lack of data on the underground pipelines and cables; insufficient public parking areas.
Economy	Unemployment, insufficient production activities, lack of market for local products, inappropriate education level of young and economically active people, low foreign investments.
Environment, natural resources and cultural	Insufficient protection of the natural and cultural heritage; pollution and landscape diminishing by the illegal landfills; water

<sup>21</sup> The SEA Baseline report does not keep the original wording of the SWOT analyses conducted for the MDP purposes in order to enhance the clarity of statements contained therein.

Sector	Deficiencies and threats <sup>21</sup>
heritage	and soil pollution by the untreated wastewater; the cumulative effects from the tailings dam of the mine „Kisnica“.

Based on the above analyses the MDP sets the development challenges and preliminary defines responsive measures to address the weaknesses and threats. They are highlighted below.

The analyses conducted by the MDP team define a number of activities in response to the weaknesses and threats listed in the Table No. 9. The majority of these actions are capital investments which need to be borne by the municipality or by the private sector. Capacity building and awareness raising campaigns are seen as appropriate responses to many challenges.

In the following table a set of anticipated measures is presented to illustrate the ideas of the stakeholders for the future development of the municipality.

**Table No. 10: Overview of development challenges and responsive measures**

Development Challenge	Responsive Measure <sup>22</sup>
Improved social infrastructure	Invest into new and/or refurbish existing healthcare facilities, schools, cultural facilities as well as strengthen the capacities of the personnel in each sector
Improved housing and lifestyle	Increase the number of dwellings to respond to the growing population trends; improve the outlook of settlements through better urban planning.
Improved mobility	Develop a ringroad for Gracanica; develop bicycle trails and lanes; set a bus and railway stop for national and international transport of passengers; establish a public enterprise for transport; erect a parking plot for heavy vehicles (trucks and buses) reconstruction and asphaltting of the local roads and streets; reconstruction of the railway line to Kisnica.
Improved infrastructure and public services	Establish a Public Enterprise for provision of public services; invest into the development of water supply and sanitation; improve telecommunications; improve public lighting; improve irrigation.
Increased and diversified production activities	Apply modern technologies in agriculture; invest into food processing industries; invest into energy plants using biomass

<sup>22</sup> The SEA Baseline report does not keep the original wording of the development challenges' analyses conducted for the MDP purposes in order to enhance the clarity of statements contained therein.

Development Challenge	Responsive Measure <sup>22</sup>
	from agriculture; stimulate self employment into traditional crafting and tourism.
Developed tourism	Improve the marketing and the offer of the cultural and sacral tourist destinations; stimulate the involvement of householders into the alternative tourism; establishment of tourism related clusters, business associations etc.
Improved protection status of natural and cultural / historical heritage	Improve the enforcement of the laws that regulate the protection of the cultural and natural heritage; raise the awareness of the population and the business society.
Minimised cumulative pollution from the tailings dam "Kisnica"	Close and remediate the tailings dam "Kisnica" under the best and most affordable technical solution.

The response to the anticipated development challenges needs to be prioritized and a plan for gradual investments needs to be devised.

The SEA objectives were set based on relevant national and EU laws, strategies and plans; the environmental problems as part of the SEA scoping also provided input to the formulation of the SEA objectives. They are discussed later in this report.

## 4.2 Setting of SEA Objectives

The environmental objectives of this SEA were set taking into account the environmental and sustainable development objectives defined in relevant laws, national strategies and plans of higher level.

The following laws and strategies were considered:

- Constitution as of 2008
- Law No 2003/14. Law on Spatial Planning
- the Law on Amendments to the Law on Spatial Planning no. 03/L-106, adopted by the Assembly on 10.11.2008, promulgated by the Decree of the President of the Republic of Kosovo no. DL-055-2008 dated 17.11.2008, and entered into force on the day of its publication in the Official Gazette No. 42 of 25, (November 2008, pages 35-39).
- Law on construction No.04/L-110
- Law on Air Protection (2004/30)
- Law on Waters (2004/24)

- Law on Environmental Impact Assessment (No. 03/L-214)
- Law on Roads (2003/11)
- Law on Nature Conservation (No. 02)
- Law on Agricultural Land (No. 02/L-26)
- Law on Waste (No. 02/L-30)
- Law on Cultural Heritage (Law No. 02/L-88)
- Law on Environmental Protection (No. 03/L-025)
- Law on Strategic Environmental Assessment (No. 03/L-230)
- Law on Organic Farming (No. 02/L-122)
- Environmental Strategy (2005-2015)<sup>23</sup>
- Profile of the Spatial Plan<sup>24</sup>
- Strategy and Biodiversity Action Plan (2011-2020)<sup>25</sup>
- A Strategic Approach to the Copenhagen Climate Change Conference, 2009<sup>26</sup>

A detailed description of environmental and socio-economic objectives that drive the setting of the SEA objectives is given in Annex 3.

#### **4.2.1 Environmental problems and deriving SEA Objectives**

In view of the above, the following environmental problems that persist in the municipality are set as to serve the development of the SEA objectives:

**Table No. 11: Most important environmental problems in the municipality of Gracanica**

No.	Description
1.	Inefficient use of natural resources
2.	Low biodiversity index <sup>27</sup>
3.	Lack of ecological network
4.	Insufficient air quality (especially in the area of Gracanica)
5.	Insufficient quality and quantity of water

<sup>23</sup> <http://www.rit.edu/~w-cenr/documents/data/Environ.Strategy-MEM.pdf>

<sup>24</sup> Only the Profile part of the Spatial Plan is available to the public on

<http://www.esiweb.org/pdf/bridges/kosovo/8/2+.pdf>

<sup>25</sup> [http://aoa.ew.eea.europa.eu/tools/virtual\\_library/bibliography-details-each-assessment/answer\\_1524000751/w\\_assessment-upload/index.html?as\\_attachment:int=1](http://aoa.ew.eea.europa.eu/tools/virtual_library/bibliography-details-each-assessment/answer_1524000751/w_assessment-upload/index.html?as_attachment:int=1)

<sup>26</sup> [https://docs.google.com/a/pr-solutions.net/viewer?a=v&q=cache:alyNzz9xfHMJ:kosovo.birn.eu.com/attachment/000000997.pdf+&hl=en&pid=bl&srcid=ADGEEsibm7gM9ZR1qZorwEFUO5IQgQzZC92H7yN9ipoRzuAaRcftAZDCIsdYlu6E095ABXjB3GeyeVFifUfZttW1YeFtEdbXn1mQ1WPF7cFH28N9wU7g-aOoru8O\\_TzZrrE-aufKQ9ct&sig=AHIEtbSpF8Vd5llkLsEww0ajHgAQDb1XOg](https://docs.google.com/a/pr-solutions.net/viewer?a=v&q=cache:alyNzz9xfHMJ:kosovo.birn.eu.com/attachment/000000997.pdf+&hl=en&pid=bl&srcid=ADGEEsibm7gM9ZR1qZorwEFUO5IQgQzZC92H7yN9ipoRzuAaRcftAZDCIsdYlu6E095ABXjB3GeyeVFifUfZttW1YeFtEdbXn1mQ1WPF7cFH28N9wU7g-aOoru8O_TzZrrE-aufKQ9ct&sig=AHIEtbSpF8Vd5llkLsEww0ajHgAQDb1XOg)

<sup>27</sup> the amount of species diversity in a given area: [How to Calculate Biodiversity Index | eHow.com http://www.ehow.com/how\\_6198789\\_calculate-biodiversity-index.html#ixzz29ZwARFPi](http://www.ehow.com/how_6198789_calculate-biodiversity-index.html#ixzz29ZwARFPi)

No.	Description
6.	Inappropriate management of wastewater and solid waste
7.	Loss of high quality agricultural land for extension of settlements and business zones
8.	Degraded soil due to abandoned land and/or poor industrial (Kisnica tailings dam), construction & demolition, healthcare and municipal waste management
9.	Insufficient implementation of SEA and EIA for new infrastructural and facilities` developments
10.	Emissions of GHG from traffic and production activities
11.	Sprawl and traffic congestion
12.	Insufficient protection of the cultural heritage
13.	Degraded land reducing the value of the rural landscape
14.	Lifestyles that neglect healthy habits and environmentally friendly behaviour
15.	Low social inclusion
16.	Insufficient residential capacity
17.	Powerty

The SEA development will be organized to address the above environmental and socio-economic problems and to ensure that the sustainable development principles are integrated in the MDP.

### ***4.3 Testing of the MDP against the Environmental objectives***

As stated elsewhere, the SEA Objectives are drawn from the existing laws, strategies and plans and are deriving from the perceived major environmental problems in the municipality.

The SEA process must ensure that the SEA objectives are taken into account in the following manners:

- Comparison between the MDP and SEA objectives is made in order to identify potential conflicts
- MDP objectives may be re-designed as to avoid and/or reduce these conflicts
- For the conflicting areas suitable mitigation measures shall be identified

The following SEA objectives are identified in this report as follows:

**Table No. 12: SEA objectives for the municipality of Gracanica**

No.	Description
1.	Protect and enhance the biodiversity
2.	Improve the air quality

No.	Description
3.	Provide sufficient quantity and quality of potable water
4.	Minimise the loss of quality soil
5.	Remediate the degraded land
6.	Prevent environmental impacts from new developments (integrate SEA and EIA whenever possible)
7.	Reduce CO2 and other GHG emission
8.	Use natural resources effectively
9.	Improve the wastewater and solid waste management
10.	Promote cultural heritage
11.	Conserve and enhance the landscape
12.	Promote and maintain the eco-networks
13.	Prevent sprawl and congestion
14.	Stimulate healthy and environmentally friendly habits
15.	Promote social inclusion
16.	Ensure sufficient dwellings
17.	Reduce poverty

#### 4.3.1 Comparison between the MDP and SEA Objectives

In the table below the MDP objectives and their relationship to the SEA Objectives is presented

**Table No. 13: Testing the MDP against the environmental objectives**

MDP Objectives	SEA Objectives	Relationship (conflict, medium, neutral, synergetic)
SOCIAL INFRASTRUCTURE, POPULATION AND DEMOGRAPHY		
AO1.1- To increase capacities in public and social services	Promote social inclusion Ensure sufficient dwellings	Synergetic
AO1.2- To provide adequate and quality services.	Provide sufficient quantity and quality of potable water Improve the wastewater and solid waste management	Synergetic
AC2 – Improvement of the living standard of citizens through proper planning of regulated	Stimulate healthy and environmentally friendly habits	Synergetic

<b>MDP Objectives</b>	<b>SEA Objectives</b>	<b>Relationship</b> (conflict, medium, neutral, synergetic)
settlements and housing facilities.		
AO2.1- To develop and treat human settlements in accordance with the relevant legislation	Prevent environmental impacts from new developments (integrate SEA and EIA whenever possible)	Synergetic
AO2.2- Expansion of housing capacities through construction of collective and individual housing facilities.	Ensure sufficient dwellings	Synergetic
<b>ECONOMIC DEVELOPMENT</b>		
BC1- Improvement of an economic development through the development of agriculture production and tourism	Use natural resources effectively	Potentially conflicting
BO1- To stimulate sustainable agricultural production	Minimising the loss of quality soil Remediate the degraded land	Synergetic
BO2- To provide market and access for product placement	Reduce poverty	Synergetic
BO3- To provide modern machinery	Use natural resources effectively	Neutral
BO4- To raise awareness on sustainable agriculture	Use natural resources effectively	Synergetic
BO5- To encourage and initiate family businesses	Reduce poverty	Synergetic
BO6- To prevent illegal use and exploitation of publicly-owned agricultural land	Promote social inclusion	Neutral
BO7- To develop and promote local tourism (cultural, religious, rural, sport and entertainment)	Use natural resources effectively Promote cultural heritage	Potentially conflicting

<b>MDP Objectives</b>	<b>SEA Objectives</b>	<b>Relationship</b> (conflict, medium, neutral, synergetic)
	Conserve and enhance the landscape Promote and maintain the eco-networks Stimulate healthy and environmentally friendly habits	
<b>INFRASTRUCTURE, TRAFFIC AND PUBLIC SERVICES</b>		
CC1 – Improvement of Public Services	Prevent environmental impacts from new developments (integrate SEA and EIA whenever possible)	Potentially conflicting
CO1.1- Coverage with water supply and sewage networks within the whole territory of the Municipality	Provide sufficient quantity and quality of potable water Improve the wastewater and solid waste management	Synergetic
CO1.2- Improve electricity network	Reduce CO2 and other GHG emission	Neutral, potentially conflicting
CO1.3 - Coverage with telecommunication networks	Reduce CO2 and other GHG emission	Neutral, potentially conflicting
CO1.4- To improve solid waste management	Improve the wastewater and solid waste management	Synergetic
CC2- Improvement of the Traffic Situation in Gracanica Municipality	Prevent environmental impacts from new developments (integrate SEA and EIA whenever possible)	Potentially conflicting
CO2.1- To reduce traffic congestion in the centre of Gracanica	Prevent environmental impacts from new developments (integrate SEA and EIA whenever possible)	Neutral, potentially conflicting
CO2.2- To improve pedestrian and cycling mobility and public spaces	Prevent sprawl and congestion Reduce CO2 and other GHG emission	Synergetic

<b>MDP Objectives</b>	<b>SEA Objectives</b>	<b>Relationship</b> (conflict, medium, neutral, synergetic)
CO2.3- To create green corridors within municipality	Conserve and enhance the landscape Promote and maintain the eco-networks	Synergetic
CO2.4- To improve the road network	Prevent environmental impacts from new developments (integrate SEA and EIA whenever possible)	Potentially conflicting
<b>NATURAL RESOURCES, ENVIRONMENT PROTECTION AND CULTURAL HERITAGE</b>		
DC1- Protection of Environment and Natural Resources	Protect and enhance the biodiversity Use natural resources effectively	Synergetic
DO1.1- Protection of agricultural land against chemical influences (agro-technical products)	Minimising the loss of quality soil Remediate the degraded land	Synergetic
DO1.2- Protection of agricultural land against illegal construction	Stimulate healthy and environmentally friendly habits	Synergetic
DO1.3- Prevention of illegal cut and forestation of barren areas	Remediate the degraded land Conserve and enhance the landscape	Synergetic
DO1.4- To raise awareness on environment protection	Protect and enhance the biodiversity Improve the air quality Reduce CO2 and other GHG emission Use natural resources effectively Improve the wastewater and solid waste management	Synergetic
DO1.5- To use renewable energy sources	Reduce CO2 and other GHG emission	Synergetic

<b>MDP Objectives</b>	<b>SEA Objectives</b>	<b>Relationship</b> (conflict, medium, neutral, synergetic)
DO1.6 - Promote energy efficiency	Reduce CO2 and other GHG emission	Synergetic
DC2- Protection and Promotion of Cultural Heritage	Promote cultural heritage Conserve and enhance the landscape	Synergetic
DO2.1- Protection of cultural heritage (architectural, vernacular, archaeological, cultural landscapes, spiritual heritage)	Promote cultural heritage Conserve and enhance the landscape	Synergetic
DO2.2- Promotion of cultural heritage values (tangible and intangible)	Promote cultural heritage Conserve and enhance the landscape	Synergetic
DC3- Decrease of risks & improve management of negative impact to environment caused by natural disaster or human driven activities	Prevent environmental impacts from new developments (integrate SEA and EIA whenever possible)	Synergetic
DO3.1- To raise awareness and capacity building on cultural heritage	Promote cultural heritage Conserve and enhance the landscape	Synergetic
DO3.2- Decrease of negative impact to environment in areas prone to natural disasters	Prevent environmental impacts from new developments (integrate SEA and EIA whenever possible)	Synergetic

As it can be seen in the table above, the major conflicting areas between the MDP and SEA objectives are in the economic and infrastructure sectors, notably in the following land use categories:

- Enhancing the business development (industrial, warehouses, mining etc.), via establishing new and/or extending the existing zones;
- Setting zones for tourism, cultural heritage and landscapes, fisheries, hunting and other complementary commercial activities;

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- Erecting new buildings and districts, being those residential, administrative, healthcare, sport, culture or others;
  - Constructing infrastructure: roads / railway, water supply (including dams, reservoirs, pipelines) / sewerage, wastewater treatment plants, waste treatment plants and landfills, power overhead lines, optical cables, natural gas pipelines etc.

Any land use change and conversion of natural landscape into construction land could potentially disturb the environment if preventive measures were not applied.

#### ***4.6 Evolution of the baseline without the plan***

The SEA regulations require that information is provided on the relevant aspects of the current state of the environment and “the likely evolution thereof without implementation of the plan”.

It is recognised that the future baseline or “without the plan scenario” is difficult to describe as trend data is scarce and rarely quantitative. However, this section will attempt to describe the future baseline for each SEA topic.

For the purposes of this SEA, the ‘without the plan’ scenario has been based on the following assumptions:

- The demographic trends will keep its present growth rate, which will cause pressure over natural and physical resources; thus, the water and other resources scarcity will prevail;
- The traffic congestion and sprawl will intensify; noise will impact adversely sensitive urban recipients (such as the Gračanica Monastery) and wildlife (which finds its habitat in the agricultural lands, riparian terrains surrounding the rivers – mainly Gračanica and Sitnica, as well as in the degraded forests in the area of Gornja Gusterica);
- The settlements will expand under haphazard conditions and will form agglomerations along the more frequent transport corridors;
- The area under agricultural land will diminish; the business zones will replace crops, while the soil quality will deteriorate under an inappropriate wastewater and solid waste management as well as an increased use of mineral fertilizers and pesticides; also, the availability of organic fertilizers will decrease along with the reduced number of livestock;
- Illegal landfills will further proliferate, as a result of a weak law enforcement;
- The quality of rivers will deteriorate due to a continuous discharge of untreated water from households and commercial / industrial establishments, as well as heavy metal bleach and erosion deposits from the tailings dam “Kisnica”; the aquatic wildlife will be at risk of being decimated.

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- Cumulative pollution from the “Kisnica” mine will worsen the air, water and soil quality and will impact adversely the human health;
  - The cultural heritage will not be sufficiently protected which will result in loss of its tangible and intangible values;
  - The biodiversity will diminish under uncontrolled and illegal logging, hunting, fishing, expansion of construction and economic activities and associated pollution;
  - The quality of life will worsen in the absence of sufficient residential areas, attractive landscapes, open spaces, parks, natural corridors aligned with the river banks and buffering the transport alignments etc.
  - The climate change will cause extreme events (floods and droughts respectively).

In the following paragraphs more arguments are provided in support to the above assumptions.

#### Population and social trends

The population will grow rapidly with high percent of young people. On one hand, this is positive and can create a vibrant society; however in view of the present high unemployment rate and lack of highly educated people the population growth can have negative consequences upon the social and economic welfare. Under this trend additional pressure over the natural resources is likely as poor communities are mainly reliant on nature in the absence of state-of-the-art technologies.

#### Human Health

Relatively poor water supply will impact negatively the human health in the five settlements using groundwater with suspicious quality as potable water. Leaching of heavy metals and other toxic substances from the “Kisnica” tailings dam and the illegal landfills where municipal, construction&demolition and non-hazardous industrial waste is mixed with hazardous (industrial and healthcare) waste will continue to influent potentially the human health. Transport and noise during intensive construction activities will bring nuisance and health impacts for sensitive urban recipients and wildlife. The number of people killed or injured on the transport system may increase, if the propulsivity of roads and safety of pedestrians would not improve.

#### Air Quality

NO<sub>2</sub> and PM<sub>10</sub> levels will increase due to the lack of gas flue control measures in industries and transport. SO<sub>2</sub> emissions will also increase if fossil fuels would be used more intensively in any kind of combustion processes. Dust and airborne emissions will continuously emerge from the construction activities and the tailings dam “Kisnica”.

#### Climatic Factors

CO<sub>2</sub> emissions will most likely increase as a result of an increased consumption of energy, industrial production and reduced forest areas. Also the use of private cars instead of public transport will contribute towards increased CO<sub>2</sub> emissions. Increased temperatures and

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extreme weather is likely to increase the stress in agriculture, which is the major economic activity in the municipality.

### Landscape

The townscape will deteriorate as a result of unplanned growth and extension of settlements.

The inexorable increase in transport infrastructure, signs etc., is likely to further degrade landscape. The mild agricultural landscape will be replaced by residential and business areas. The natural ecological network will not recover which will negatively impact the biodiversity.

### Heritage

Fewer resources will be available to support heritage initiatives and thus the archeological and historical / cultural sites will not be put under protection. Expansion of settlements may endanger the protection endeavors on the “Ulpijana” archeological site.

### Biodiversity

Recognition of biodiversity resources and enhanced management practices will not occur most likely as the awareness of the community on the importance of the biodiversity conservation is rather low. As a result the area under forest will diminish, which will negatively influence the biodiversity index. It will further impact negatively the hunting, fishing and tourism development potential.

### Soil

Contaminated land will prevail in the absence of any soil reclamation and remediation activities. Clean up of illegal landfills will not bring any improvements in case the existing waste management practices remain the same.

### Water

Increased flooding risk (as a result of climatic factors), in combination with water pollution, will signify the scarcity of water resources and adversely impact the human health and quality of life. Agricultural production will also suffer while the food scarcity will prevail.

### Material Assets

Without the recycling of waste the demand for primary raw material will increase, as will the levels of material sent to landfill.

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## 5. ENVIRONMENTAL ASSESSMENT OF THE ALTERNATIVE DEVELOPMENT SCENARIOS

The MDP has undergone an interactive process during which experts and municipal staff developed three alternative development scenarios. Each scenario set up a development framework on different landuse patterns and economic development options. In the following lines these scenarios are described and tested against their adherence to the sustainability principles and thus the environmental objectives.

### **5.1 Trend Scenario**

This scenario has already been described under the “do nothing”, or “without a plan” alternative in the paragraph 3.7 above.

The sustainability principles are rarely recognized with the “Trend” scenarios. Hence, from an environmental point of view this scenario causes the highest risks in the gravitational areas of the agglomeration of Pristina, the existing business zone and emerging satellites and conurbations within the major transport corridors. The spontaneous loss of high quality agricultural land is another negative consequence of the “Trend” scenario.

However, the team of planners brought forward a slightly deviating land use pattern which, next to recognizing and recording the trends, introduced also certain environmentally friendly development scenarios. This scenario comprises of the following major planning determinants:

1. Merger of settlements along the main transport ‘axes’ and their extension by the definition of residential zones for single houses and highrise buildings (the latter to be organised in the surrounding of Gračanica). The following (controlled) agglomerations to be created by the merger of settlements are foreseen: 1) Gračanica, Susica and Badovac in the north-eastern part of the municipality; 2) Donja and Gornja Gusterica, in the south-eastern part of the municipality; 3) extension of the settlement Dobrotin in the southern part of the municipality; 4) Caglavica, Laplje Selo and Preoce in the northern part of the municipality; 5) extension of the settlement Ugljare; 6) merger of the settlements Suvi Do, Radevo, Skulanevo, Lepina and Batuse in the western part of the municipality.
2. Organising business / industrial zones in the areas of: 1) urbanizing the existing business area located alongside the highway connecting Pristina and Skopje; 2) urbanizing the emerging business zone located alongside the road connecting Pristina and Lipljan and 3) urbanizing the emerging business zone located alongside the road heading in parallel with the railway connecting Kosovo Polje and Skopje.
3. Prevention of unrestrained emerging of residential areas situated on quality agricultural land (i.e. any replication of the “Marigona” settlement without consulting the municipality of Gračanica should be avoided). The consultations with the municipality of Gračanica should

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be introduced as a legal obligation whenever a Ministry approves an erection of structures on quality agricultural land.

4. Setting a bypass to convey the traffic outside the centre of Gracanica during the rush hours and reduce noise and congestion in the protected zone of the Gracanica monastery; a proposed alignment of the bypass is available, it only needs to be taken into account in the national plans for the development of road infrastructure.
5. Setting up a public transport scheme as well as developing cycling corridors; railway stops are planned in Lepina, Laplje Selo and Kisnica bus stops in every settlement. The proposed improvement of the transport infrastructure also comprises of the restoration of the railway line to “Kisnica” mine passing nearby the Ulpijana site as to serve potential passengers and tourists;
6. Maintain the existing trends of agricultural production and where possible introducing land consolidation/re-parcelling to intensify the production. Protect the agricultural landscape in the western part of the municipality (area surrounding the settlements Suvi Do, Radevo, Skulanevo, Lepina and Batuse).
7. Improving the water supply, especially in the western part of the municipality (villages Suvi Do, Radevo, Skulanevo, Lepina and Batuse in particular). The water supply source for these villages would be partly Gracanica Lake and partly the system currently in use in the Lipljan municipality. The existing water supply system that was installed for the Batuse village should be inspected to determine the level of deterioration and in case of usability should be restored and put into operation. Alternatively, the potential for exploiting the groundwater capacity to supply the aforementioned 5 villages should be explored. In addition, the water supply system using the water of the Gracanica Reservoir and supplying the majority of settlements should be refurbished as to replace all the asbestos pipes forming the secondary (distribution) network;
8. Establishing a landfill for inert waste nearby the area of “Kisnica” tailings dam to improve the ground stability and to filter out the leachate from the tailing dam itself. Combining this landfill with a recycling yard in order to reduce the waste quantities for transport outside of the municipality towards to final disposal site; refurbish the former carcasses` pits in Donja Gusterica;
9. Establish a sound healthcare waste management system via introducing a treatment plant within the premises of the biggest healthcare establishment and setting up sufficient logistics in terms of collection containers, chill and transport capacity (e.g. specialized transport vehicles);
10. Reserving an area (possibly in the scope of the business zone situated in the corridor of the road connecting Pristina and Lipljan) for erection of a biomass plant to replace fossil with renewable energy sources;

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11. Erecting 4 wastewater treatment plants (WWTP) at the lowest points in the valleys and in the vicinity of recipients (water courses);
  12. Protect Mosque in Kisnica churches in Dobrotin, Laplje Selo, L. Gusterica and construct a mosque in Kisnica;

Some planning determinants work in synergies with the SEA objectives while certain are potentially conflicting. The latter shall lead to proposing practical mitigation measures.

Comments to this scenario from the SEA point of view are presented as follows:

1. The merger of settlements is a reality and although it may result in sprawl, loss of quality agricultural land and possibly in loss of biodiversity, it can not be prevented. Mitigation is possible by defining clear boundaries for extension of settlements and by keeping the population density within the existing levels and establishing limits for height of houses / buildings and defining a minimum percent of greenery within an urban block.
2. The transport infrastructure naturally attracts businesses as they require supply and dispatch of commodities. The SEA would suggest a full coverage of the business zones with necessary technical infrastructure (a network of internal streets, water supply, wastewater & stormwater collection and disposal systems, electricity and other energy distribution systems etc.) environmental infrastructure (fat traps, sedimentation ponds, green belts along the public roads etc.) in the aforementioned zones to mitigate the related health and environmental impacts.
3. The restriction for settling residential areas on agricultural land goes in the same direction with the SEA objectives.
4. The bypass leading outside Gracanica is potentially attracting business and residential activity which in turn results in sprawl. The planners should take it into account when setting the boundaries for the future development of the municipal centre; in addition, any uncontrolled land development, either for residential or business activity, should be strictly prohibited.
5. The proposed public transport could take a form of an inter-modal scheme. It comprises of combining available public transport modes (railway, bus) including also definition of transport nodes (shifting from one to another public transport mode). To this end the railway stops that are planned in Lepina, Laplje Selo and Kisnica can be combined with bus stops. Alternatively, the planned railway stops can remain in Lepina and Kisnica, while instead of the one in Laplje Selo a node for shifting from railway to road transport can be planned at the crossroad in Preoce. As the cycling corridors are also planned with this scenario, rental points for bicycles can be planned at the transport nodes.
6. By this SEA it is proposed to introduce Best Agricultural Practices (BAT) at the consolidated parcels. In addition, to protect the agricultural landscape utilization of traditional land operation techniques is envisaged.

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7. The proposed water supply concept is fully in line with the SEA objectives;
  8. The proposed landfill for inert waste should be in line with the Directive 1999/31/EC and therefore should not accept wastes that are leaching in the ground as a result of any material decomposition;
  9. Key to sound operation of healthcare waste, apart from setting up suitable technical infrastructure, is improving the capacities of operators (at the level of waste segregation, packing and handling within and outside hospitals' premises - collection, temporary storage, transportation and final treatment) and regular maintenance of facilities;
  10. Next to any biomass plants, Photovoltaic (PV) panels can be installed to support the energy generation of public (municipality, schools etc.) and private buildings (for highrise and single houses as well as industrial establishments) and for public lighting. Wind farms can also be implemented at consolidated agricultural parcels. Integration of aforementioned renewable energy sources (RES) into the existing electricity grid goes in line with the EU Green House Gases (GHG) reduction targets; still, there might be legal, institutional and technical barriers that require detailed observations.
  11. The regular WWTPs can be a costly solution for Gracanica municipality. Therefore it is proposed to analyse the possibility to use engineered lagoons to treat the municipal wastewaters. For the industrial establishments Integrated Prevention and Pollution Control (IPPC) procedures should be implemented in order to prevent any discharge of polluted water into the recipients.
  12. The protection of cultural heritage is fully in line with the SEA objectives;

## ***5.2 Scenario for Concentrated Development***

According to this scenario, the future developments will be concentrated in zones that are already equipped with an existing infrastructure. Sustainability principles can be easily integrated with this scenario. Agricultural land, water and biodiversity resources as well as the landscape can be protected more stringently while the transport corridors are freed from pressures of urbanization. This approach would contribute to saving natural and financial resources, but it could limit certain development trends.

Similarly to the "trend" scenario, the one developed by the municipal staff and experts contains some "hybrid" elements.

The following planning premises were developed:

1. This scenario is difficult to implement because any future expansion of Gracanica is limited by spatial barriers (mine "Kisnica", Uplijana site and agricultural land in private ownership). Still, the centre of Gracanica and emerging conurbation adjoining Pristina is confirmed while the remaining settlements are kept within the existing boundaries or are extended slightly; the functions are combined in order to improve the public services;

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2. Public transport was introduced with emphasize on the railway restoration; new stops are foreseen for both road and railway transport;
  3. A bypass conveying the traffic outside Gracanica was foreseen similarly to the first scenario;
  4. An attempt to restore an ecological network was made by the definition of ‘green corridors’ along the existing roads and riverbeds, wherever possible;
  5. A new transport route heading towards the Pristina airport was introduced. In view of the newly asquired infrastructure plan developed on national level and new transport corridors intersecting the territory of the municipality of Gracanica, the proposed route renders redundant and therefore is not considered for its impacts over the environment and consequently the number 5 of the table below is left blank;
  6. Sustainable economic development was based on organic agriculture and eco-tourism;
  7. A multipurpose tourist area (including an Ethno-hotel) was defined in the vicinity of Ulpiana;
  8. A landfill located nearby Preoce (using a publicly owned land, originally planned to foster a business incubator) was proposed;
  9. Improved water supply and sanitation was foreseen;

If one would compare the “trend” and “concentrated development” scenario, there are fewer conflicting areas with the environment.

Comments to this scenario from the SEA point of view are presented as follows:

1. The concentration of public services in the central part of the municipality is not favouring a balanced development. Dispersion of primary education, healthcare, sport, telecommunications and communal services (waste and water) would prevent the depopulation of presently underdeveloped villages. A completely new outlook of settlements must be worked out to secure equal quality of life in every part of the municipality.
2. The commentaries related to the pulbic transport expressed for the “trend” scenario are valid;
3. The same applies to the bypass;
4. The planned restoration of the ecological networks is strengthening the biodiversity and landscape, therefore it can apply to any development scenario as a mitigation measure accompanying the transport infrastructure and/or regulation of rivers;
5. Regarding the new national transport framework under which highways intersect the territory of the municipality of Gracanica, EIA processes must be implemented in order to prevent or mitigate the related environmental impacts ad risks which will certainly arise and will have bigger magnitude than any local economic activity;
6. The organic agriculture can be implemented only where mineral fertilizers and pesticides were used with a limited extent. Certification and other incentives will have to be introduced to compensate the agricultural procucers who decide to apply best agricultural practices.

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The eco-tourism is a rather new economic activity and the interested entrepreneurs should be trained in order to design their products and marketing;

7. The planned multipurpose tourist area (including an Ethno-hotel) in the vicinity of Ulpiana can have good economic effects. Still, this project should be carefully designed and accompanied by SEA and EIA;
8. A landfill for municipal waste is not needed for the municipality of Gracanica. Only a landfill for inert waste can be planned. The collected municipal waste on this territory should be segregated and commodities (paper, plastics, metal, glass) prepared for recycling. In such a way a reduction of waste quantities for transport to the regional (sanitary) landfills can be achieved.
9. The improved water supply and sanitation is fully in line with the SEA objectives;

### ***5.3 Decentralised Development Scenario***

A number of centres that generate the future development and controlled expansion of businesses and residential areas are the main features of this scenario.

The following planning premises were developed:

1. To enable a more balanced development on the municipal territory the following centres and sub-centres were established:
  - Gracanica remains the main centre despite of the fact that its expansion is limited; diversification of land uses and functions should be encouraged under this scenario; expansion is possible only in the direction to Susica and towards north; in view of the limited availability of land to extend this settlement, highrise buildings should dominate in the newly erected residential areas;
  - The following sub-centers were nominated: Lower Gusterica (mini center Dobrotin, Livadje, Upper Gusterica) and Lepina-Skulanevo (villages of Suvi Do, Radevo, Batuse)
2. The existing road network is enhanced via building a bypass around Gracanica and introducing a new corridor (using the existing road serving agricultural purposes) and connecting the road-Lepina Preoce and Lipljan. The latter proposal is made to enable a quicker connection to the airport. A bus-station was introduced on the way Laplje Selo-Livadje (at the entrance to Laplje Selo) and the reestablishment of the former railway station in Suvi Do was proposed;
3. Introducing a multipurpose tourism zone and a craft centre in the area of Ulpiana. Also a sports-recreational area was proposed on the outskirts of Laplje Selo towards Livadje; A hunting resort was planned nearby Gracanica Lake and in the western part of the municipality; apart from the fishing spot already existing in the Gracanica lake area, another fishing attraction is foreseen in Radevo;

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4. Improving the water supply system was foreseen in the western part of the municipality;
  5. Setting green markets in the village of Laplje Selo and Lepina.
  6. Provision of a business zone Incubator in the area towards Ugljare.
  7. Provision of a wastewater treatment plant in Preoce and Gracanica.
  8. Setting a landfill site on the section between Upper Gusterica to Janjevo.
  9. Establishing a technological park in the area of the “Kisnica” mine and tailings dam;
  10. Urbanization of the existing informal business zone emerging nearby the road Laplje Selo-Livadje, (near the so-called "Potok"); organizing business-zones along the highways Pristina-Skopje and Pristina-Lipljan; reserving a smaller area for the development of light industry in Suvi Do.

The following general comments derive from the environmental assessment of the alternative planning scenarios:

1. All subsequent plans and particular investment projects must be prioritized and tested against the environmental objectives throughout SEA and/or EIA processes;
2. Strategic Environmental Assessment may be needed when developing urban plans of lower level; this possibility must be always examined by the municipal staff in consultation with MESP prior to initiating any urban planning document; This is particularly true for planning of any extension of settlements and organizing new business zones in order to prevent converting high quality agricultural land, intensifying erosion, jeopardizing environmental media's quality and land stability, as well as potentially causing unwanted environmental, social and public health risks of any kind;
3. Environmental Impact Assessment must be undertaken for the new transport corridors and industries, in line with the EIA Directive and its annexes;
4. The dedicated zones for business development should be organized nearby the settlements to make use of existing infrastructure and protect the agricultural land; stretching business zones along the transport corridors renders the infrastructure development inefficient and therefore expensive; The scarce publicly owned land should not be used for commercial use – it should be converted into public amenities and other services for the benefit of the entire community;
5. A strong ecological network shall enhance the biodiversity, maintain the water quality and positively contribute to both – climate change mitigation and adaptation.

## 6. MOST LIKELY ENVIRONMENTAL IMPACTS FROM THE IMPLEMENTATION STRATEGY OF THE MDP

The MDP will bring positive effects for the wellbeing of citizens of the municipality of Gracanica as it promotes various initiatives on the provision of affordable housing, enhancing the healthcare and social protection, initiation and fostering family business and business incubation, incentivizing good agricultural practice, branding local products etc. Some measures defined in the MDP, however, will have negative impact over the environment if mitigation measures would not be defined and implemented.

In the table below an environmental assessment of the activities proposed during the planning phase so called “*Implementation strategies*” is carried out.

**Table No 14: Most likely impacts from the plan implementation strategies**

Protection of the environment	
Activity	Impact / comment
Raising of awareness about the effects of use of fertilizers and pesticides	Positive environmental impacts. Coordination with the Hydrometeorological institute is essential.
Campaign against uncontrolled conversion of quality agricultural land into non productive purposes (housing, business zones etc.).	Positive environmental impacts. Cooperation with the Ministry of Agriculture must be ensured.
Strengthening municipal inspectorate	Positive environmental impacts. It is suggested to increase the number of inspectors, to train the staff and to assist them in the development and implementation of the annual plan of inspections.
Raising the awareness of population on environmental issues	Positive environmental impact. The awareness raising activities should be rather attached to some concrete environmental projects; otherwise they would not have the required effect.
Use of biomass as renewable energy source	Positive environmental impact. Biomass could be used for production of combined heat and power (CHP); still, to obtain feasible results in terms of CO <sub>2</sub> reduction and saving of fossil fuels a well developed electricity grid and district heating infrastructure should be available.
Penalising illegal dumping of	Positive environmental impact

<b>Activity</b>	<b>Impact / comment</b>
waste	
Remediation of illegal dumpsites	Positive environmental impacts.
Mitigation of environmental impacts from the tailings dam "Kisnica"	Positive environmental impact.
Improvement of water supply: Constructions of water supply systems in settlements that are currently supplied with water by own wells.	Positive environmental impact. Note: improved water supply may imply overconsumption of water therefore campaigns to save water should be implemented.
Enhancing the riparian habitats	Positive environmental impact.
Exploring the archeological heritage	Positive environmental impacts.
Redefine the activities on the protection of Ulpijana site	Positive environmental and socio-economic impacts.
Promotion of the cultural heritage	Positive environmental and socio-economic impact
Protection against flood	Positive environmental impact. Although the regulation of riverbeds is often considered the only measure against flood, one should have in mind that anti erosion measures (afforestation), river flow cascading and enhancement of riparian habitats should be combined to obtain more sustainable results.

### Economic development

<b>Activity</b>	<b>Impact / comment</b>
Development of a study on sustainable agriculture	Positive environmental impact. Cooperation with the Ministry of Agriculture must be ensured.
Education of agricultural producers on good agricultural practice	Positive environmental impact.
Project preparation to access grants funding.	Positive environmental impact
Implementation of good	Positive environmental impact.

Activity	Impact / comment
agricultural practice	
Improvement of irrigation	Positive environmental impact.
Mobilising the communities and entrepreneurs in the development of market for local products	Positive environmental impacts; improvement of market conditions, however, may stimulate the increase of consumption that can lead to overproduction and overexploitation of natural resources. Sustainability principles must guide any business activity.
Creating conditions for marketing of local products.	Positive environmental impacts (erection of a green market foreseen)
Incentives for employment	Positive socio-economic effects; training courses and longlife learning programmes envisaged.
Organising fairs, promotional events and study tours to encourage family businesses and tourism activities	Moderate environmental impacts. Tourism can cause increasing waste and wastewater quantities and traffic jams (with negative effects for the air quality). Tourism development should be promoted but within the limits of sustainability.
Establishment of a business centre and/or business incubator	Positive socio-economic impact. Cooperation between the private sector, municipality and institutions active in education is foreseen.
Establishment of business zones	<p>Negative environmental impacts:</p> <ul style="list-style-type: none"> <li>- For the new construction that will occur in residential and business areas <b>natural resources will be used which will increase the carbon footprint of the municipality;</b></li> <li>- High quality agricultural land will be lost;</li> <li>- due to the new construction <b>construction and demolition waste will be generated, some of which will hold hazardous properties;</b> as there is no dedicated area for the disposal of construction and demolition waste further <b>soil and water pollution will be propagated</b> as a result of this activity;</li> <li>- in absence of any wastewater collection and treatment, the discharged wastewater will pollute the surface, groundwater and soil;</li> </ul>

## Demography and social development

Activity	Impact / Comments
Improvement of the healthcare services and construction of necessary healthcare facilities	Positive social impact. From an environmental point of view one should have in mind that healthcare is associated with healthcare waste which needs to be managed properly otherwise health and environmental risks will emerge due to the hazardous properties of infectious waste and chemicals.
Improvement of education and construction of necessary education facilities	Positive socio-economic impact and moderate environmental impact. Public services will enable for improved lifestyles of population in the area of education, sport, culture, healthcare etc. However, the urbanization will intensify and for new construction the development of suitable public infrastructure and services will be required. If the new facilities would not be equipped with sufficient communal infrastructure negative environmental impacts will occur.
Improved care for elders	Positive social effects. Management of healthcare waste should be taken into account.
Improved care for children without parental care	Positive social effects.
Shelter for victims of violence (including family violence)	Positive social effects.
Construction of post office, court	Positive social effects. Locations should be carefully selected to minimize environmental impacts.
Construction of bus station	Positive effects because it will foster use of public transport.
Sport courts, playgrounds, houses of culture etc.	Positive social effects. Locations should be carefully selected to minimize environmental impacts. Municipal infrastructure should also be available (grinfield locations should be avoided).
Religious structures.	Positive social and cultural effects.
Longlife learning programmes.	Positive social, economic and cultural effects.
Development of urban regulatory plans for important zones in the municipality	Moderate effects. The extension of settlements and/or erection of business, sport or tourism related zones will be regulated in terms of boundaries and will possibly be concentrated which will make easier to implement infrastructure. On the other hand, any new development, even

Activity	Impact / Comments
	if it is regulated, will result in negative environmental effects.
Improving housing and extension of boundaries of settlements to foster the construction activity	Negative environmental impact. The extension of settlements' boundaries will impact the present land use by the conversion of agricultural land into non productive purpose and reduction of the natural vegetation cover while extending paved areas. According to the planned settlements' boundaries, the extension of Gracanica counts for around 25% of the existing area; also the villages of Donja and Gornja Gusterica as well as Suvi Do will extend significantly compared to their present borders. It will result in a permanent loss of agricultural land and will increase the CO2 emissions as a result of the reduced photosynthesis potential of the land cover as well as of the activities taking place in the area with converted land use.

### Infrastructure

Activity	Impact/comment
Improvement of water supply; the priority will be set at villages currently using groundwater extracted in own wells.	Positive environmental impact if water saving practices would be fostered.
Improved sanitation and erection of wastewater treatment plants	Positive environmental impact. Improvement of sanitation by the extension of existing sewerage systems in settlements will improve the hygienic conditions in residential areas. However, if the wastewater would be discharged without any treatment the quality of the recipients (mostly local rivers) will worsen.
Renewable energy sources	Positive environmental impact. One should not have in mind that given the presently unstable electricity network in Kosovo some simple technologies should be used for demonstration purposes only.
Improved telecommunications	Positive social impact
Construction of pits for the disposal of carcasses	Positive environmental impacts

Activity	Impact/comment
Temporary landfill for healthcare waste	Negative environmental impact. Temporary landfills should not be established as they will remain for indefinite.
Landfill for inert waste	Moderate environmental impact. The construction and demolition waste is mainly inert but it can contain also fractions that hold hazardous properties.
Ringroad for Gracanica	Negative environmental impact. Construction of roads is associated with land conversion and loss of quality soil, emission of harmful substances in the air, water and occurrence of excessive noise.
Cycling trials	Positive impact. Safety might be a concern to be addressed by signalization, marking etc.
Access for disabled	Positive social impact.
Ecological network	Extremely positive impact.
Public lighting	Moderate environmental impact due to an increased consumption of electricity. Positive social impact due to an increased safety.
Local road network	Negative environmental impact. Extended corridors for local roads may increase the traffic frequencies to cause additional CO2 emissions as a result of the combustion of fossil fuel in engines of vehicles; the new corridors shall occupy land and reduce biodiversity; stormwater drainage from road surfaces will transport pollution to the nearby terrain caused by leached oils and lubricants, residual materials from breaks and tires; increased traffic will cause noise and disturb the sensitive noise recipients – people, animals and birds;

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## 7. MITIGATION MEASURES

Based on the assessed significance of the environmental impacts in this chapter a set of mitigation measures to respond to the environmental risks deriving from certain activities defined in the MDP.

Whenever the proposed measures are associated with construction of buildings / facilities there will be environmental impacts for which mitigation measures should be sought. A general recommendation of this SEA Report is to implement the public participation in the decision making to the extent possible through the procedures of SEA and/or EIA.

### ***7.1 Recommendations for strengthening the proposed measures for environmental protection***

The MDP sets various measures for the protection of the environment which aim at:

- strengthening the ecological network in the municipal territory and protecting the biodiversity; protection against flood;
- protecting the high quality agricultural land from harmful impacts deriving from the application of artificial fertilizers and pesticides,
- protecting the human health via provision of quality water supply to all citizens, closure and remediation of environmental hotspots (i.e. the tailings dam “Kisnica” and the illegal landfills used for the disposal of construction & demolition, municipal and potentially hazardous waste)
- improving the energy security and reducing the CO<sub>2</sub> emissions by introducing the renewable energies and improving the energy efficiency
- Protecting the archeological and religious heritage
- Raising the awareness of population and building the capacity of the municipal administration on the environmental issues
- Enforcing the legislation

All the proposed measures will bring positive environmental effects. It is, however, important to take into account the following:

1. An ecological network is composed of following elements:
  - core areas (forests, parks, lakes etc.) that are usually protected by buffer zones,
  - corridors (riparian habitats of rivers, buffers along the roads etc.) and
  - nature restoration areas, where needed (e.g. the restored tailings dam “Kisnica”).

The key word in an ecological network is connectivity; it provides the possibility for free movement of wildlife in an otherwise fragmented and often hostile environment. The ecological network concept also provides a tool for ecological design that facilitates the

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interaction with other land uses. More details on the design and maintenance of ecological networks can be seen on <http://www.eeconet.org/eeconet/>

2. Weather-wise application can reduce pesticide hazard to the environment. An aware agricultural producer carefully checks the weather conditions before beginning spray procedures. Saving of the pesticide itself can contribute to reduced costs of an agricultural product. More information on the weather-wise and environmentally responsible application of pesticides can be found at <http://edis.ifas.ufl.edu/pi232>
3. The use of renewable energies will improve the CO<sub>2</sub> emission footprint of the municipality on the long term; still the proposed plant using the biomass for generation of electricity should be erected after certain conditions in Kosovo are met:
  - The national electricity grid should be a counterpart to the modern technologies for utilizing biomass;
  - There should be incentives available for the private sector to invest into such facilities
  - The most suitable technology for using biomass is the combined heat and power (CHP). It requires that the location of such a plant is selected close the densely populated areas which are already equipped with district heating network. For more details please see [http://www.biomassenergycentre.org.uk/portal/page?\\_pageid=75,37173&\\_dad=portal&\\_schema=PORTAL](http://www.biomassenergycentre.org.uk/portal/page?_pageid=75,37173&_dad=portal&_schema=PORTAL)

Having in mind the above, it is recommended to start introducing the renewable energies (predominantly solar power) for producing sanitary hot water in schools and other public buildings as demonstration projects. Only after sufficient experience is gained on the renewable energies the municipality can initiate more complex projects such as the biomass CHP plants. Photovoltaic, biomass, wind and other renewable are not recommended short-term; first the market for green electricity should be better developed. Next to this it is important to work with the population to improve the payment discipline and to save electricity to the extent possible.

4. The closure and reclamation of illegal landfills shall be implemented based on a previous plan. Such a plan shall take into account the size of existing landfills: the waste dumped at landfills with volume less than 100 m<sup>3</sup> shall be moved to the landfills with volume over 100 m<sup>3</sup> (e.g. the landfill at Padaliste). More information on the best landfill closure planning and execution can be found at <http://bih-waste.se/wp-content/uploads/2011/11/Closure-of-Dumps-and-non-compliant-Landfills.pdf>
5. The closure of the tailings dam “Kisnica” can be inspired by the guidelines that can be found at [http://www.tailSAFE.bam.de/pdf-documents/TAILSAFE\\_Closure\\_and\\_Remediation.pdf](http://www.tailSAFE.bam.de/pdf-documents/TAILSAFE_Closure_and_Remediation.pdf) The suitable remediation measures would be intended to cap the upper layers to prevent flying dust, stop penetration of stormwater into the dam, minimize erosion at the slopes and create

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an underground barrier for the propagation of polluted leachate towards the sensitive recipients.

6. An extension of existing regional water supply system in the municipality of Lipljan in the settlements that currently suffer from improper water supply quality may be taken into account. It will cause positive health effects and will improve the wellbeing of local communities. The asbestos pipes will have to be replaced in settlements attached to the regional water supply that is supplied from the Gracanica Lake. The exploitation of (scarce) water may lead to the depletion of aquifers which implies that water utilization should be limited by the promotion of sustainable water harvesting and recycling measures. The improved water supply in settlements not connected to a public water supply system is often associated with an increased consumption of water by newly connected households. Water saving measures should be implemented aiming at the reduction of the water consumption to 120l/capita/day (EU norm).
7. The protection against flood is a complex discipline that should involve hydrologists, hydro-technicians and biologists. Environmental experts should define suitable (biological) measures to improve the presently weak riparian habitats. Anti erosion measures may be more efficient than regulating the riverbeds only as it is practiced today in the municipality of Gracanica.
8. There should be suitable zones defined with different level of protection regime as the special zone to protect the Ulpijana site covers a rather large area.
9. The improved enforcement is possible only if the environmental inspectorate performs its duties in line with a previously defined annual plan. Two inspection methods should be applied: regular announced visits and ad-hock inspections at the premises where irregularities were noticed during the announced visits.
10. The awareness raising activities must be conducted in parallel with concrete environmental projects and incentives, otherwise the resources would be lost;

## ***7.2 Recommendations for strengthening the proposed measures for economic development***

The MDP sets various measures for the protection of the environment which aim at:

- Introducing sustainable agriculture (this works in synergy with the wheather wise application of pesticides suggested towards the environmental protection); it comprises of combination of incentives (subsidies and direct grants for purchase of modern equipment for soil operation), education / training and certification (especially on organic farming);

- Creation of enabling environment for increasing the employment rates: establishing a business centre / incubator, conducting long life learning programmes and tailored training courses; promoting the local products and erecting a green market;
- Fostering the cooperation between the municipality and the business sector: setting appropriate institutional forms and book of rules to facilitate this cooperation etc.
- Strengthening the existing and shaping / organizing new business zones.

Most proposed measures will bring positive socio-economic and environmental effects. However, the agriculture and the activities in business zones will cause negative environmental impacts if the following mitigation measures would not be implemented:

1. A study on sustainable agriculture should be developed to define the following: (i) the assessment of the soil quality; (ii) optimum cropping patterns and avoidance of monocultures; (iii) optimum irrigation methods; (iv) optimum application of fertilizers and pesticides; (v) recommendations for best agricultural practices and organic agriculture.
2. At the green market composting of the organic waste could be implemented. More details regarding the smallsize composting to be implemented at green markets, but also at home, can be found at <http://www.grownyc.org/compost>
3. For the erection of business zones SEA for the regulation plans and EIA for the conceptual design phases will have to be implemented. Full coverage with communal infrastructure should be reached prior to starting the construction activities;

### ***7.3 Recommendations for strengthening the proposed measures for demography and social development***

The MDP proposes measures for the demography and social development that positively contribute to reaching the objectives for improved housing and public services. The following environmental considerations should be taken into account in this sector:

1. The healthcare and the care for elders are associated with generation of healthcare waste to which hazardous properties are attributed. Having in mind the present practice of mixing the healthcare with the household-like waste and disposing it at illegal sites (e.g. on the top of the tailings dam) one should realize that this practice causes significant environmental problems. It is proposed: to train the staff in healthcare facilities on segregating the hazardous from the non-hazardous waste and to sterilize the infectious waste by way of autoclaving. More details on the autoclaving technology can be found at <http://gefmedwaste.org/downloads/ALTERNATIVE%20HEALTH-CARE%20WASTE%20MANAGEMENT%20TREATMENT%20TECHNOLOGIES.pdf>
2. The public transport will have to be developed for which a new institutional set up and related infrastructure should be provided. From an environmental point of view the use of public transport is beneficial for the reduction of harmful emissions in the air including the

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GHG emissions but its planning will require additional effort on its own next to the MDP providing the basis. The proposed construction of a bus station should be analysed in view of the possibilities to combine the public transport by road, railway, taxi, cycling, and potentially use of electric vehicles in the long run. A study on sustainable transport should propose the best location of such a bus station (or bus stations if required) that will become part of transport nodes. From the inter-modality point of view, shortest distances from residence to the work places, combination of transport with leisure and public services etc. should be sought. The more efficient the public transport will be the less CO<sub>2</sub> emissions will be generated while the citizens will choose public transport means rather than using a private car. More details on the inter-modal public transport can be seen on [http://en.wikipedia.org/wiki/Intermodal\\_passenger\\_transport](http://en.wikipedia.org/wiki/Intermodal_passenger_transport)

3. The extension of settlements to accommodate new residential zones brings negative environmental impacts. Especially the extension of the municipal centre Gracanica is foreseen to the north-east where the ground may not be sufficiently stable due to the longstanding exploitation of lead-zinc ore in underground tunnels. It is proposed to request geo-mechanical investigations prior to implementing any construction activities in that area. There is also an extension of the village Laplje Selo to the south which spreads in a thin belt along the local road to Livagje. If possible this extension should be reduced in order to avoid longitudinally spread zones which are not rational with regard to involved costs for erecting communal infrastructure to serve limited number of houses / buildings located along the local road.
4. The location of sport playgrounds should be selected in a way to avoid quality agricultural land and valuable landscapes (e.g. riparian habitats).

#### ***7.4 Recommendations for strengthening the proposed measures for development of infrastructure***

The MDP foresees number of measures towards and improved quality of the communal infrastructure (water supply & sanitation, landfill for inert waste, pits for burying of carcasses) and transport (improved local roads, erection of a ringroad for Gracanica and cycling trails).

The following should be taken into account from an environmental point of view:

1. Erection of wastewater treatment plants is foreseen in the MDP but one can question whether it is feasible to construct sophisticated (and expensive) plants to serve less than 5,000<sup>28</sup> inhabitants. Therefore some innovative (and less costly) wastewater treatment methods should be sought. It is proposed to implement constructed wetlands. More details on construction wetlands can be seen at [http://en.wikipedia.org/wiki/Constructed\\_wetland](http://en.wikipedia.org/wiki/Constructed_wetland)

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<sup>28</sup> The Urban Wastewater Directive 91/271/EEC sets the threshold of 10,000 inhabitants for a settlement to be considered as an agglomeration which qualifies it to the erection of a wastewater treatment plant.

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2. For burying of carcasses use of lime is recommended. More details on proper burial practices can be seen at <http://tammi.tamu.edu/Burial%20pub%202012.pdf>
  3. The improved public lighting is seen as an important precondition for an improved safety. Sodium bulbs are recommended instead of mercury bulbs that are used massively due to relatively low investment costs; the sodium bulbs are more expensive but have a high electricity saving potential.
  4. The proposed cycling lanes should be designed in a way to increase the safety and to improve the cycling experience. More details on the design of cycling lanes can be found at <http://www.marylandroads.com/oots/Chapter%203%20-%20Bike%20Lanes.pdf>

## 8. MONITORING PLAN

Objectives and targets set aims and thresholds that should be taken into account when assessing the impact of the MDP on the environment. Indicators are used to illustrate the environmental impact in a simple and effective manner. The selected indicators shall also be used to form the basis of a monitoring programme for the MDP; the next review of the MDP shall take into account the level of achievement of the proposed targets and indicators. The proposed monitoring programme is outlined in this chapter.

The purpose of indicators is to monitor the effectiveness of the MDP in meeting the SEA environmental objectives and targets. The methodology for the development and selection of the SEA indicators has been based on:

- Identification of existing environmental problems which inform the development of SEA objectives and indicators
- Selection of a limited number of practical, mainly qualitative, but also quantitative indicators (where possible) to keep monitoring manageable

The determination of the set of indicators used in this report has been informed by the baseline assessment and the scoping process. However, it should be noted that the final set is also influenced by the availability of existing and relevant indicators, current monitoring programmes and the scale of application. Where data has not been available one of the recommendations of this report is to carry out additional analyses (e.g. studies) and to enhance the existing monitoring system in place.

The monitoring plan is aimed at validating of the achievement of the environmental objectives during the MDP implementation as well as examining the environmental effects from the implemented mitigation measures. In the following table the proposed indicators to assess the success of the implementation of the recommended mitigation measures are presented. This table represents the basis for the monitoring plan.

**Table No. 15: Environmental objectives, targets and indicators**

Environmental Objectives	Targets	Indicators
Protect and enhance the biodiversity	<ul style="list-style-type: none"> <li>– Reduce the impacts over the protected areas and areas rich in biodiversity</li> <li>– Increase the public green spaces</li> </ul>	<ul style="list-style-type: none"> <li>– Number of fishing licenses (increase of the existing number for up to 10% in 5 years);</li> <li>– Number of tourist visits (increase of the existing number up to 10% in 5 years);</li> <li>– Area under public green spaces (increase of the existing number up to 15% in 5 years).</li> </ul>
Improve the air quality	<ul style="list-style-type: none"> <li>– Replace the fossil with renewable fuels</li> <li>– Improve the public transport</li> </ul>	<ul style="list-style-type: none"> <li>– Participation of RES (up to 3% in 5 years)</li> <li>– Number of passengers using public transport (increase of the existing</li> </ul>

Environmental Objectives	Targets	Indicators
	<ul style="list-style-type: none"> <li>Prevent and control the industrial pollution</li> </ul>	<ul style="list-style-type: none"> <li>number up to 20% in 5 years);</li> <li>Number of environmental permits (up to 30 environmental permits issued in the course of 5 years);</li> </ul>
Provide sufficient quantity and quality of potable water	<ul style="list-style-type: none"> <li>Cover all settlements by public water supply systems</li> </ul>	<ul style="list-style-type: none"> <li>Number of settlements that are not connected to public water supply systems (coverage of 85 % of the total population in 5 years)</li> </ul>
Minimising the loss of quality soil and urban sprawl	<ul style="list-style-type: none"> <li>Convert the degraded land into productive land use</li> <li>Prevent further extension of existing settlements and business zones</li> </ul>	<ul style="list-style-type: none"> <li>Remediation of the Kisnica tailings dam (development of a detailed design and fund raising activities in 5 years);</li> <li>Extension of settlements and business zones (up to 5% in 3 years);</li> </ul>
Remediate the degraded land	<ul style="list-style-type: none"> <li>Reduce the area of degraded land</li> </ul>	<ul style="list-style-type: none"> <li>Area under degraded land (reduce the existing number by 10% in 5 years);</li> </ul>
Prevent environmental impacts from new developments (integrate SEA and EIA whenever possible)	<ul style="list-style-type: none"> <li>Enforce the SEA and EIA laws</li> </ul>	<ul style="list-style-type: none"> <li>Number of successfully implemented SEA and EIA processes (up to 20 SEA and EIA processes in 5 years)</li> </ul>
Use natural resources effectively	<ul style="list-style-type: none"> <li>Rationalise the consumption of water</li> <li>Prevent conversion of high quality agricultural land for construction purposes</li> <li>Introduce waste hierarchy</li> </ul>	<ul style="list-style-type: none"> <li>Average consumption of water (reduced the present average consumption norm by 5% in 5 years);</li> <li>Area of agricultural land converted for construction purposes (up to 5% converted agricultural land in 5 years);</li> <li>Rate of waste segregation / waste recovery (up to 5% waste recycling recovery in 5 years);</li> </ul>
Improve the wastewater and solid waste management	<ul style="list-style-type: none"> <li>Improvement or at least no deterioration in surface water quality by 2020</li> <li>Prevent the proliferation of illegal dumps</li> <li>Prevent mixing of hazardous and non hazardous waste</li> </ul>	<ul style="list-style-type: none"> <li>Number of settlements that discharge the wastewater without treatment (up to 5% of the total population connected to wastewater treatment plant in 5 years);</li> <li>Number of illegal dumps (reduction of the existing number by 30% in 5 years)</li> <li>Separate systems for collection and treatment of healthcare and industrial hazardous waste (disinfection of up to 50% of the total healthcare waste generated in 5 years);</li> </ul>
Promote cultural heritage	<ul style="list-style-type: none"> <li>Protect all valuable cultural heritage sites</li> </ul>	<ul style="list-style-type: none"> <li>Number of protected cultural heritage sites (increase the existing number by 10% in 5 years);</li> </ul>

Environmental Objectives	Targets	Indicators
Conserve and enhance the landscape	<ul style="list-style-type: none"> <li>- Maintain the existing public green areas</li> </ul>	<ul style="list-style-type: none"> <li>- Records for maintenance of existing public green areas (annual reports on the maintenance of public green areas);</li> </ul>
Promote and maintain the eco-networks	<ul style="list-style-type: none"> <li>- Maintain and enhance the “green corridors” along the main rivers</li> <li>- Establish “green corridors” along the major and local roads</li> </ul>	<ul style="list-style-type: none"> <li>- Length of “green corridors” (increase of the existing numbers by 20% in 5 years).</li> </ul>
Prevent sprawl and congestion	<ul style="list-style-type: none"> <li>- Improve the local urban planning</li> </ul>	<ul style="list-style-type: none"> <li>- Number of local urban plans (50% coverage of settlements with urban/regulatory plans in 5 years)</li> </ul>
Stimulate healthy and environmentally friendly habits	<ul style="list-style-type: none"> <li>- Raise the environmental awareness</li> </ul>	<ul style="list-style-type: none"> <li>- Number and type of trainings and public awareness campaigns (executed up to 5 various trainings annually)</li> </ul>
Promote social inclusion	<ul style="list-style-type: none"> <li>- Effectuate local regulations to foster social inclusion</li> </ul>	<ul style="list-style-type: none"> <li>- Legal acts in place and enforced (2 new environmentally sound local regulations drafted and enforced in 5 years)</li> <li>- Number of employments of disabled and persons with special needs (obligatory employment of disabled persons in public sectors regulated in 5 years);</li> <li>- Structures accessible for disabled (30% of existing and newly erected public areas of vital importance are accessible for disabled)</li> </ul>
Ensure sufficient dwellings	<ul style="list-style-type: none"> <li>- Increase the number of apartments in single and highrise buildings</li> </ul>	<ul style="list-style-type: none"> <li>- Number of families without a dwelling (reduced existing number up to 30% in 5 years)</li> </ul>
Reduce poverty	<ul style="list-style-type: none"> <li>- Reduce the unemployment rate</li> <li>- Increase the average salary</li> </ul>	<ul style="list-style-type: none"> <li>- Number of unemployed (reduced existing numbers up to 5% in 5 years)</li> <li>- Average salary amount (increased existing numbers up to 5% in 5 years).</li> </ul>

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## 9. EXECUTIVE SUMMARY

This Strategic Environmental Assessment (SEA) analyses the environmental effects of the Municipal Development Plan (MDP) of the Gračanica municipality and provides recommendation for the municipal administration on how to integrate the environmental issues into the implementation of the plan.

The SEA process was implemented in parallel with the MDP development to ensure that environmental considerations were integrated in the MDP in support of environmentally sound and sustainable development.

The Municipality of Gračanica is a young agglomeration of territories, which were part of the municipality of Prishtina, Lipljan and Kosovo Polje until 2009. It was established on 29.12.2009 as of the constitutional session of the Municipal Council. Gračanica had 18.642 inhabitants as measured in the census of 2008, while assessments and projections performed by the Municipality place the current number at around 25.000 in 2011. It is a multiethnic municipality, comprised of 85.7% Serbs, 3.7% Albanians and 10.6% Roma, Ashkali, Egyptians etc. The climate is continental with hot and dry summers as well as relatively cold winters.

According to the Spatial Plan for Kosovo (2010-2020) the municipality of Gračanica belongs to the zone assigned for intensive economic development due to its relative closeness to the Capital Pristine.

Agricultural land, water and lead-zinc ore are the most important resources in the municipality. When it comes to mineral resources, one should have in mind the environmental consequences of the potential restart of the existing mine “Kisnica” in spite of the existing environmental pressures deriving from the tailings dam’s leachate and erosion deposits as well as the improperly maintained mine.

While the agricultural land with high quality is available, there are various pressures for its conversion into non productive purposes. Soil quality is not sufficiently studied in the municipality. Protection of agricultural land in conjunction with the preservation of the high quality soils should be one of the most important priorities of the municipality.

Water resources are not mapped out adequately: there aren’t data on the average, maximum and minimum river flows, nor is there information about the groundwater aquifers (water table, abundance, discharge etc.). Further analyses are required in order to define the future water supply and irrigation policies in the municipality. In addition, knowledge about the hydrology of rivers is important to decide on the best regulation methods of rivers as part of the future policies on flood protection. Only after a study on water resources is furnished the municipality can decide on the best ways of securing water supply and irrigation sources.

Biological resources are pretty scarce: limited and economically not valuable forests, declining fish stock due to the low quality of rivers, wildlife being not monitored nor protected also in spite

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of the municipal plans to establish a hunting resort; it implies that the municipality should work on restoration of biological resources in an organized way.

Officially, the largest number of people in the municipality is employed in the public sector, most notably in education, healthcare and municipal administration, provided here in order of magnitude. The facilities for the provision of public services (healthcare, education etc.) are deteriorated and require urgent refurbishment. There is an obvious housing deficit which the municipality intends to address via the extension of the boundaries of existing and construction of new settlements.

Limited number of citizens is involved in the private sector. The entrepreneurship is not developed at sufficient levels. The industries are located along the national roads branching off Pristina. The industrial plants located therein produce mainly construction material, paints and varnishes and some furniture; there are also plenty of warehouses supporting the trade activities. The business zones are not adequately organized and suffer from insufficient road and communal infrastructure.

The MDP objectives were tested during the SEA process against their adherence to the environmental objectives. Synergetic relationship was found for the majority of the MDP objectives. The major conflicting areas between the MDP and SEA objectives are in the economic and infrastructure sectors, notably in the following land use categories:

- Enhancing the business development (industrial, warehouses, mining etc.), via establishing new and/or extending the existing zones;
- Setting zones for tourism, cultural heritage and landscapes, fisheries, hunting and other complementary commercial activities;
- Erecting new buildings and districts, being those residential, administrative, healthcare, sport, culture or others;
- Constructing infrastructure: roads / railway, water supply (including dams, reservoirs, pipelines) / sewerage, wastewater treatment plants, waste treatment plants and landfills, power overhead lines, optical cables, natural gas pipelines etc.

Any land use change and conversion of natural landscape into construction land could potentially disturb the environment if preventive measures were not applied.

The SEA Report highlights the evolution of the baseline scenario without the plan in view of the following:

- The demographic trends will keep its present growth rate, which will cause pressure over natural and physical resources; thus, the water and other resources scarcity will prevail;
- The traffic congestion and sprawl will intensify; noise will impact adversely sensitive urban recipients (such as the Gračanica Monastery) and wildlife (which finds its habitat in the agricultural lands, riparian terrains surrounding the rivers – mainly Gračanica and Sitnica, as well as in the degraded forests in the area of Gornja Gusterica);

- The settlements will expand under haphazard conditions and will form agglomerations along the more frequent transport corridors;
- The area under agricultural land will diminish; the business zones will replace crops, while the soil quality will deteriorate under an inappropriate wastewater and solid waste management as well as an increased use of mineral fertilizers and pesticides; also, the availability of organic fertilizers will decrease along with the reduced number of livestock;
- Illegal landfills will further proliferate, as a result of a weak law enforcement;
- The quality of rivers will deteriorate due to a continuous discharge of untreated water from households and commercial / industrial establishments, as well as heavy metal bleach and erosion deposits from the tailings dam “Kisnica”; the aquatic wildlife will be at risk of being decimated.
- Cumulative pollution from the “Kisnica” mine will worsen the air, water and soil quality and will impact adversely the human health;
- The cultural heritage will not be sufficiently protected which will result in loss of its tangible and intangible values;
- The biodiversity will diminish under uncontrolled and illegal logging, hunting, fishing, expansion of construction and economic activities and associated pollution;
- The quality of life will worsen in the absence of sufficient residential areas, attractive landscapes, open spaces, parks, natural corridors aligned with the river banks and buffering the transport alignments etc.
- The climate change will cause extreme events (floods and droughts respectively).

Further, the SEA Report presents the environmental consequences from the three development scenarios of the MDP: the trend, the concentrated and decentralized scenario. Each scenario had good proposals which were discussed from an environmental point of view. These scenarios were then tested against their adherence to the sustainability principles and thus the environmental objectives. These analyses contributed to the identification of the most likely environmental impacts deriving from the planning development framework and proposed measures therein.

In the table below an environmental assessment of the activities proposed during the planning phase so called “**Implementation strategies**” is carried out.

<b>Protection of the environment</b>	
<b>Activity</b>	<b>Impact / comment</b>
Raising of awareness about the effects of use of fertilizers and pesticides	Positive environmental impacts. Coordination with the Hydrometeorological institute is essential.

Activity	Impact / comment
Campaign against uncontrolled conversion of quality agricultural land into non productive purposes (housing, business zones etc.).	Positive environmental impacts. Cooperation with the Ministry of Agriculture must be ensured.
Strengthening municipal inspectorate	Positive environmental impacts. It is suggested to increase the number of inspectors, to train the staff and to assist them in the development and implementation of the annual plan of inspections.
Raising the awareness of population on environmental issues	Positive environmental impact. The awareness raising activities should be rather attached to some concrete environmental projects; otherwise they would not have the required effect.
Use of biomass as renewable energy source	Positive environmental impact. Biomass could be used for production of combined heat and power (CHP); still, to obtain feasible results in terms of CO2 reduction and saving of fossil fuels a well developed electricity grid and district heating infrastructure should be available.
Penalising illegal dumping of waste	Positive environmental impact
Remediation of illegal dumpsites	Positive environmental impacts.
Mitigation of environmental impacts from the tailings dam "Kisnica"	Positive environmental impact.
Improvement of water supply: Constructions of water supply systems in settlements that are currently supplied with water by own wells.	Positive environmental impact. Note: improved water supply may imply overconsumption of water therefore campaigns to save water should be implemented.
Enhancing the riparian habitats	Positive environmental impact.
Exploring the archeological heritage	Positive environmental impacts.
Redefine the activities on the protection of Ulpijana site	Positive environmental and socio-economic impacts.
Promotion of the cultural heritage	Positive environmental and socio-economic impact

<b>Activity</b>	<b>Impact / comment</b>
Protection against flood	Positive environmental impact. Although the regulation of riverbeds is often considered the only measure against flood, one should have in mind that anti erosion measures (afforestation), river flow cascading and enhancement of riparian habitats should be combined to obtain more sustainable results.

### Economic development

<b>Activity</b>	<b>Impact / comment</b>
Development of a study on sustainable agriculture	Positive environmental impact. Cooperation with the Ministry of Agriculture must be ensured.
Education of agricultural producers on good agricultural practice	Positive environmental impact.
Project preparation to access grants funding.	Positive environmental impact
Implementation of good agricultural practice	Positive environmental impact.
Improvement of irrigation	Positive environmental impact.
Mobilising the communities and entrepreneurs in the development of market for local products	Positive environmental impacts; improvement of market conditions, however, may stimulate the increase of consumption that can lead to overproduction and overexploitation of natural resources. Sustainability principles must guide any business activity.
Creating conditions for marketing of local products.	Positive environmental impacts (erection of a green market foreseen)
Incentives for employment	Positive socio-economic effects; training courses and longlife learning programmes envisaged.
Organising fairs, promotional events and study tours to encourage family businesses and tourism activities	Moderate environmental impacts. Tourism can cause increasing waste and wastewater quantities and traffic jams (with negative effects for the air quality). Tourism development should be promoted but within the limits of sustainability.

<b>Activity</b>	<b>Impact / comment</b>
Establishment of a business centre and/or business incubator	Positive socio-economic impact. Cooperation between the private sector, municipality and institutions active in education is foreseen.
Establishment of business zones	Negative environmental impacts. For the new construction that will occur in residential and business areas natural resources will be used which will increase the carbon footprint of the municipality; due to the new construction construction and demolition waste will be generated, some of which will hold hazardous properties; as there is no dedicated area for the disposal of construction and demolition waste further soil and water pollution will be propagated as a result of this activity;

### Demography and social development

<b>Activity</b>	<b>Impact / Comments</b>
Improvement of the healthcare services and construction of necessary healthcare facilities	Positive social impact. From an environmental point of view one should have in mind that healthcare is associated with healthcare waste which needs to be managed properly otherwise health and environmental risks will emerge due to the hazardous properties of infectious waste and chemicals.
Improvement of education and construction of necessary education facilities	Positive socio-economic impact and moderate environmental impact. Public services will enable for improved lifestyles of population in the area of education, sport, culture, healthcare etc. However, the urbanization will intensify and for new construction the development of suitable public infrastructure and services will be required. If the new facilities would not be equipped with sufficient communal infrastructure negative environmental impacts will occur.
Improved care for elders	Positive social effects. Management of healthcare waste should be taken into account.
Improved care for children without parental care	Positive social effects.
Shelter for victims of violence (including family violence)	Positive social effects.

<b>Activity</b>	<b>Impact / Comments</b>
Construction of post office, court	Positive social effects. Locations should be carefully selected to minimize environmental impacts.
Construction of bus station	Positive effects because it will foster use of public transport.
Sport courts, playgrounds, houses of culture etc.	Positive social effects. Locations should be carefully selected to minimize environmental impacts. Municipal infrastructure should also be available (grinfield locations should be avoided).
Religious structures.	Positive social and cultural effects.
Longlife learning programmes.	Positive social, economic and cultural effects.
Development of urban regulatory plans for important zones in the municipality	Moderate effects. The extension of settlements and/or erection of business, sport or tourism related zones will be regulated in terms of boundaries and will possibly be concentrated which will make easier to implement infrastructure. On the other hand, any new development, even if it is regulated, will result in negative environmental effects.
Improving housing and extension of boundaries of settlements to foster the construction activity	Negative environmental impact. The extension of settlements' boundaries will impact the present land use by the conversion of agricultural land into non productive purpose and reduction of the natural vegetation cover while extending paved areas. According to the planned settlements' boundaries, the extension of Gračanica counts for around 25% of the existing area; also the villages of Donja and Gornja Gusterica as well as Suvi Do will extend significantly compared to their present borders. It will result in a permanent loss of agricultural land and will increase the CO2 emissions as a result of the reduced photosynthesis potential of the land cover as well as of the activities taking place in the area with converted land use.

## Infrastructure

<b>Activity</b>	<b>Impact/comment</b>
Improvement of water supply; the priority will be set at villages currently using	Positive environmental impact if water saving practices would be fostered.

Activity	Impact/comment
groundwater extracted in own wells.	
Improved sanitation and erection of wastewater treatment plants	Positive environmental impact. Improvement of sanitation by the extension of existing sewerage systems in settlements will improve the hygienic conditions in residential areas. However, if the wastewater would be discharged without any treatment the quality of the recipients (mostly local rivers) will worsen.
Renewable energy sources	Positive environmental impact. One should not have in mind that given the presently unstable electricity network in Kosovo some simple technologies should be used for demonstration purposes only.
Improved telecommunications	Positive social impact
Construction of pits for the disposal of carcasses	Positive environmental impacts
Temporary landfill for healthcare waste	Negative environmental impact. Temporary landfills should not be established as they will remain for indefinite.
Landfill for inert waste	Moderate environmental impact. The construction and demolition waste is mainly inert but it can contain also fractions that hold hazardous properties.
Ringroad for Gračanica	Negative environmental impact. Construction of roads is associated with land conversion and loss of quality soil, emission of harmful substances in the air, water and occurrence of excessive noise.
Cycling trials	Positive impact. Safety might be a concern to be addressed by signalization, marking etc.
Access for disabled	Positive social impact.
Ecological network	Extremely positive impact.
Public lighting	Moderate environmental impact due to an increased consumption of electricity. Positive social impact due to an increased safety.
Local road network	Negative environmental impact. Extended corridors for local roads may increase the traffic frequencies to cause additional CO <sub>2</sub> emissions as a result of the combustion of fossil fuel in engines of vehicles; the new corridors shall occupy land and reduce biodiversity; stormwater drainage from road surfaces

Activity	Impact/comment
	will transport pollution to the nearby terrain caused by leached oils and lubricants, residual materials from breaks and tires; increased traffic will cause noise and disturb the sensitive noise recipients – people, animals and birds;

The MDP sets various measures for the protection of the environment which aim at:

- strengthening the ecological network in the municipal territory and protecting the biodiversity; protection against flood;
- protecting the high quality agricultural land from harmful impacts deriving from the application of artificial fertilizers and pesticides,
- protecting the human health via provision of quality water supply to all citizens, closure and remediation of environmental hotspots (i.e. the tailings dam “Kisnica” and the illegal landfills used for the disposal of construction & demolition, municipal and potentially hazardous waste)
- improving the energy security and reducing the CO2 emissions by introducing the renewable energies and improving the energy efficiency
- Protecting the archeological and religious heritage
- Raising the awareness of population and building the capacity of the municipal administration on the environmental issues
- Enforcing the legislation

All the proposed measures will bring positive environmental effects. It is, however, important to take into account the following:

1. An ecological network is composed of following elements:
  - core areas (forests, parks, lakes etc.) that are usually protected by buffer zones,
  - corridors (riparian habitats of rivers, buffers along the roads etc.) and
  - nature restoration areas, where needed (e.g. the restored tailings dam “Kisnica”).

The key word in an ecological network is connectivity; it provides the possibility for free movement of wildlife in an otherwise fragmented and often hostile environment. The ecological network concept also provides a tool for ecological design that facilitates the interaction with other land uses. More details on the design and maintainance of ecological networks can be seen on <http://www.eeconet.org/eeconet/>

2. Weather-wise application can reduce pesticide hazard to the environment. An aware agricultural producer carefully checks the weather conditions before beginning spray procedures. Saving of the pesticide itself can contribute to reduced costs of an agricultural product. More information on the wheather-wise and environmentally responsible application of pesticides can be found at <http://edis.ifas.ufl.edu/pi232>

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3. The use of renewable energies will improve the CO<sub>2</sub> emission footprint of the municipality on the long term; still the proposed plant using the biomass for generation of electricity should be erected after certain conditions in Kosovo are met:

- The national electricity grid should be a counterpart to the modern technologies for utilizing biomass;
- There should be incentives available for the private sector to invest into such facilities
- The most suitable technology for using biomass is the combined heat and power (CHP). It requires that the location of such a plant is selected close the densely populated areas which are already equipped with district heating network. For more details please see

[http://www.biomassenergycentre.org.uk/portal/page?\\_pageid=75,37173&\\_dad=portal&\\_schema=PORTAL](http://www.biomassenergycentre.org.uk/portal/page?_pageid=75,37173&_dad=portal&_schema=PORTAL)

Having in mind the above, it is recommended to start introducing the renewable energies (predominantly solar power) for producing sanitary hot water in schools and other public buildings as demonstration projects. Only after sufficient experience is gained on the renewable energies the municipality can initiate more complex projects such as the biomass CHP plants. Photovoltaic, biomass, wind and other renewable are not recommended short-term; first the market for green electricity should be better developed. Next to this it is important to work with the population to improve the payment discipline and to save electricity to the extent possible.

4. The closure and reclamation of illegal landfills shall be implemented based on a previous plan. Such a plan shall take into account the size of existing landfills: the waste dumped at landfills with volume less than 100 m<sup>3</sup> shall be moved to the landfills with volume over 100 m<sup>3</sup> (e.g. the landfill at Padaliste). More information on the best landfill closure planning and execution can be found at <http://bih-waste.se/wp-content/uploads/2011/11/Closure-of-Dumps-and-non-compliant-Landfills.pdf>
5. The closure of the tailings dam “Kisnica” can be inspired by the guidelines that can be found at [http://www.tailSAFE.bam.de/pdf-documents/TAILSAFE\\_Closure\\_and\\_Remediation.pdf](http://www.tailSAFE.bam.de/pdf-documents/TAILSAFE_Closure_and_Remediation.pdf) The suitable remediation measures would be intended to cap the upper layers to prevent flying dust, stop penetration of stormwater into the dam, minimize erosion at the slopes and create an underground barrier for the propagation of polluted leachate towards the sensitive recipients.
6. An extension of existing regional water supply system in the municipality of Lipljan in the settlements that currently suffer from improper water supply quality may be taken into account. It will cause positive health effects and will improve the wellbeing of local communities. The asbestos pipes will have to be replaced in settlements attached to the

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regional water supply that is supplied from the Gracanica Lake. The exploitation of (scarce) water may lead to the depletion of aquifers which implies that water utilization should be limited by the promotion of sustainable water harvesting and recycling measures. The improved water supply in settlements not connected to a public water supply system is often associated with an increased consumption of water by newly connected households. Water saving measures should be implemented aiming at the reduction of the water consumption to 120l/capita/day (EU norm).

7. The protection against flood is a complex discipline that should involve hydrologists, hydro-technicians and biologists. Environmental experts should define suitable (biological) measures to improve the presently weak riparian habitats. Anti erosion measures may be more efficient than regulating the riverbeds only as it is practiced today in the municipality of Gracanica.
8. There should be suitable zones defined with different level of protection regime as the special zone to protect the Ulpijana site covers a rather large area.
9. The improved enforcement is possible only if the environmental inspectorate performs its duties in line with a previously defined annual plan. Two inspection methods should be applied: regular announced visits and ad-hock inspections at the premises where irregularities were noticed during the announced visits.
10. The awareness raising activities must be conducted in parallel with concrete environmental projects and incentives, otherwise the resources would be lost;

The MDP sets various measures for the protection of the environment which aim at:

- Introducing sustainable agriculture (this works in synergy with the weather wise application of pesticides suggested towards the environmental protection); it comprises of combination of incentives (subsidies and direct grants for purchase of modern equipment for soil operation), education / training and certification (especially on organic farming);
- Creation of enabling environment for increasing the employment rates: establishing a business centre / incubator, conducting long life learning programmes and tailored training courses; promoting the local products and erecting a green market;
- Fostering the cooperation between the municipality and the business sector: setting appropriate institutional forms and book of rules to facilitate this cooperation etc.
- Strengthening the existing and shaping / organizing new business zones.

Most proposed measures will bring positive socio-economic and environmental effects. However, the agriculture and the activities in business zones will cause negative environmental impacts if the following mitigation measures would not be implemented:

1. A study on sustainable agriculture should be developed to define the following: (i) the assessment of the soil quality; (ii) optimum cropping patterns and avoidance of

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monocultures; (iii) optimum irrigation methods; (iv) optimum application of fertilizers and pesticides; (v) recommendations for best agricultural practices and organic agriculture.

2. At the green market composting of the organic waste could be implemented. More details regarding the small size composting to be implemented at green markets, but also at home, can be found at <http://www.grownyc.org/compost>
3. For the erection of business zones SEA for the regulation plans and EIA for the conceptual design phases will have to be implemented. Full coverage with communal infrastructure should be reached prior to starting the construction activities;

The MDP proposes measures for the demography and social development that positively contribute to reaching the objectives for improved housing and public services. The following environmental considerations should be taken into account in this sector:

1. The healthcare and the care for elders are associated with generation of healthcare waste to which hazardous properties are attributed. Having in mind the present practice of mixing the healthcare with the household-like waste and disposing it at illegal sites (e.g. on the top of the tailings dam) one should realize that this practice causes significant environmental problems. It is proposed: to train the staff in healthcare facilities on segregating the hazardous from the non-hazardous waste and to sterilize the infectious waste by way of autoclaving. More details on the autoclaving technology can be found at <http://gefmedwaste.org/downloads/ALTERNATIVE%20HEALTH-CARE%20WASTE%20MANAGEMENT%20TREATMENT%20TECHNOLOGIES.pdf>
2. The public transport will have to be developed for which a new institutional set up and related infrastructure should be provided. From an environmental point of view the use of public transport is beneficial for the reduction of harmful emissions in the air including the GHG emissions but its planning will require additional effort on its own next to the MDP providing the basis. The proposed construction of a bus station should be analysed in view of the possibilities to combine the public transport by road, railway, taxi, cycling, and potentially use of electric vehicles in the long run. A study on sustainable transport should propose the best location of such a bus station (or bus stations if required) that will become part of transport nodes. From the inter-modality point of view, shortest distances from residence to the work places, combination of transport with leisure and public services etc. The more efficient the public transport will be the less CO2 emissions will be generated while the citizens will choose public transport means rather than using a private car. More details on the inter-modal public transport can be seen on [http://en.wikipedia.org/wiki/Intermodal\\_passenger\\_transport](http://en.wikipedia.org/wiki/Intermodal_passenger_transport)
3. The extension of settlements to accommodate new residential zones brings negative environmental impacts. Especially the extension of the municipal centre Gracanica is foreseen to the north-east where the ground may not be sufficiently stable due to the longstanding exploitation of lead-zinc ore in underground tunnels. It is proposed to

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request geo-mechanical investigations prior to implementing any construction activities in that area. There is also an extension of the village Laplje Selo to the south which spreads in a thin belt along the local road to Livagje. If possible this extension should be reduced in order to avoid longitudinally spread zones which are not rational with regard to involved costs for erecting communal infrastructure to serve limited number of houses / buildings located along the local road.

4. The location of sport playgrounds should be selected in a way to avoid quality agricultural land and valuable landscapes (e.g. riparian habitats).

The MDP foresees number of measures towards and improved quality of the communal infrastructure (water supply & sanitation, landfill for inert waste, pits for burying of carcasses) and transport (improved local roads, erection of a ringroad for Gracanica and cycling trials).

The following should be taken into account from an environmental point of view:

1. Erection of wastewater treatment plants is foreseen in the MDP but one can question whether it is feasible to construct sophisticated (and expensive) plants to serve less than 5,000<sup>29</sup> inhabitants. Therefore some innovative (and less costly) wastewater treatment methods should be sought. It is proposed to implement constructed wetlands. More details on construction wetlands can be seen at [http://en.wikipedia.org/wiki/Constructed\\_wetland](http://en.wikipedia.org/wiki/Constructed_wetland)
2. For burying of carcasses use of lime is recommended. More details on proper burial practices can be seen at <http://tammi.tamu.edu/Burial%20pub%202012.pdf>
3. The improved public lighting is seen as an important precondition for an improved safety. Sodium bulbs are recommended instead of mercury bulbs that are used massively due to relatively low investment costs; the sodium bulbs are more expensive but have a high electricity saving potential.

The proposed cycling lanes should be designed in a way to increase the safety and to improve the cycling experience. More details on the design of cycling lanes can be found at <http://www.marylandroads.com/oots/Chapter%203%20-%20Bike%20Lanes.pdf>

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<sup>29</sup> The Urban Wastewater Directive 91/271/EEC sets the threshold of 10,000 inhabitants for a settlement to be considered as an agglomeration which qualifies it to the erection of a wastewater treatment plant.

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