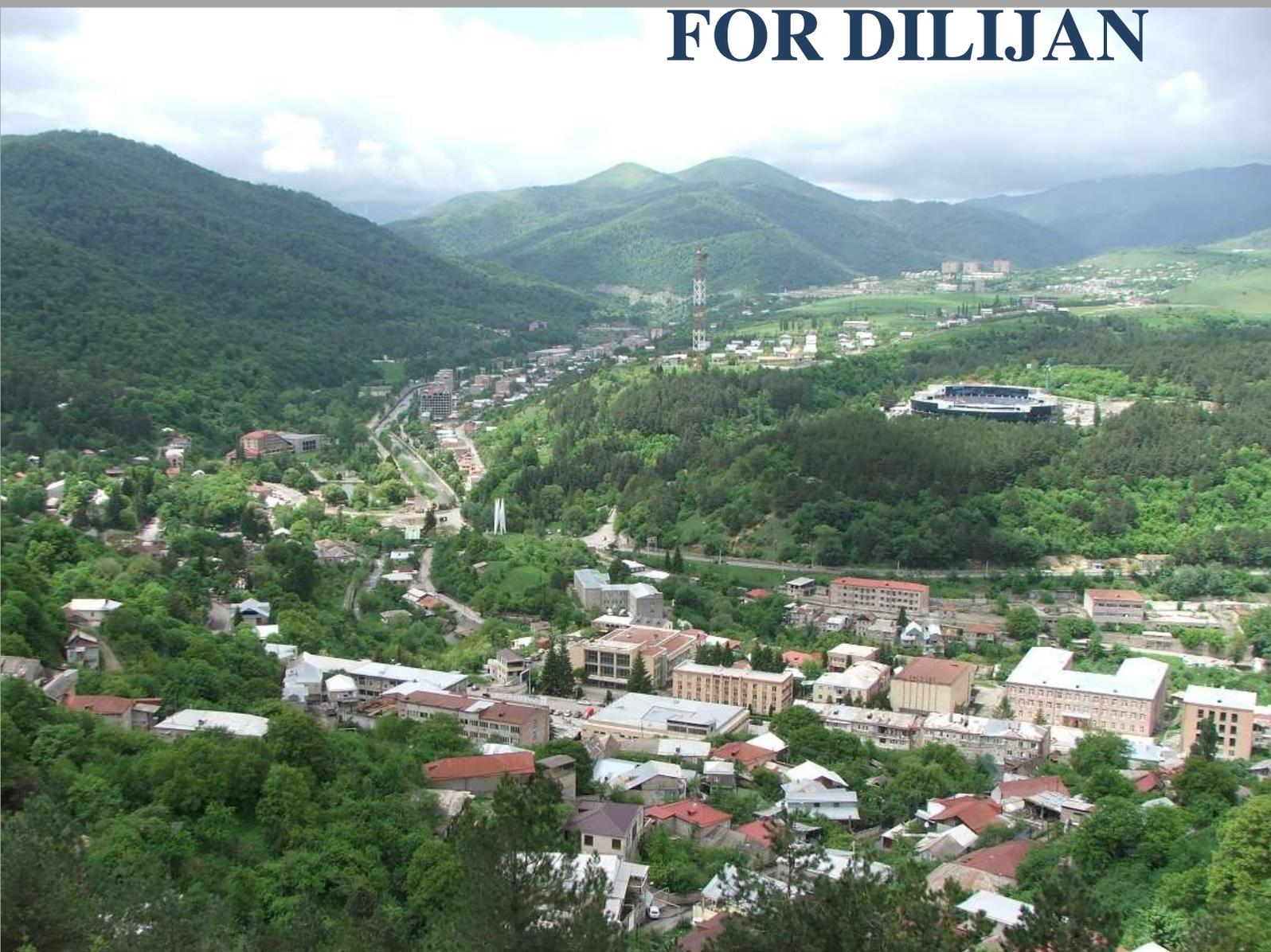




LOCAL ENVIRONMENTAL ACTION PLAN (LEAP)

FOR DILIJAN



DILIJAN 2013

LOCAL ENVIRONMENTAL ACTION PLAN (LEAP)

FOR DILIJAN

YEREVAN 2013

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All the photos are provided by the authors.

Project implementation team expresses its gratitude to Dilijan Mayor Mr. Armen Santrosyan, Municipality's staff, as well as Dilijan Aarhus Center Coordinator Mr. Albert Haroyan for their continuous support and assistance provided during the project.

Disclaimer: This project was funded through a Department of State Public Affairs Section grant, and the opinions, findings and conclusions or recommendations expressed herein are those of the Author(s) and do not necessarily reflect those of the Department of State.

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THE MESSAGE OF DILIJAN MAYOR

The main development priorities of Dilijan Resort City are expansion of health sector and tourism development, which closely relate to environmental issues. The main directions of Municipality's and City Council's performance were and continue to be an enlargement of green areas, proper preservation and use of natural resources. In the last 10 years, over 300 thousands trees and bushes have been planted in Dilijan. In previous two years, measures to treat Aghstev Riverbed and to stabilize the river walls have been undertaken along the length of the City. At present, there are major projects carried out in the city and Municipality performs consistent work to implement these projects in compliance with environmental requirements. Public hearings are conducted regarding all construction projects to minimize negative impact on environment.

Meanwhile it should be noted, that on a basis of current situation, we could not be able to deliver the required level for activities implemented towards environmental conservation. We still have serious problems related to waste management and drinking water quality improvement. The main reason is the lack of necessary funds. Based on importance of these issues, we consider the project "Local Environmental Action Plan for Dilijan City" implemented by Regional Environmental Center for the Caucasus Armenia Branch very valuable, in the result of which absolutely realistic document is produced in terms of in-depth situational analysis and indication of ways to solve problems.

We hope that in case of relevant financial support by international donor organizations, not only these problems of vital significance for the city population will be solved, but also city healthcare facilities will be expanded and its valuable natural resources will be used more complete.

Dilijan Mayor

Armen Santrosyan

REPUBLIC OF ARMENIA TAVUSH MARZ
CITY COMMUNITY COUNCIL OF DILIJAN

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DECISION

“21” May 2013 N 96–A

ON THE APPROVAL OF LOCAL ENVIRONMENTAL ACTION PLAN (LEAP) FOR
THE CITY OF DILIJAN

According to the section 6 of the Article 11 of the RA Law on “Local Self-Governance” and taking into account the recommendation of the community mayor, ***the community council decides***:

1. to approve Local Environmental Action Plan developed by Armenian Branch Office of Regional Environmental Center for Caucasus, based on appended document;
2. to recommend the community mayor to undertake measures for implementation of actions planned by the project action plan.

Community Council Members:

Votes: 8 in favor

0 abstention

0 against

- | | | |
|-------------|--------|---------------------|
| 1. In Favor | signed | Ruben Asatryan |
| 2. In Favor | signed | Garnik Davtyan |
| 3. In Favor | signed | Samvel Davtyan |
| 4. In Favor | signed | Vardan Ghazaryan |
| 5. In Favor | signed | Vardan Matevosyan |
| 6. In Favor | signed | Simon Martirosyan |
| 7. In Favor | signed | Vardan Mnatsakanyan |
| 8. In Favor | signed | Sargis Sahakyan |

Mayor of the Community of Dilijan signed A. Santrosyan

Official seal

21 May 2013
Dilijan City

1. PROJECT BACKGROUND INFORMATION

Project Summary

In September 2012, the Regional Environmental Center for the Caucasus (REC Caucasus) Armenia Branch received grant funding from the Embassy of United States to Armenia to develop Local Environmental Action Plan for the city of Dilijan. The proposed project aimed at pursuing implementation of the goals set by project, which were focused on

- Improvement of environmental conditions in the community by implementing concrete strategies;
- Increase of public awareness on environmental issues;
- Building and enhancing capacities of both local self-government bodies and NGOs to manage and implement environmental programs and find solutions to environmental problems;
- Identifying and prioritizing main environmental problems;
- Producing Local Environmental Action Plan;

through targeting improvement of environmental management and practical application of environmental planning at local level by means of public participation in environmental decision-making process and cross-sectoral cooperation.

To meet the goals set, in the project implementation period from September 2012 – June 2013, following major activities have been undertaken and implemented by the project team in accordance with project work plan.

Project City Conference

RECC Armenia organized Project City conference in Dilijan town on 13 November 2012. The major goal of the conference was to raise public awareness on newly started project funded by US Embassy, as well as met with wide spectrum of civil society to discuss environmental issues existing in Dilijan town. More than 40 representatives of civil society together with Dilijan City mayor, Mr. Armen Santrosyan, City council members, officials of different infrastructures, REC Caucasus Armenia, LEAPs Focal point of The RA ministry of Nature Protection and representatives from the Embassy of United States to Armenia, Ms Liana Sahakyan (Grant Specialist Public Affairs) and Mr. Jay Treloar (Information Officer) attended the conference.



The project idea was greatly welcomed by all conference attendees, who shared their views in regard with resolution of Dilijan environmental issues and expressed their willingness to support effective project implementation and be involved in all stages of project intervention. Common consensus among project team and civil society representatives of Dilijan town has been reached towards implementation of further activities in accordance to the project action plan. The

conference was finalized with an emphasis on importance of the project in term of addressing environmental issue together with Stakeholders' Committee, which will consists of active representatives (citizens, local government officials, NGOs, CBOs, business and private sector, scientists, youth and women) interested in resolution of environmental issues. The questionnaires on identification of Dilijan environmental issues were also completed by conference participants, which will help to get initial picture of current situation in terms of environmental problems. RECC Armenia project team especially stressed out that project attaches great attention on the ways the best collaborate with civil society, through decentralization of democratic activities, mainstreaming democratic approach in to procedures of elaboration and development of local environmental action plan for Dilijan town.



Establishment of Project Stakeholder committee

On a basis of project requirements, the project stakeholder committee was established immediately after accomplishment of City Conference in Dilijan town and started its work in Dilijan Aarhus Center.



Over 27-30 representatives of civil society eligible to work and collaborate in an effective manner to ensure an overall community well-being via active participation in entire implementation of the project and elaboration of LEAP document reflecting common interests of civil society, voluntarily joined stakeholder committee (SC). Members of already established SC, while expressing their interests in comprehensive efforts, have also taken responsibility and commitment to be actively

involved in the process of project implementation and meet project requirements in any possible way.

Training on LEAPs Methodology

Favorable background created and consensus achieved assisted LEAPs project team in continuation of project activities and entering into introduction of core objectives and methodology of the project. Two-day trainings held by project experts were focused on demonstration of the legal basis for project implementation, what is Local environmental planning, disciplines of strategic planning, the role of participants in the LEAPs procedure, analysis of baseline situation. Based on example of abstract city presented by project expert, SC members became familiar with LEAPs methodology while revealing and identifying main problems of an abstract City, prioritizing them and drawing “the tree of problems”, as well as elaborating “the tree of objectives” by working in groups. Training held was very productive, as it delivered essentials of LEAPs methodology via example of abstract city, which will be used in identification of environmental problems and development of

tree of objectives for Dilijan town. During this two-day training, interviews with LEAPs project experts Ms. Dshkhuhi Sahakyan and Ms. Evelina Ghukasyan were taken by Tavush TV local company. In their speech, project experts put emphasis on the project relevance to current environmental status of Dilijan town, as well as welcome atmosphere enabled and collaborative platform is already formed for an interactive cooperation, and successful development of the Environmental Status report.



Identification of environmental problems

Two-day trainings conducted at the Dilijan Aarhus center helped to carry out initial analysis of environmental issues based on the survey questionnaires submitted by conference participants during the City Conference. The questionnaire focused to reveal major environmental issues existing in Dilijan town, assisted project team in shaping initial picture of environmental problems. More than 60 participants took part in survey and presented their opinions and views in regard with environmental situation obvious in the town. The data received were compiled and grouped. Three major problems outlined are as follow:

- ✓ Insufficient forest management (noted by 33 participants)
- ✓ Insufficient water resources management (noted by 17 participants)
- ✓ Environmental pollution (noted by 6 participants).

Besides highlights on major environmental issues, several sub-categories were also written down by conference participants, which were grouped under each major environmental problem by project expert. Sub-category issues are listed below:

Insufficient forest management

- ✓ Forest illegal loggings (20 votes)
- ✓ Limited or lack of forest restoration activities (9 votes);
- ✓ Insufficient biodiversity conservation (4 votes);
- ✓ Landslides (12 votes);
- ✓ Poor Waste management (9 votes).

Insufficient Water management

- ✓ Surface water pollution (7 votes);
- ✓ Drinking water poor quality (7 votes);
- ✓ Lack of wastewater treatment (3 votes);

Environmental Pollution

- ✓ Insufficient measures to clean city (3 votes)
- ✓ Pollution of green areas (2 votes);
- ✓ Violation of the Natural Environment (1 vote)
- ✓ Limited green areas in the town (2 votes)

- ✓ Atmosphere pollution (1 vote);
- ✓ Inaccessible alternative energy recourse (1 vote);
- ✓ Lack of nature protection culture among population (1 vote).

Prioritization of problems, Vision and strategic objectives

LEAP Stakeholder committee meeting has taken place on 30 November, 2012. Initial analysis conducted based on the initial data obtained from questionnaires provided by Dilijan residents during the city conference, helped to shape initial picture of Dilijan environmental problems, their impact of dimension at first glance. To identify the major environmental problems, the votes of SC members and conference participants were counted. The problems with the highest number of votes were selected as the most urgent problems that exist in the City. In the result of analysis and active discussions, the list of Environmental problems (10 major problems) has been produced and the list is attached below:

Table –Dilijan Environmental Problems

N/n	The Problem	The score
1	Drinking water poor quality	41
2	Poor waste management	40
3	Pollution of Forest areas	38
4	Forest illegal logging	29
5	Pollution of Surface water	23
6	Landslides	22
7	Absence of stream water treatment	21
8	Insufficient biodiversity conservation	20
9	Limited or Lack of forest restoration activities	19
10	The global issues are a forest logging for construction purposes (this problem will be discussed with architect of the town).	

After mutual consensus reached in regard with setting out environmental issues of Dilijan town, on a basis of LEAP methodology, via table of indicators containing 6 criteria (number of beneficiaries, treat to human health, an extent of danger to environment, improvement timeline, the cost of measurements, impact on social conditions) and 3 indicator priorities (high, medium and low), the problems were prioritized and the tree of problems formulated. The next step was to select two problems of 10 listed in the table and analyze



based on the exemplary methodology of an abstract city of Lipvil introduced by project experts. To deal with the task given, SC members formed two groups and chosen one problem each: first group: Poor waste management and second group: Poor drinking water quality.

Data collection /Development of Environmental Status report for Dilijan town

In the period of December 2012 and June 2013, the project experts were intensively working on development and finalization of Environmental Status report for Dilijan City. ESR for Dilijan was drafted based on the data acquired from different infrastructures, institutions, local government authorities, community council of Dilijan town. ESR consists of number of sections, which encompass information on Dilijan geographic location, climate, soils, water, biodiversity (fauna and flora), relief, minerals, ground water, employment, migration, social-economic conditions, agriculture, livestock and etc. An environmental status reports also contains information on analysis of environmental problems by each sector, as well as recommendations and strategic objectives towards resolution of problems revealed, which were elaborated by joint efforts of stakeholder committee members.

The process of preparation and elaboration of ESR required complete data, integrated approach, and complex analysis of all possible sectors in function in Dilijan town, as well as regular reviews, adjustments and finalizations of data/information with Local Government authorities, SC members and other relevant interested parties. In this context the project team progressively conducted regular visits, meetings and discussions with active local environmental NGOs, “Dilijan” National Park, “Dilnet Service” educational NGO, “Dilly” LLC, “Dilimak” LTD (construction and trash removal services), Renco S.p.A., an Italian company (consulting, engineering and construction services for the energy, oil & gas and civil infrastructures sectors), “Haghartsin” CJSC (asphalting services, construction and maintenance of interstate and republican roads), City Architect and City Council.

Regular broadcasting programs held by “Tavush” Local TV Company

In the entire process of project implementation, starting from October 2012 – June 2013, “Tavush” Local TV Company broadcasted all activities conducted within the project, including meetings, discussions and review process implemented by Stakeholder Committee members.

In addition, the TV Company has also held interviews with LEAPs Project experts and published short articles in Dilijan local newspaper.



Articles are mainly focused on raising public awareness about project importance for Dilijan and current implementation status of the LEAPs Project. Overall activities conducted have been published in “Dilijan” newsletter, as well as posted on website of Dilijan Municipality, in the following link: <http://dilijancity.am/Pages/Home/Default.aspx>

2. GENERAL INFORMATION

Dilijan is one of the unique settlements of Republic of Armenia with its climatic conditions. Dilijan urban community and nearby area is distinguished by picturesque landscapes, considerable recreation resources, the existence of a unique historical-architectural monuments. The beautiful view of the town has a positive effect on patients and holiday-makers. The town had long been known as mountain-climatic health resort residence, and after road construction (Akstafa-Yerevan - Alexandropol), holiday-makers from all over the Caucasus region travel here.

In ancient times, the territory of Dilijan was a part of Varazhnunik province of Ararat region of the historic Mets Hayk. It is believed that it was a historic Hovk, which served as royal hunting and rest place for Armenian kings. The town is 100km from Yerevan (the capital of RA). The first Master Plan of town Dilijan was created in 1928 by Painter Yesakov, and new main Master Plan, which included Shahumyan, Golovino and Papanino settlements, was developed by architect Isabekyan. The Final Master Plan was elaborated and approved on 30 November, 2006.

2.1 PHYSICAL-GEOGRAPHIC CHARACTERISTICS

2.1.1 Geographic location

The health resort town Dilijan is located in the north-eastern part of the Republic of Armenia, in the valley of river Aghstev, at height of 1100-1510 meters above sea level and surrounded by Lesser Caucasus mountain-ranges. It borders with Bazums mountain-ranges in the north-east, Pambak mountain ranges - in the west and south-west, Murghuze- in the east and Areguns- in the south-east. The gorge mountain-ranges are covered with rich forests changing to alpine meadows at the alp. An absolute mid height of the territory is 1256 meter. The town is southern gate of Tavus region.

2.1.2 Climate

Dilijan is characterized by mild, mountain-forest moderate warm summer, sunny warm winter and warm weather during the whole year. Annual average air temperature is 8.1 °C. Average monthly temperature in January is -2,0 °C, in July-18,2 °C. Atmospheric moisture capacity is 73%, rainfall is 593mm, sunlight duration is 2091. Annual maximum precipitation observed in spring is 35%; minimum in winter is 12%. Rainfall reaches up to 100mm in May, and 12-19mm in January. An average snow cover is 18cm, maximum 39cm. Winds are weak, annual average speed is 2m/sc, territory is dominated by north-east (46%) and eastern winds (17%). Thunderstorm days are 15-20 during the whole year, which contribute to atmosphere treatment and ionization.

2.1.3 Geological structure, relief and tectonic

Relief of the territory is complicated, River Aghstev channel and terraces are smooth but slopes are steep with cut off ravines. Urban and adjacent areas are characterized by high power alluvial-deluvial (10-30m) clays, clay-sand, gravel, large slides. Seismic risk level of the territory is estimated 0.2-0.3g.

2.1.3.1 Minerals

There are many and various metal and non-metal mines in the territory. From metals, antimony, copper and other non-ferrous and precious elements, iron and manganese mines are met in the territory, as for non-metallic minerals: limestone, sand, dolomite, macadam, boulder, clay, proliferate, sandstone and other construction materials mines. The territory doesn't have exploiting metal mines.

2.1.4 Surface and ground water

The territory is rich in surface water resources. The main water artery of the territory is Aghstev River with its tributaries. River Aghstev is immediate tributary of river Kur Araks. Total length of the river is 133km. The largest tributary of the river is Getik (30km). Rivers and streams are typically mountainous and flow through gorges. All rivers and streams are characterized by fresh water. There are more than 100 streams in the area. There are many mineral springs in the area as well, of which spring “Bldan” is distinguished by its industrial significance, known as “Dilijan”. It is one of the most valuable springs in the Republic and is used for healing purposes.



Figure 1- River Aghstev Valley

2.1.5 Soils

The total area of lands covered by administrative boundaries of the community is 4301.5ha, including

Soil type	Unit /ha/
in actual boundaries of settlements	1268.5
Industrial, underground use and other production purposes	84
energetic, communications, transportation, utility infrastructures	51.5
specially protected areas	300.5
special significance	60.3
agricultural significance	717
forest /national park/	1786.4
water	33.3

Forest zone is dominated by brown forest soils, which are distinguished by their power and good differentiation of horizons. Soils are developed on carbon-rich rocks, which are met in the entire forest zone along with brown steppe soils. Mountain-meadow black-soils are developed in the subalpine zone. In the places, where the area is not eroded, soils are characterized by humus layer. The forests mainly are of natural origin. Geological structure is complicated and diverse. Almost all geological period rocks are met here. However, rock formations of the Jurassic, upper chalk, eotsen, oligotsen- miotsen/kainos and quaternary age are the most popular.

2.2. BIODIVERSITY

2.2.1 Dilijan National Park

“Dilijan” National Park, as a State Nature Reserve, was established on the basis of the decision N341 of the Board of Ministers of Armenian SSR in 1958. The aim of the Dilijan State Reserve establishment was to provide preservation of oak and beech (mezophile) forests, a relic species of third era, as berry-yew and Rhododendron Caucasian. However, spatial distribution of 5 settlements located in administrative boundaries of National Park and town Dilijan, as well as agricultural and other significance soils used under that area, have not been taken into account while implementing organization of the state reserve. In the result, later on, lands of active economic exploitation have appeared in the territory of the reserve, and application of which was strictly against reserve regime. In August 1995, the State Reserve was transferred under the RA Ministry of Environment and Underground Resources



Figure 2 - Dilijan National Park Scheme

According to RA Government decree N165 (February 21, 2002), in the area of Dilijan State Reserve and nearby territories, “Dilijan” National Park was organized. By the same decision, Dilijan state reserve budgetary institution was reorganized as “Dilijan” National Park state non-profit organization. National Park has department of Science, where botanist, zoologist, geodesist, recreation specialist, computer operator and bee keeper work. Preservation of National Park is carried out by the protection department, which consists of chief forester, preservation engineer, hunting specialist, inspectors of operation group, heads of sections and their assistants. For an effective preservation, the park area is divided into 4 territorial sections: “Dilijan”, “Shamakhyan”, “Haghartsin” and “Gosh”, employees of which are responsible for preservation of fauna and flora of the territory attached to them.

Dilijan National Park is located in Lesser Caucasus, to the north-east of Armenian Highland. The park area is stretched through mountain-slopes of Pambak, Aregouni, Miapor, Ijevan and Halab at altitudes of 1070-2900m. The major part of the Park territory lies on northern slopes of Aregouni mountain ranges. Eastern parts of the Park include southern slopes of Miapor mountain-ranges, which descend to the valley of river Getik by large rock denudations and stair-form terraces. Ijevan mountain-range is bordering park from north and north-east, slopes of which are flat and only in upper parts become slope. Low section of the park is a valley of River Aghstev, western right-side slopes of which generally have volcanic origin, and left-side slopes are composed of sediment rocks.

2.2.1.1 Zoning of “Dilijan” National Park

New boundaries of “Dilijan” National Park were determined based on relief features (watersheds, gorges, rivers, peaks, mountain-slopes and etc.), which are expressive in nature and are relatively stable borders, as well as results of satellite image decoding and field surveys held by foresters, cartographer, zoologists, botanists and hydrologists. Issues of ecological condition of nearby landscapes and preservation of natural resources (flora, forest, fauna, water and etc) and community’s boundaries neighboring national park registered by state cadastre were taken into consideration. In the result:

An area of “Dilijan” National Park	33765 ha, of which
Protected zone	8807.78 ha,
Recreation zone	2867.13 ha,
Economic zone	22090.09 ha.

2.2.1.2 Climate

Dilijan National Park is characterized by temperate warm and humid climate. An average annual temperature fluctuation doesn’t exceed 24⁰C. In low-mountain section of the park, annual average air temperature is +9.2⁰C to +10.5⁰C degrees, in January -0.6⁰C to -1.3⁰C, July +19.9⁰C to +21.1⁰C. Absolute maximum temperature is +37⁰C and absolute minimum is -26⁰C. At altitude of 2000m above sea level, average temperature in January is -10⁰C to -13⁰C, and in August +13⁰C to +15⁰C. The time period without frosts fluctuates from 200 to 210 days. In the Park area, snow cover doesn’t occur every year. Snow cover thickness ranges from 5 to 50cm, and on northern slopes sometimes it exceeds 70 cm. Average annual precipitations vary from 537mm (foothill zone) to 850-860mm (highland zone). Maximum rainfall is observed in spring (about 35% of annual norm), and minimum quantity of rainfall in winter (about 12%).

2.2.1.3 Relief

Major fluctuations of absolute height, different locations of slopes and severe complicated relief in a relatively small area of Dilijan National Park, create unique diversity of natural conditions. Besides foothill and alpine zones, vertical alteration landscapes are well expressed here. Especially average mountain zone is well expressed at altitudes of 1200-1800m. Oak and beech foliate forests

are typical here, which are main type of reserve's vegetation. Highland zone starts at an altitude of 1900m, which is characterized by sparse forests and subalpine high-grasses. Park area is intersected by many large and small canyons, and in each of them unique microclimate is formed.

Dilijan National park relief is a system of mountain-ranges stretching through different directions and deep valleys separating them from each other. Halab mountain range stretches from the north-west border to east of the park, which reaches up to 2778m altitude in this segment. Slopes of mountain range are steep; the peak is distinguished by comb-shape arranged rock prominences. It joins Ijevan mountain range near Ayr Kar mountain top stretching in the same direction. Its height reaches up to 2787m in this section (Ays Kar). Slopes of Ijevan mountain range are steep as well. Calx-stony rock sections (having stair-shape) with height of 50-200m are common in highlands. Old flattening surfaces are preserved in apical parts. Karst-shapes of relief are widespread here (caves, wells, funnel-shapes and etc.). At medium heights (1500-1800m) there are many karst springs. The south-west part of the National Park is occupied by eastern section of Pambak mountain range, which reaches up to 2732m altitude. Slopes of Pambak mountain range are relatively mild-steep, less fragmented, and peaks are cupola-shape. Dilijan mountain range occupies an interval of Shamlugh and Getik tributaries of River Aghstev. It reaches up to 2642 altitude in the peak of Mets Maimekh. Slopes of mountain range are relatively mild-steep.

There are active landslide processes developed on the slopes. Areguni mountain range stretches from Sevan mountain pass to the south-east direction, Maralija top of which has 2599m height. In the territory of National Park, the mountain range represented by mild-forms of relief. In eastern section, the right-coast segment of Getik River is occupied by ramifications of the system of Miapor mountain range, the slopes of which having western position, are enough fragmented and in some places are distinguished by denudation of maternal rocks. Orography major units formed by Aghstev and its tributaries are erosion deep valleys. They are narrow, mostly V-shape valleys, which extending in some places and create small inter-mountain concavities. Tectonic movements have great impact on formulation of valleys. Structural and accumulative heights are preserved in river valleys. Slope processes are quite active in the territory of National Park. There are many active landslides. Major landslides are Dilijan, Hagharstin, Parz Lake, Fioletovo and etc. Among slope processes, defluxion (in forest areas), stone fall and other phenomena are widespread.

2.2.1.4 Water Resources

“Dilijan” National Park area is rich in surface waters. Almost in all big or small valleys there are flowing rivers and streamlets. Numerous streams feed streams, which flow into the main water artery of the park: Aghstev River, which originates from the northern slopes of Pambak mountain range, at an altitude of 3000m. In upper streams, the river flows through Margahovit concavity, then narrow gorge, and it extends nearby Dilijan and Ijevan towns. River length is 121km; water catchment basin area is 2500sq/km. Annual river flow is 256 million cubic meters. The main tributaries of River Aghstev are Hovvajur, Shtoghanajur, Haghartsin, Bldan and Getik. All mentioned rivers and rivulets are typically Mountain Rivers, flooding after rainfall and snow melt in the end of spring and early summer. Total overflowing duration is about 10-15 days, but depending on overflowing intensity, activation of landslides and coastal collapses is possible.

The territory of National Park is also rich in mineral springs, of which Bldan spring is distinguished by its industrial significance, known with name of “Dilijan”. The spring water has hydro-carbonate-sodium mineral composition, which also contains microelements of sulphates and magnesium, as well as iron, strontium, lithium, zinc, bromine and copper. It is used for the treatment of gastrointestinal diseases. The National Park is also known for its picturesque lakes, the largest one is Lake Parz. It is located in the northern slope of Aregouni mountain range at an altitude of 1400m, 8km north-east from Dilijan city. Lake area is about 2ha; length is 250m, width 70m, average depth is 3m, water volume-83.8 thousand cubic meters, water catchment basin area is 1.52km². Another known lake of the Park is Goshalich (Tzrka), which is located to the east of Parz Lake at 1500m above sea level. Its length is 56m; width 27m, surface area is 1.53ha, water catchment basin area 1.34km². An average depth of the lake is 6m. Other known lakes in the territory of the Park are Bachnilich, Bakhtiarilich, Zhangotlich and etc.

2.2.1.5 Soils

Land cover of “Dilijan” National park is mainly represented by two types of soils: forest and mountain-meadow. Forest belt is dominated by brown forest soils, which are remarkable by power and good differentiation of horizons. Carbonate-humus soils are developed on maternal rocks rich in carbonates, which are met in entire forest together with brown steppe soils zone in the form of mosaic. Mountain-meadow soils are developed in sub-alpine zone. In the places, where an area is not eroded, these soils are notable with powerful humus layer up to 40cm. Alluvial fertile lands are widespread in relatively large areas of valleys, which are mostly turned to cultivated lands.

2.2.2. FLORA

2.2.2.1. Flora

In the territory of “Dilijan” National Park and its preservation zone, Flora includes 1200 species of vascular plants, 977 of which grows in the park area. Among which, 51 species are tree types, 47 – bushes, 696 - perennial herbs, 176 - annual and biennial plants, 7 – parasites. 5 of mentioned types are endemics of Armenia. 958 species of vascular plants are met in preservation zone of the park (225 of which are not met in the territory of the National Park). Endemic types met in Park area, are growing here as well. Besides this, one more endemic species: *Psephellus Pambakensis* grows in the preservation zone (in open sites of slopes of Aghstev River valley), which fairly widespread in Lori and Ijevan. 27 flora species of the National Park are included in Red Book of Armenia (those are 22 in preservation zone). 54 flora species of the National Park are as herbs.

Some part of these species doesn't form dense populations and are scattered in the area of National Park, and consequently do not represent economic interest at present, and 41 species of them are edible. Besides this, 480 species and sub-species of mushrooms are discovered in the territory of “Dilijan” National Park and its preservation zone, 320 of which belong to agaric mushroom types (*Amanita muscaria*), 124 are aphylophorales and 36 - gasteromycetes. More widespread are single kernel/seed generating species of *Russula*, *Lactarius*, *Cortinarius*, *Inocybe*, *Amanita* breeds, as well as wood depleting *Pleurotus ostreatus*, *Armillaria mellea* species and polyporaceae family representatives. Among mentioned mushrooms, 176 types are edible, of which *Pleurotus ostreatus* type is most popular and demanded in market. 38 species of mushrooms are toxic. Native residents

call them *Amanita phalloides* and avoid of collecting; therefor poisoning cases are not registered in the last a few years.



Picture.3 *Anemone ranunculoides*



Picture.4 *Bupleurum koso-poljanskyi*

2.2.2.2. Vegetation

The Vegetation of the National park is dominated by forest. It mainly dominated by deciduous species, such as oriental beech (*Fagus orientalis*), Georgian oak (*Quercus iberica*), *Q. macranthera*, common and oriental hornbeam (*Carpinus betulus*, *C. orientalis*). These are accompanied by *Acer campestre*, *A. platanoides* and *A. trautvetteri*, maple, lime (*Tilia caucasica*), as (*Fraxinus excelsior*), *Sorbus aucuparia*, *S. graeca* and etc. Wild fruits are also met here, such as Caucasian pear (*Pyrus caucasica*), eastern apple (*Malus orientalis*), plum (*Prunus divaricata*), blackthorn (*P. spinosa*), walnut (*Juglans regia*), ordinary (*Corylus avellana*), cornel (*Cornus mas*), different types of couch (*Crataegus*), *Mespilus germanica*, *Padus* and etc. The diversity of berries is also rich and represented by currant (*Ribes*), blackberry (*Rubus caesius*), strawberry (*R. idaeus*), gooseberry (*Grossularia*) and etc. Upper limit of higher forest zone is concluded by birch subalpine sparse forest remnants; by prevalence of *Betula pendula*, *B. pubescens*, *Populus tremula*, *Salix caprea*.

Stands with predominance of tree species forming main forest are represented either by the form of homogeneous oak, beech and hornbeams, or mixed forests with different combinations of the species. Forest ecosystems, as per vertical upland alteration and location have following prevalence. Georgian oak (*Q. iberica*) forests occur on the southern slopes of the middle forest zone and oriental beech forests on the northern slopes. The upper zone forest (above 1500 meters) is represented by *Q. macranthera*. Hornbeam occurs mainly in mixed forests. Oriental hornbeam reaches up to 1500m above sea level in the sub-forest of lower forest zone, while Caucasian hornbeam spreading all over the forest zone up to 2000m. National Park forest ecosystems are characterized by Coniferous forests. Pine (*Pinus sosnovskyi*) often makes dense forests and met on the slopes of the Areguni and Pambak ranges in the vicinity of serpentine Dilijan highway. There are lots of pine trees in Dilijan and on nearby slopes. Juniper sparse forests are of great interest in the territory, which spread in the valley of Getik River, as well as on dry slopes of Ijevan Mountains. There are well conserved juniper stands on the rocky slopes of Mount Abeghakhar in the basin of Aghstev River. Juniper sparse forests are represented by *Juniperus polycarpos* and *Juniperus foetidissima*. Juniper bush types, such as long-leaf (*J. oblonga*) and low-height (*J. depressa*) are also growing in the territory of the national park. Other types of vegetation are represented by small islands: in forest spaces or above the upper limit of forests. In the low segment of National Park, (up to 1100m altitude),

Shiblyak scrubs are met in small areas, where dominant species are *Paliurus spina-christi* and a few other species of xerophilous shrubs, such as *Berberis vulgaris*, *Cotoneaster integerrimus*, *Rosa canina*, *Celtis caucasica*, *Rhamnus pallasii* and etc.

Herbaceous cover in these coexistences is very diverse and represented mainly by xerophilous herbages. Small islands of steppe vegetation are also met here with prevalence of *Bothriochloa ischaemum*, which have secondary origin in general. In the non-large treeless areas, steppe combinations, dominated by *Festuca valesiaca* species and not typical for this region, are met, which contain quite a lot meadow plants. Sub-alpine meadows are widespread above 1800-1900 meters, where the area is dominated by mixed-cereal coexistences. The main dominant species are *Koeleria cristata*, *Poa pratensis*, *Poa nemoralis*, *Dactylis glomerata*, *Anthoxanthum odoratum*, *Trisetum sibiricum* and etc. There are widespread coexistences dominated by *Anemone fasciculata*, *Trollius ranunculinus* and *Veratrum album*. By the way, occurrence of *Veratrum album* is directly related to grazing intensity.

Some segments of sub-alpine zone are characterized by coexistences of sub-alpine high grasses represented by *Lilium armenum*, *Aconitum orientale*, *Cephalaria gigantea*, *Dactylis glomerata*, *Campanula glomerata*, *Betonica macrantha* and etc. Intrazonal rocky vegetation is represented in rocky segments of valleys of “Dilijan” National Park territory, which consists of several fern species presenting special interest – some species of *Polystichum braunii*, *Polypodium vulgare*, *Asplenium*. Banks of lakes and rivers located in the territory of the national park are represented by water-swampy vegetation, which mainly includes common species for Armenia, representatives of *Salix*, *Populus*, *Carex*, *Ranunculus*, *Juncus* breeds.

2.2.3. FAUNA

2.2.3.1 Invertebrates

Mussels (bivalvia mollusca) and Arthropods

There are 69 species of mussels and 1431 species of arthropods in the territory of “Dilijan” National Park. 6 of mentioned species are endemic species of Armenia. The Red list of International Union for Conservation of Nature includes 3 species that are met in the territory of “Dilijan” National Park. Those are *Parnassius apollo* L., *Cerambyx cerdo acuminatus* Motsch, *Rosalia alpina* L. and *Proserpinus proserpina* Pal.l:

Crawfish

“Dilijan” National Park area is characterized by a small number of crawfish (*Pontastacus leptodactylus*), which is available only in Parz and Gosh lakes. This species was not found in the rivers flowing through the territory of the Park.

2.2.3.2 Vertebrates

Fish

During surveys, in the rivers flowing through the territory of “Dilijan” National Park, in particular Aghstev River, 9 varieties of fish have been identified. These varieties include *Capoeta capoeta*,

Barbus Lacerta cyri, Leuciscus cephalus, and Alburnoides bipunctatu (this endemic variety of fish is met along entire River Aghstev and upper streams of its tributaries), Alburnus filippi, Barbatula barbatula caucasica, Salmo trutta fario, Gobio persus and Carassius auratus.

Amphibians

There are 5 amphibious species identified in the territories of “Dilijan” National Park and its preservation zone. These species are represented by two taxonomic classes – jumpers (Salientia), 4 species of frogs and toads and 1 species of triton (Cuadata). It should be noted, that 30 young Cuadata species were filled into Lake Parz in 2000, which were grown in laboratory conditions. This species is rare for Armenia and the first time it was registered in water basin of Shamlugh village of Lori region in 1997. None of these mentioned amphibious species is registered in the Red Book of Armenia.

Reptiles

Over 19 types of reptiles are identified in the territories of “Dilijan” National Park and its preservation zone, which are divided into following taxonomic groups:

- Lizards (Lacertilia) – 12 species;
- Snakes (Serpentes) – 6 species;
- Turtles (Testudines) – 1 species.

None of these reptiles is registered in the Red Book of Armenia.

Birds

Over 147 species of birds are registered in the territories of “Dilijan” National Park and its preservation zone (e-version of birds’ list is provided to “Dilijan” National Park” SNCO), which are divided into following taxonomic classes:

- Grebe birds (Podicipediformes) – 1 species.
- Predatory birds (Accipitriformes) – 26 species.
- Ducks (Anseriformes) – 1 species.
- Herons, storks (Ciconiiformes) – 2 species.
- Quail and gray partridge (Galliformes) - 4 species
- Crane (Gruiformes) – 1 species.
- Gulls (Charadriiformes) – 2 species.
- Doves (Columbiformes) - 4 species.
- Cuckoos (Cuculiformes) – 1 species.
- Owl (Strigiformes) - 4 species.
- Goatsucker (Caprimulgiformes) – 1 species.
- Common Swift (Apodiformes) – 5 species.
- Bee-eater European roller and Hoopoe (Coraciiformes) – 4 species.
- Woodpecker (Piciformes) – 6 species.
- Sparrows and singing birds (Passeriformes) – 85 species:

16 species of mentioned birds are included in the Red book of Armenia.

Mammals

Over 49 species of mammals are met in the territories of “Dilijan” National Park and its preservation zone (e-version of mammals’ list is provided to “Dilijan” National Park” SNCO). They are divided into following 6 taxonomic classes:

- Insectivorous (Insectivora) – 9 species;
- Rodents (Rodenti) – 17 species;
- Hare species (Logomorpha) – 1 species.
- Chiroptera – 7 species.
- Predatory animals (Carnivora) – 12 species;
- Hoofed animals (Artiodactyla) – 3 species;

8 species of mentioned mammals are registered in the Red Book of Armenia, such as long-ear hedgehog (*Erinaceus auritus*), European *Tadarida teniotis*, *Hystrix indica*, *Vormela peregusna*, otter, brown bear, Mediterranean turtles and wild cat.



Picture.5 Forest cat



Picture.6 *Tadarida teniotis* Rafinesque



Picture.7 Brown Bear



Picture.8 *Hystrix indica*

Lots of informational and educational programs are implemented in Dilijan National Park. Guidelines, leaflets and popular scientific literature are being published and disseminated.



2.3. SOCIAL ECONOMIC SITUATION

Activity	Legal entities, companies	individual entrepreneurs
Agriculture	10	3
Fishery	4	1
Mining Industry	2	
Processing Industry	64	24
Electricity, gas and water supply	3	
Construction	16	3
Trade, Repair of vehicles, household appliances	209	359
Hotels, restaurants	23	
Transport and Communication	12	17
Real Estate Agencies	7	7
Healthcare and social services	9	2
Communal - household	16	3
Total	378	419

There are numerous enterprises and private entrepreneurs registered in Dilijan, as per fields of activities listed above. The main trend of the city's industrial sphere is a processing industry, in which the industry of food and beverages is distinguished. Among dairy processing companies, "Dilly" LLD while being livestock complex, is also specialized in cheese production. Besides production of traditional cheese types, "Dilly" also produces Italian mozzarella. All these products are of high demand in Armenia.

Artistic Wood processing has a tradition of centuries.

In the last years, institutions of service sector are gradually becoming active in Dilijan City. There are branches of ArdshinInvest, ACBA Credit Agricole, VTB, Ararat, Ameria, Armbusiness, Converse banks in the town, performing traditional services. There are considerable number of restaurants and markets in Dilijan, which gradually become more attractive and comfortable and provide quality services. There are also hotels and guest-houses in the city, equipped with necessary conditions, which host tourists from foreign countries and other settlements of Republic of Armenia for many years. The number of businessmen dealing with domestic tourism is growing year by year. Tourism development information center was also founded in the city. The most important prerequisite for tourism development is also network expansion of hotel complexes. Since 2011, "The Best Western Paradise" complex operates in the city, with its 60 comfortable



and high quality rooms, conference hall, gambling-salons. Among other guest houses, “Old Dilijan” complex functions in Dilijan, which is one of the Tufenkyan Foundation's traditional hotels, built in different regions of Armenia, aimed to develop tourism in Armenia and present Armenian rich history and centuries-old culture to international public. Tufenkyan Foundation has restored Dilijan historic-cultural preservation located on Sharamberyan Street by preserving historic and cultural spirit and placing shops, workshops and studios for Armenian craftsmen to work and sale their handicrafts. “Dilijan” hotel complex is situated in the heart of the green, leafy forests of Dilijan. It offers ideal conditions for recreation and leisure lovers, business tourists. The place is equipped with meeting halls.

2.3.1 Population

According to RA census results in 2001, the number of permanent population comprises 16202, of which men comprise 46.8%. Based on non-official data in 2011, the number of Dilijan residents comprises 19000.

Age composition of community population

	Age groups	total	Men	Women
1	0-5 year old	875	450	425
2	6-19 year old	4191	2133	2058
3	20-64 year old	9293	4232	5061
4	More than 64 years old	1843	771	1072
	Total	16202	7586	8616

There are 8296 employed citizens in the City of Dilijan, while 1856 people are involved in public sector, 6938 people in private sector. The total number of people involved in economic sectors is shown in the table below:

Economic sector	number
Industry	309
Agriculture and environment	2361
Construction	658
Transport and communication	391
Housing communal services, the field of non-productive types of population domestic services	200
Health Care, physical education and social security	603
Trade and public food	888
Education, culture and art	604
Other sectors	2282

According to employment, the city population is divided into several groups; people engaged in small and medium trade, employees of public and local self-government agencies, unemployed, seasonal construction workers, service sector workers, which approximately comprise 35-40% of population.

2.3.2 Social-Economic Conditions of Population

There are 104 multi-apartment buildings in the city, of which 77 are made up of stone, 18 are panels, 9 are monolith. The roof of 31 multi-apartment buildings is oblique, 70s is flat. About 95% of these buildings is currently privatized. Over 233 of 2800 families living in multi-apartment buildings are included in the Poverty/Family Benefit system of RA. Elevators of 7 multi-residential buildings out of 15s were capitally renovated. There are 4 buildings constructed after earthquake by up to 20-30% in the community, which are included in the program on “Elimination of effects of disasters” by RA Government. The total area of housing facilities of the community comprises 390.9 thousands sq. meter, of which residing area is 285.3 thousands sq. meters. 2605 apartments out of 2753 are privatized; the rest 148 apartments belong to community.

Over 125 families are included in the housing list of vulnerable people in the community. In February 27, 2012, Social Housing Program implementation has started in Dilijan. This year, it is planned to construct 20-25 apartments by involvement of private companies, and within the first project stage: 50-52 apartments. Constructed apartments will be allocated on timeless lease basis to people having low and average income, as well as temporarily residing in the city. There are also other opportunities for beneficiaries to purchase apartments. Besides the role in resolution of housing issues of the city, the program will also contribute to creation of new jobs. Over 200 residents of the city have already applied for the involvement in the program, and some of them wish to get involved in construction works.

2.3.3. Unemployment and Employment

There are 2398 job seekers and 2493 employed citizens registered in Dilijan City. The level of unemployment by age, sex and duration in the community, is presented in the table below:

	Unemployed	Women	16-24 age	25-30 age	1 month	1-3 month	3-6 month	6-12 month	1-3 month	3 month and more	Unemployment level
01.01.2011	2322	1470	264	431	102	450	210	281	500	779	22.6%
01.07.2011	2270	1484	267	434	96	423	198	275	487	791	21.5%

According to data by 2012, unemployment has dropped, and comprises 19.9%.

The table below indicates educational level of 2270 unemployed citizens:

Education	number
Higher Education	92
Vocational	408
Pre-professional	78
General secondary vocational education	1501
Basic general	187
Primary	4

2.3.4. Social Insurance

Social structure of population

Social structure	number
Women	8616
Men	7586
Pensioners	4100
Refugees	23
Single-parent children	131
World War participants	21
Handicapped	964
Able to work	11094
Employed	8296
Unemployed	2322
Number of families	3436
Families registered in "Paros" family benefits system	1034
Families of war victims	21

2.3.5 Trade - Service sector

There are many shops and food facilities in Dilijan City. The number of people engaged in trade and public food service sector comprises 888.

2.3.6 Culture - Sport

Dilijan is a city with a rich cultural heritage. Since 80-s of 19th century, many theatre groups were organized, brass band and many entertainment places were established. In the beginning of 20th century, until 30-s, Rotonda open air theatre has been functioning in Dilijan, where many classic works of Armenian and world dramaturgy have been performed by prominent masters of Armenian Dramatic Art.



Dilijan is a favorite recreation and resort town with its nature and recreation zones, unique natural and cultural heritage in Armenia. An area is rich in archeological and architectural monuments. The spiritual and cultural center of midlevel Armenia, Haghartsin Monastery is located in the territory, 12km away from Dilijan town (13th century). There are also a few different monasteries located here, like Goshavank Monastery (12-13th century), Matosavank Monastery (10-13th century), Jukhtak Monastery (11-13th century), Akhnabat Monastery (11th century), Akhnabat Bridge (11th century) and etc.

From Natural Monuments, it should be noted Parz Lake, Guardians Limestone Exits near entrance of Gosh village, Gosha Lake, Gorge of Frolova-Balka, Akhnabat Yew Park, Anagyun Caves and etc. In recent years, cultural environment was enriched by new modern monuments. The major part of historic wealth of the territory is related to its biodiversity and historical heritage. The place has

been pace of inspiration for artists. Since 1930, homes of prominent wealthy people in Caucasus are preserved so far in Dilijan city.



Picture.9 "Goshavank" Historical and Architectural Reserve

Data on cultural organizations:

Organization	The year of foundation	The number of Employees	Amount of Exhibits
" Geological Museum and Art Gallery "CNCO	1950	10	8670

There are 3,000-year-old archaeological items, 8670 exhibits having worldwide significance and national value preserved in Geological Museum, of which the main stock is 5589, including 753 pictures, 52 sculptures, 391 exhibits of applied decorative art, 903-archelogical; 826-ethnography, 619 numismatic and 1119 other documents and materials. There are compositions by famous painters in the museum, such as Hovhannes Ayvazovski, Shishkin, M. Saryan, P. Terlemezian, Kh. Zheranjan, Garzuni, Ed.Shahin, Raquel Kent, Lagorio, Italian and French painters of 16-19 centuries.

Organization	The year of foundation	The number of Employees	The number of group-rooms	The number of sits in Hall
"Chamber of culture" SNCO	1972	21	14	551

The Chamber of Culture plays an important role in City's cultural life. Design capacity of the structure is 2280 square meter. New club building of Shamakhyan District was exploited in 2007. Open-air amphitheater was built in 2008. Dilijan School of Fine Arts after named Hovhannes Sharambeyan actively takes part in republican and international painting contests and receives praises and awards. In 2012, the School took part in International 40th anniversary painting contest held in Lidice city of Czech Republic and had great achievements. 26 thousands compositions of children from 67 countries were presented at International contest. 7 years old school student Anna Gevorgyan has received the greatest award: "Lidice rose" medal and diploma, for her composition. Students of the same school, Erna Zandyan and Eva Bojikyany were awarded diplomas. For the best paintings and graphic works, the School of Fine Arts was awarded "Lidice" medal.

Organization	The year of foundation	The number of Employees
" Children's park SNCO	1972	2

Children’s Park occupies 7ha area. It has 6 attraction-Carousels. The Park has children's playground and children's cafe built by Jinishian Memorial Foundation.

Organization	The year of foundation	The number of Employees	Stock /book/
"Library" SNCO	1908	29	221120

In the Republic, the first centralized library system (pilot) has been established in Dilijan in 1974. The book stock of library comprises 221120 books (as of 01.01.2011); the number of readers is 5600 (as of 01.01.2011).

Organization	The year of foundation	The number of Employees	Athletes
"Sport Complex" SNCO	1965	9	130

Sport life in the city is regulated by sport complex of Municipality. The Sport Complex was established based on sport school, sport stadium and football school in 2003, as a non-profit organization. Sport School was built in 1965. There are Greco-Roman wrestling, football, volleyball, basketball, handball sport active groups, which include 130 athletes.

Dilijan City has a rich sport-biography as well. “Impulse” football team of Dilijan was a multiple champion and winner at Soviet Armenia times. The significant group of athletes was a multiple champion in USSR and Armenia, like Hamlet Yesayan – track and field athletic (hammer and discus), Zaven Amyan - track and field athletic (high jump). Athletes of Freestyle and Greco-Roman wrestling are Abraham Tovmasyan, Benik Babinyan, Arthur Tovmasyan, Levon Santrosyan, Arthur Santrosyan, Armen Martirosyan, Sasun Ghambaryan, Gagik Baghdasaryan, Talorik Petrosyan, Lyudvig Petrosyan.



There is also “Old Dilijan” historic-cultural museum complex in the City, founded in 1983. The complex was restored in 2006-2008.

2.4. ECONOMY

2.4.1. Agriculture

10-15% of population is engaged in agriculture. Agricultural lands are distributed in the following manner:

Type	ha
Meadows	91.3
Pastures	347.8
Arable lands	265.7
Other	12.2

Located in humid climatic conditions, lands are not irrigated and not rich in humus naturally. There are fruit crofts with an area of 249 ha. Due to unfavorable climatic conditions, the yield is not high.

2.4.2. Industry

There are several factories, like “Impulse” plant (not-full capacity), “Dilijan” and “Dilijan Frolova Balka” mineral water plants that function in the territory. 1078 industrial and non-industrial private enterprises are registered in Dilijan City, 530 of them are functioning in the city.

2.4.3. City Infrastructure

2.4.3.1. Water - Sewage System

Aghstev River water is used to provide city with drinking water, which is taken from the height of 1500 meters. During the spring floods, river water muddiness is being increased, which creates problems in the field of water supply by plugging filters. After floods, the riverbed becomes cleaned. Water supply issue of Shamakhyan district is not solved yet; however it is in the list of priority measures by Municipality. Water pipelines of private houses are in poor condition. According to specialists of sanitary-hygienic station, drinking water quality of Dilijan city is sufficient. Sanitary zones are not preserved in the required manner; there is not appropriate water chlorination. The city doesn't have treatment facility. However, there is a half-structure of the facility and its reconstruction is a primary task. To get runoff to treatment facility, the construction of collector and connecting lines has to be solved as well. The total length of sewage collector is about 15km, 12km of which is under renovation. The first phase of water supply improvement program is launched in Dilijan city, which presumes:

- Construction of Sewage collector;
- Improvement of Water supply in Shamakhyan District;
- Renovation of Internal Sewage network.

For the first phase, the programs are already approved; financial assistance for this phase was provided by Dilijan Municipality, US Embassy to Armenia, “Coca-Cola” Company. Second phase of Water supply improvement program presumes:

- Construction of Sewerage treatment facility;
- Repair of Internal Network;

- Construction of drinking water treatment facility in the city.

Second phase of works implementation is in process of programs' preparation.

2.4.3.2 Trash Removal

Trash removal in Dilijan City is conducted on contractual basis. The company is selected according to tender procedure, which subsequently carries out trash removal in the city. In the last a few years, "Dilimak" company was the winner in tender process, which is provided four million drams to implement monthly trash removal. The number of employees of the company is limited-45 people, 25 of which are cleaners. The company has 12 watering, loading, transporting vehicles. The number of garbage bins reaches 500, with the capacity of 0.6 cubic/meter of each, however, according to opinion of Company's director Gagik Tovmasyan, the means available are not sufficient for to properly perform trash removal activities. Only two hundred thousand square meter area out of one million eight hundred thousand square meters (which is subject to treatment) is being served.

While the trash removal is carried out every day in the central parts of the city, and once in two days in other streets, the company finds that to perform regular trash removal, 5 more vehicles and no less than 150 garbage bins are required. But the most important issue still remains landfill issue. Current landfill doesn't meet required standards. Landfill capacities are very limited. Landfill is located on a large slope area, which causes serious complications during trash removal, especially in winter. Citizens also make difficulties in trash removal by often mixing household waste with construction waste thus causing destruction of bins. Landfill is located 60-70meters away from river, which doesn't exclude runoff entrance into Aghstev River system. Internal waste combustion procedure in the landfill threatens the existence of nearby forest as well.

"Dilimak" company also carries out trash removal in the area nearby Haghartsin Monastery located in Dilijan territory. Trash removal is conducted on call basis, when garbage is accumulated; however this is not sufficient to maintain the area clean. Trash removal in surroundings of the city is also carried out by "Haghartsin" CJSC, which is also implements renovation of interstate roads (Dilijan – Yerevan 7km, Dilijan – Ijevan 5km, to Vanadzor 3km), road trash removal and greening works. The company has 8 vehicles, 45 employees. The company also performs activities on contractual basis. "Haghartsin" company has won 5-year contract by tender procedure to implement trash removal in Dilijan City. Annual amount of funding comprises 102 million drams. There aren't available industries producing asphalt in the territory of Dilijan City. Asphalt for road reconstruction and plants for greening are obtained from neighboring communities.

2.4.3.3 Roads: Transport - Transport Network

Yerevan-Sevan-Ijevan highway passes through the territory of Dilijan City. Another highway Vanadzor –Dilijan connects to this one just in the center of the city. Dilijan city is connected with Yerevan (96km), Vanadzor and regional center Ijevan (35-40km) through well-maintained highway. Since 1986, Dilijan is linked with the Republic's rail network (Dilijan-Yerevan segment 144km) by railway. Dilijan City has municipal streets and roads with total area of 461.4 thousand meters. Extensive



construction works are implemented in the city for improvement and complete architectural design of central part. These works are carried out in compliance with urban development requirements by taking into consideration resort city's features and an importance of maintenance of historic environment at most. Improvement of City central part is implemented with relevant architectural design and installation of sculptural elements. There are 22 bridges in the city which are respectively located in Shahumyan str.1; Gay str.1; Myasnikyan str.3; Kamo str.2; Getapnya left str.3; Getapnya right str.5; Abovyan str.1; Sayat-Nova str.4; (side dams of the first and last bridges are destroyed and plundered; bridges are subject to repair) Maksim Gorki str. and Vasilev str. 4 bridges were capitally repaired and asphalted in 2006-2008. Traffic lights and traffic signals were installed in the community's territory.

2.4.3.4 Health Care

Dilijan Med-center has been established in 2008, when hospital and polyclinic functioning in the city were incorporated. Med-ceter which previously had 200-beds, now has 40-bed and 185 employees, of which 25 are doctors, mainly natives. The building has local heating system. According to doctors, after the Decree of RA Government on "Free medical aid and services", the number of patients is increased. There are two septic holes constructed nearby hospital, of which only one is used. The disposal of surgical supplies, organic residues and expired drugs is not conducted here. The Hospital has a need for replenishment of med staff.

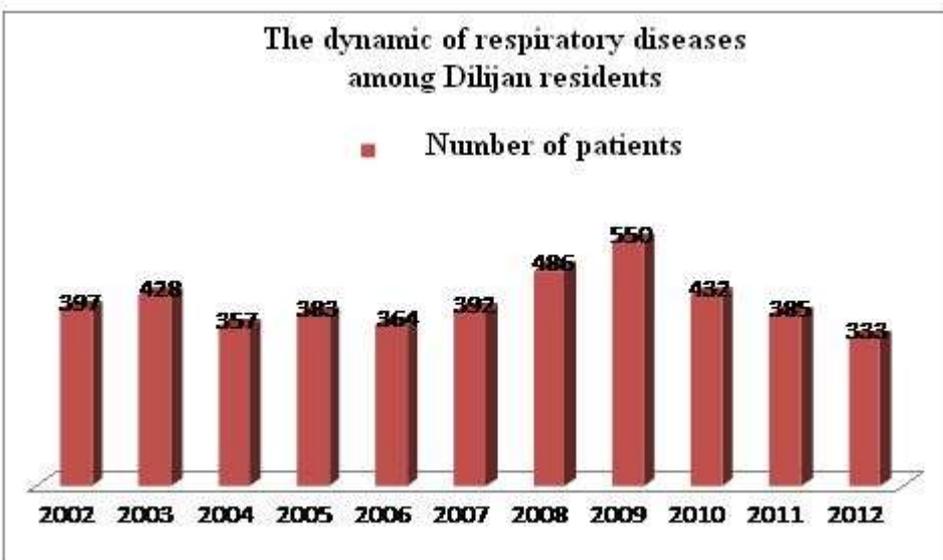
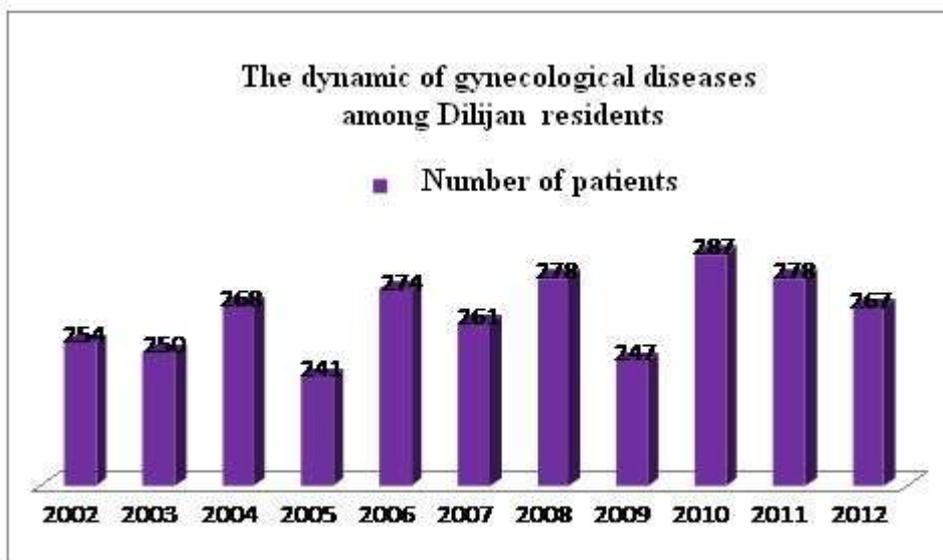
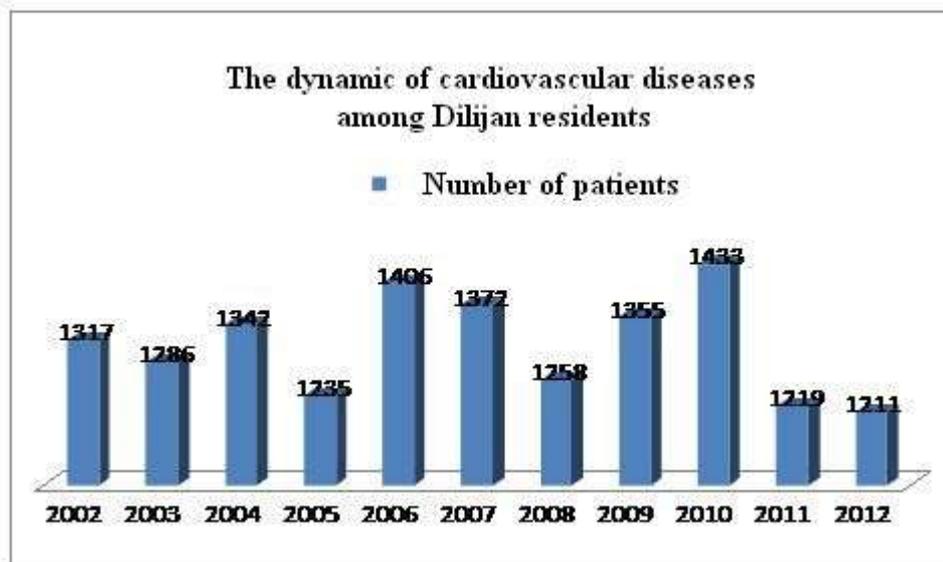
“Tavush” medical center, which was completely renovated and equipped with modern equipments, has started to function in Dilijan City in 2013. The major goal of the center is to provide high quality diagnostic and medical services in compliance with international standards. Consultations and outpatient treatment is being organized in the Medical Center. The center is equipped with

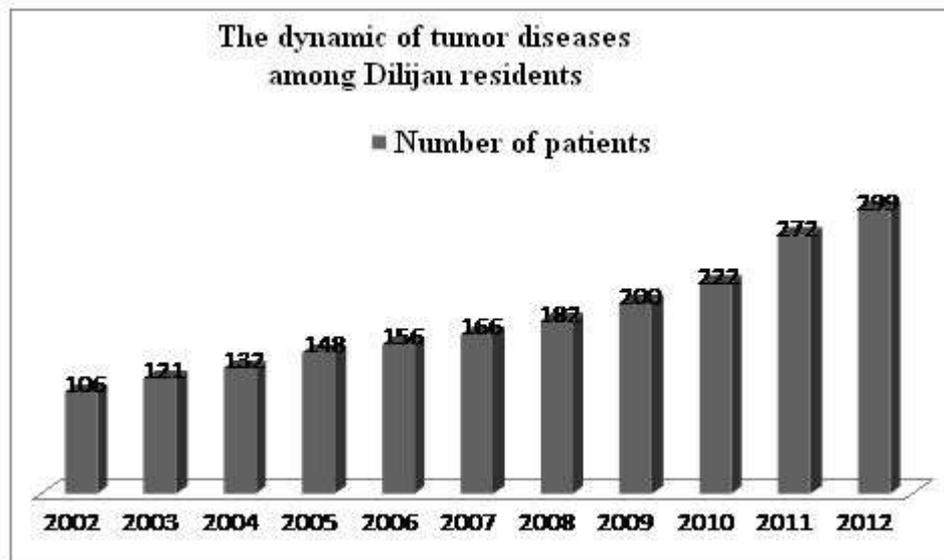
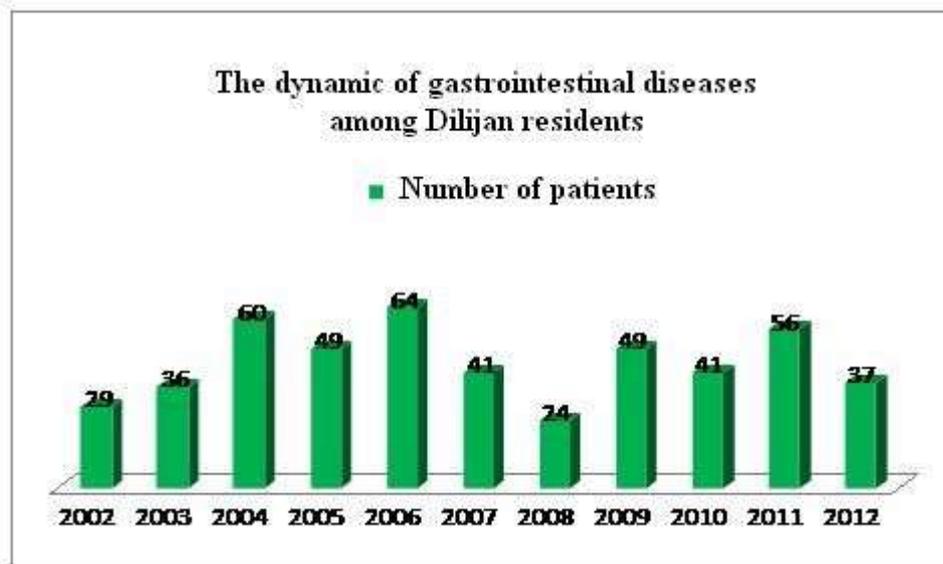


cardiological diagnostic, as well as other modern equipment, which provide exceptional diagnostic accuracy and high quality image by minimizing damage (negative impact) to patients.

According to opinion of Health Care sector experts, Dilijan is dominated by cardiovascular diseases and tumors. Occurrence of cardiovascular diseases is conditioned with insufficient social-economic conditions. According to doctors,

the growth of tumors cases is explained by use of poor-quality food imported to republic. An analysis of the dynamic of diseases encountered among Dilijan population has shown that in case of marked diseases, there is a tendency of reduction, except tumors, the frequency of which is dramatically increased in the last decade, which is typical in whole Republic as well.





2.4.3.5 Education

There are five secondary schools in Dilijan City, where 2027 students are enrolled. The number of workers at schools comprises 253, of which 201 are pedagogues, and of which nearly 80% has higher education. In the period of 2005-2008, Dilijan Municipality has allocated 2673.4 thousand drams for children from 446 poor families to pay rent fee of textbooks. In 2008, 211 students graduated the school, of which 118 have been admitted to country and foreign universities. Material assistance has been provided to 45 students studying at Universities. Dilijan has one University and three colleges, where 550 students are enrolled. 4 schools and 5 kinder gardens in the city supplied with gas. Children's Music School is also supplied with gas, where classes of piano, kanun, drum, duduk and reedpipe are being organized. Several other facilities supplied with gas are rooms' allocated to central library in the Chamber of Culture, two of library branches functioning in districts, playrooms of branch of chess academy and veterans, children's school of Fine Arts, where

classes of painting and decorative art (makrame, carpets, lace, gobelin, wood art processing) are held.

Data on educational institutions

Educational Institutions	Quantity	The number of students	Number of workers
Secondary Schools	5	1745	266
Vocational /Colleges/	3	478	94
Universities	1	172	34
Children’s Musical School	1	120	19/14
Children’s Art School	1	120	14/10

Data on pre-school organizations:

Organization	The year of establishment	Number of children	Number of workers
“Dilijan No.1 Kinder garden” SNCO	1970	181	26
“Dilijan No.2 Kinder garden” SNCO	1978	134	25
“Dilijan No.3 Kinder garden” SNCO	1975	100	17
“Dilijan No.4 Kinder garden” SNCO	1981	86	16
“Dilijan No.5 Kinder garden” SNCO	1960	20	9
“Dilijan No.6 Kinder garden” SNCO	1950	42	13

4 pre-schools (non-commercial organizations) out of 6 functioning in Dilijan City are located in typical buildings, 2 of them are suited. There are 1100 pre-school age children, of which 563 attend kinder garden. 5 kinder gardens have local heating system. There is also Children’s Art Gallery functioning in the School of Fine Arts. Library’s building is now rebuilt and turned into a modern center of “Knowledge for Development”. The center provides foreign language lessons, as well as PC usage skills to residents of Dilijan city and Tavush region.

Famous businessman Ruben Vardanyan, together with its family initiated revival program for Armenian villages and cities. This program also includes “Dilijan” International school of Armenia. The School construction project is implemented through two phases: works of first phase are planned to be completed in September 2014. At that time, general and sport buildings of the school, stadiums, two complexes of dormitories, med-unit, training studio, multifunctional center will be put into function. Second phase of school construction is planned to be completed in 2016. Two more complexes will be built: dormitories for students and one complex for teaching staff, as well as theatre, amphitheater, school gardens. In “Dilijan” project, 70% of students will receive free education, because they will be paid by private procedure from scholarship fund collected. “Dilijan” International School of Armenia will be the First Elite school-pansione in the territory of Armenia and CIS. There will study 13-18 years old boys and girls. The concept of School foundation implies higher academic education, formation of creative and responsible individuals with general ideas and

life routers. An education will be held in English by professionals invited from abroad. It is planned, that by the year of 2020, over 600 children will be studying at school, and 200 of them will be RA citizens.

Prince Charles's Alley will also be open in Diljan. A certificate commemorating the opening of the Prince Charles Alley was awarded to His Royal Highness Prince of Wales by Veronika Zonabend and Ruben Vardanyan, the founders of Dilijan International School (DIS). 65 plane trees will be planted in Alley named after Prince Charles in Dilijan. The tree symbolizing knowledge is also the symbol of the Dilijan International School. The certificate was awarded to Prince Charles on 28 May 2013, during his private visit to Armenia as a guest of Armen Sargsyan's charity initiative "Yerevan, My Love!".

2.4.3.6 Non-Governmental Organizations/NGOs

There are number of non-governmental organizations (NGOs) functioning in the city of Dilijan:

"The Bridge of Hope",

“Association of University Women”

"Dilnet-services"

"Union of Dilijan Communities"

"Junior Achievements"

"Support for women and children"

"Armenian Relief Society"

"Dilijan Tourism Association"

"Aarhus Public Environmental Information Center"

"Youth Action Club" /YAC/

The number of NGOs active in the field of environment is limited.

2.4.3.7 Mass Media

"Dilijan" newspaper is published in the town, where Dilijan correspondence point of Regional "Tavush" TV Company is active as well. "Dilijan" newspaper is published once a month (300 copies) and provided to institution enterprises free of charge. Publication of newspaper has started in 1957, which periodically addresses environmental issues of the town, publishes public articles, and covers activities and measures undertaken in the town, like tree planting, city cleaning days. Regional "Tavush" TV company is in close partnership with active NGOs and Aarhus center. Municipal and regional environmental issues are in daily focus of Regional TV Company, through demonstration of environment-targeted documentaries.

2.5. NATURE - ENVIRONMENTAL PROTECTION

2.5.1 Landslides

Environmental and social problems of Dilijan City are directly related to landslides phenomena. In the city, especially in the central part, landslides are obviously very active, which is a big threat as

for urban development, as well as for population. According to experts' conclusion, mentioned phenomena may become more active along with weather warming.



Photo.10 Landslide sites in Dilijan city

Certain procedures against landslides have been implemented since 1970 in Dilijan City. According to the programs carried out by institutes of ArmHydroproject and Geodesy (SSRA), following landslide sites are separated in Dilijan:

Site 1: Dilijan Construction Segment (Mets Tala, Takhta, Kaghni Khach);

Site 2: Parz Lake segment;

Site 3: Jukhtak Vank segment;

Site4: Gosdach segment.

According to archive data, following construction works have been carried out by “Arpa-Sevan” company. In particular, anti-landslide tunnels, surface drainage channels and etc have been constructed.



Photo.11 Anti-landslide tunnels

At present, among all aforementioned landslide sites, Site 1 is an urgent priority at most in terms of community urban long-term development, and in general public safety. According to information by Dilijan Municipality, this site presents double side anti-landslide tunnels: 1080 liner/meter (from old market to underneath of Rotonda) and 650liner/meter (from the Camp of Medical University to underneath of Rotonda). The construction works of these tunnels is mainly implemented. Boreholes planned inside tunnels to the soil surface are remained incomplete, due to which ground waters and

sediment should be disposed, and further activation of landslides prevented. All works noted have been carried out against Dilijan landslides with participation of Dilijan expedition group involved in, on behalf of manager R.B.Yadoyan, geologist- specialist of Academy of Sciences of Armenia. Complete reconstruction of central part, architectural design and modernization works, including reconstruction of headwalls destroyed by landslides have been implemented so far, and now are in process of implementation on account of local budget means by urban development project in Dilijan City. In particular, works implemented include:

- reconstruction of Central Square and architectural design;
- reconstruction of “Matinov” memory spring;
- architectural design and reconstruction of headwall with length of 45.0 liner/meter nearby “Matinov” memorial spring in the central part;
- architectural design and reconstruction of pavement with length of 350.0 liner/meter in the area from public library to Mantashyan street;
- architectural design and reconstruction of headwall with length of 90.0 liner/meter in the start-section of Myasnikyan street;

Ongoing works include:

- reconstruction works of 70.0 liner/meter headwall near the lower part of the road, in the start-section of Myasnikyan street;
- reconstruction of decorative stairs in the start-section of Myasnikyan street;
- reconstruction of Dilijan Geological Museum-gallery;
- Construction of Open-Air Amphitheatre parallel to Myasnikyan Street.

Many new urban development activities are planned by coming four-year program for community development; however prevention of current landslides is strict priority in the territory of Dilijan.

2.5.2. Atmospheric Air Pollution

Atmospheric air in Dilijan is polluted by industrial enterprises, individual heating appliances of residential and public buildings and motor vehicles emissions. All industrial enterprises of the city belong to IV-V classes of sanitary dangers and air pollution does not exceed the normative level. The main river of Dilijan urban community is Aghstev. The river is polluted by industrial and household stream waters, which fall into river via sewage network without treatment and in disorganized manner. Stream water treatment facility currently does not work. Community wastes have considerable impact on environment, which are stored in the landfill with 1 ha area, located 2km away from administrative borders of the community. Annual volume of waste comprises 5.4 thousand cube meters. Total area of green territories in Dilijan comprises 1947 ha.

Despite high degree of community green areas, the population provision with green areas (parks, gardens) of common use is low. Considerable part of green areas with special significance needs large-scale rehabilitation measures.

2.5.3 Surface water quality: Aghstev River’s water quality characteristics

Aghstev River is a right tributary of Kura River. It starts at height of 2985 meters, from the north-western slope of Tezh mountain of Pambak mountain range. The river length is 121km. By flowing

through Margahovit concavity, then narrow gorge, the river is flooding near Dilijan by becoming water-abundance River. In the lower stream, river valley gradually expands and joins Kura valley. An average annual release of the river is 9.2 cubic meters per second (Ijevan), maximum: 177 cubic meters per second (29.8.1990), the flow is 281 million cubic meters (Armenian Nature 2006). The river, flowing through large cities and villages, carries consequences of anthropogenic impact. According to the monitoring data by “Environmental Impact Monitoring Center” of RA ministry of Environment in August 2010, maximum permissible norms of nitrite (by 2.5-4.5 times), ammonium ions (by 2.1 in down segments of Dilijan City); aluminum (by 3,9-8,4 times), vanadium (by 3,0-7,0), chromium (by 2,0-3,0 times near border), manganese (by 1,9-3,0 times) and copper (by 2,0 times) are exceeded in samplings taken from Aghstev River. The content of dissolved oxygen in Aghstev River, in the upper segment from Ijevan town comprises 5.24mg/dm³. To compare result of hydro-chemical and hydro-biological studies, hydro-biological surveys have been carried out in the following segments of Aghstev River:

Observation site 1: upper stream of Aghstev River, the segment lying up to Margahovit village: River width is 2-3 meters, maximum depth is 40cm, and temperature in summer is 22C⁰. Water is muddy, which is probably caused by high temperature and upper stream pollution penetrating from enormous pastures.

Observation site 2: middle stream of Aghstev River, the segment lying after Dilijan city. River width is 25m, maximum depth is 35cm, and temperature in summer is 17C⁰. Water is muddy, which is probably caused by stream waters of Dilijan City.

Observation site 3: lower Stream of Aghstev River, the segment lying after Ijevan city. River width is 30-10m, maximum depth is 35-45cm, and temperature in summer is 21C⁰. Water is muddy, which is probably caused by high temperature and stream waters of Ijevan City.

Water quality assessment has been carried out by EBI index. (Woodiwiss, 1978; Semenchenko, 2004):

Results obtained

Studies have revealed animals belonging to 9 benthos groups. In summer, the greatest species diversity was recorded in upper stream of river (table 2), where species diversity index of Shannon - Winnie (by 4 point scale) is equal to 2.8. Index value decreases after Dilijan City, and increases again after Ijevan. In autumn, there is a reverse image in these two observation places, species diversity index in second observation place is almost one point higher from index value of third observation place.

Based on identified species composition, river water quality EBI index is calculated (Extended Biotic Index): Assessments determined by EBI index of different segments of Aghstev River are fully in line with indices of Shannon – Winnie index. Water quality of upper, middle and lower streams of Aghstev River by EBI index (Institute of Hydro-ecology and Ichthyology; Academy of National Sciences, Zoology and Hydro-ecology Scientific Center of RA, Report, 2011)

	June			November	
	I Observation site	II Observation site	III Observation site	II Observation site	III Observation site
Index unit	8	6	8	8	7
Water quality	good	adequate	good	good	adequate

Taking into consideration results obtained through different methods, the water quality of Aghstev River can be assessed “satisfactory-good”. Average values of water quality are result of impact of organic pollution sources that are available all along the river stream. As a fodder base ingredient of bentofag fish (*Barbus lacerta*, *Alburnoides bipunctatus*), from animals living in the riverbed, more valuable animals are (*Gammarus*), Trichoptera, Diptera and Ephemeroptera, Oligocheta, which quantity is quite high in some segments of the river (Table 3).

As per microbial indices of Aghstev River, water quality is assessed in the following manner (by Ambrazen classification): River source: “pure – lightly contaminated”; down from Dilijan: “moderate – highly contaminated”; down from Dilijan: “weak polluted - moderate polluted”.

Table 5; the number of Saprophyt bacteria cell/ml in different segments of Aghstev River

Observation point	20	37	Coli Index	
Estuary	2000	320	700	“pure- lightly contaminated”
Down from Dilijan	60000	8000	240000	“moderate- heavy contaminated”
Down from Ijevan	22400	720	24000	“lightly contaminated- moderate contaminated”

2.5.4 Forest loggings

Due to crisis occurred in 90th, forest cover area has been reduced by 1051.9 hectares. Communities neighboring forests, Dilijan and Shamakhyan districts have been mostly affected.

2.5.5 Current issues in Agricultural sector

Dilijan urban community has 717ha of agricultural lands, and the main measures to preserve fertility include:

- Application of anti-erosion irrigation technologies
- Normative use of mineral fertilizers
- Prevention of pasture overgrazing
- Rehabilitation of green areas and forests.

3. PROJECTS IMPLEMENTED IN THE COMMUNITY

In the result of mutual trust of Dilijan Municipality and international organizations, number of joint projects has been implemented in the community. Investments in the field of urban development, capital construction have been made, as well as number of educational projects implemented.

Organization	Project	Total amount	Community	Donor	Year
UNDP	Central Sector Improvement /headwall/	29370.5	21370.5	8000.0	2007
GIZ	Renovation of Kinder Garden No. 1 and rehabilitation of heating system	10238.3	4838.3	5400.0	2007
GIZ	Purchase of linen and heating electrical appliances for Kinder Garden No.11	0.8		0.8	2007
GIZ	Renovation of Riverside street water pipeline	16339.1	7139.1	9200.0	2007
GIZ	Construction of service office for Dilijan City and Municipality	5020.5	2520.8	2500.0	2007
GIZ	Purchase of property for Citizens service office	16501.5		16501.5	2008
City Petange, Luxembourg	Renovation of Dilijan No. 1 School and purchase of property	44030.1		44039.1	2008
UNDP	Establishment of condominiums	2430.0	1500.0	930.0	2008
USAID	Renovation of Kinder garden building No.1 and construction of local heating system	19411.2	9905.3	9505.9	2008
UNDP	Reconstruction of Lions' stairs	87800.0	78600.0	9200.0	2009
"Research Triangle Institute" non-profit organization, Armenia country branch	Purchase of garbage truck	13181.0	2636.2	10544.8	2009
IFAD	Asphalting of 1km 16m length road of 4 th Shamakhyan lane	88000.0	8000.0	80000.0	2009
UNDP	Beautiful Dilijan /renovation of Appearances and corridors of 76, 78 buildings on Myasnikyan street; improvement of Myasnikyan street nearby buildings/	25750.0	12875.0	12875.0	2010

State budget	Repair of landslide segment	23497.0		23497.0	2010 2011
"Save the Children Federation inc." Armenia country office	Renovation of Kinder Garden No.3 and purchase of property	43349.1	18064.1	25265.0	2011
State budget	Reconstruction of kinder garden No. 4 and elementary school	70000.0		70000.0	2011
State budget	Construction of heating system of kinder garden No.4	8100.0		8100.0	2011
State budget	Repair of roofs of multi-apartment buildings	11900.0		11900.0	2011
State budget UNDP and "Coca Cola" Corporation	Improvement of drainage system, Construction of wastewater treatment facility	400000.0	37000.0	363000.0	2012
Social Housing foundation	Social Housing foundation		62000.0		2012

4. BUSINESS PROGRAMS IMPLEMENTED IN THE COMMUNITY

The construction of International School started in Dilijan. International School is a private charity project. An amount of planned investments will exceed 60 million US dollars. This school is a boarding school at international level for children of various countries. It is planned, that about 600 children aged 13-18 will study at school in 2020, over 200 of which will be citizens of Armenia. Around 80% of Armenian children will study free of charge – by scholarships allocated by charity organizations and individuals. After graduation, high school students will be awarded Bachelor diploma /MB/. Training-research center of Central bank is under construction in Dilijan. This will activate as Dilijan public, as well as economic life by exporting newly born ideas worldwide and investing best practices in Armenia. Within the scopes of project on transferring the Branch of RA Central Bank to Dilijan, central library building of the city was allocated to Central Bank, which will be capitally renovated. In the framework of the project, office building and cottage for bank employees is also constructed (100-150 families). The project will be completed in January 2013.

5. COMMUNITY STRATEGY AND MAIN OBJECTIVES

Community mission is to provide quality services to community population and tourists, to ensure community development, to make Dilijan prosperous and competent town for investments.

The strategic goal of the community is to ensure sustainable development of the town through consistent improvements of social-economic conditions of residents, make it regional financial center, a priority, to which special attention is paid by the Government of Armenia.

The main objectives of the community's four-year development program

- To improve financial situation of the community by implementation of effective policy of defining and charging of non-tax incomes, local taxes and fees.
- Apparently to promote entrepreneurship, by closely linking it with community's economic development;
- To maintain modern style of town's architecture, in the center and 19th century style in Sharambeyan Street. Exclude unauthorized construction and land occupations.
- To improve activities of educational and cultural sector by permanently enriching their material and technical base;
- To continue city improvement and greening measures;
- To implement various social projects;
- To ensure investments in the field of urban development, capital construction, establishment of new production by collaboration of donor organizations and Dilijan natives working abroad.

Annex 1. The List of Dilijan LEAP Stakeholder Committee members

N/n	Name, Surname	Organization
1.	Hripsime Muradyan	Employment center
2.	Lamara Mantashyan	Dilijan Municipality
3.	Alvard Mailyan	Dilijan Secondary school #4
4.	Sos Aghajanyan	Dilijan Paros Service
5.	Armen Sarikyan	Electricity Network
6.	Ashot Hovhannisyan	“Dilnet Service” NGO
7.	Robert Beglaryan	Chamber of Commerce, SNCO
8.	Albert Simonyan	“Dilijan” newspaper
9.	Harutyun Hovakimyan	“Dilijan” newspaper, Editor
10.	Artak Martirosyan	Dilijan National Park
11.	Simon Martirosyan	Dilijan AG Service, council m.
12.	Tatul Tovmasyan	Chief veterinarian
13.	Vache Hovsepyan	Hydro-power CJSC Dilijan
14.	Anush Grigoryan	“Tavush” TV company
15.	Bagratuni Minasyan	Dilijan Fire rescue squad
16.	Artak Ghazaryan	Dilijan Fire rescue squad
17.	Svetlana Poghosyan	RA Ministry of Health, SNCO
18.	Lilia Karagyozyova	Dilijan Medical Center, therapist
19.	Alina Manukyan	Dilijan high school
20.	Hermine Grigoryan	Dilijan high school
21.	Armine Grigoryan	“Bridge of Hope” NGO
22.	Vahe Hovhannisyan	Tavush Marzpetaran
23.	Roza Zhamharyan	Dilijan Municipality
24.	Vardan Hakhverdyan	Head of boarding school #1
25.	Nver Danielyan	Head of land use/urban division
26.	Samvel Zhamharyan	Recreation specialist National Park
27.	Susan Sarukhanyan	Dilijan high school

Activities

Insufficient water quality

- Maintenance of sanitary zones of water reservoirs
- Implementation of armed control
- Renovation of fences of water catchment reservoirs
- Replenishment of working staff and clarification of functions
- Reconstruction of treatment facilities, rearming with modern equipment
- Purchase of relevant items for initial treatment and permanent provision (Koagulant, quartz sand, chlorine, make fluorination)
- Repair of water supply internal network.

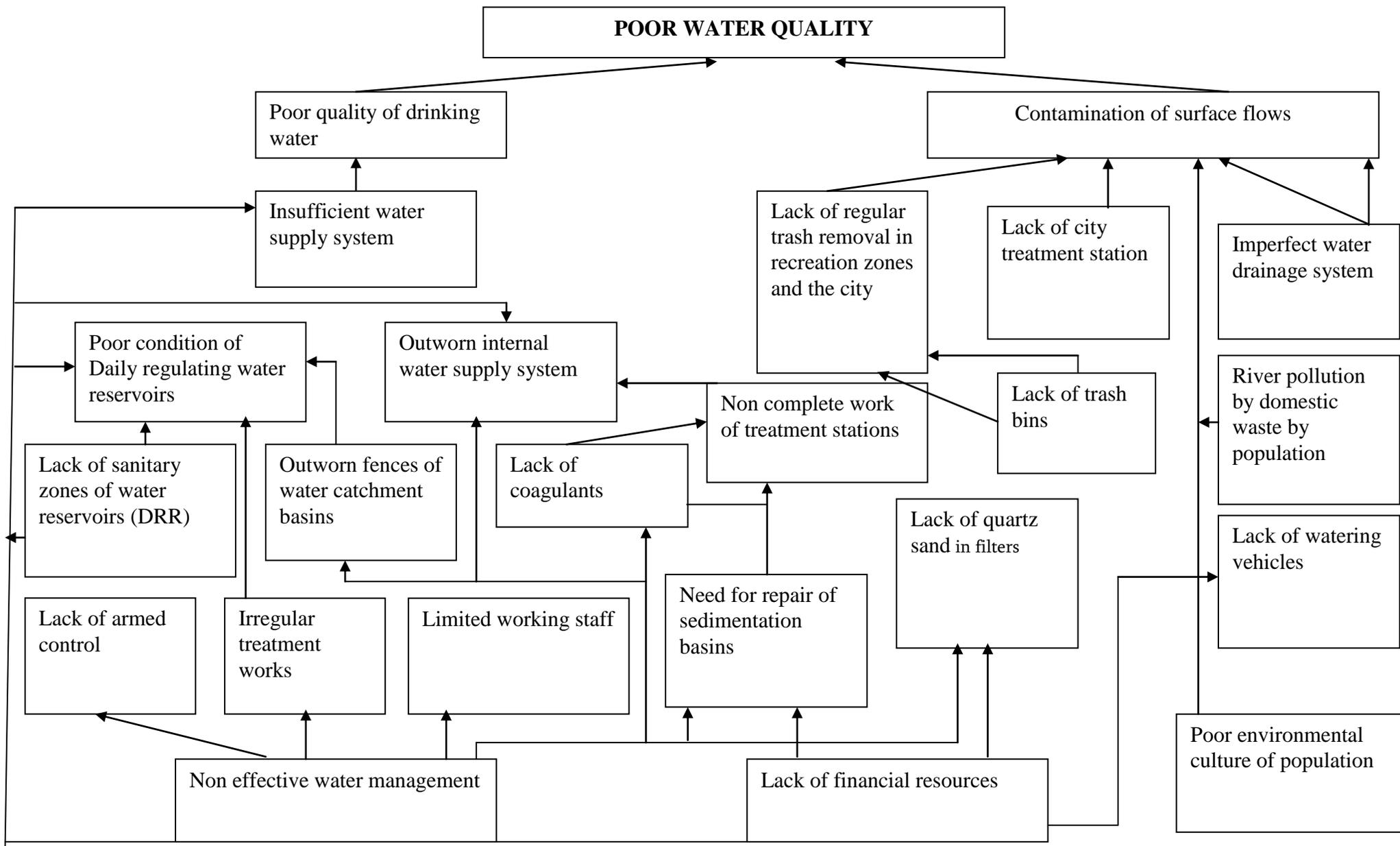
Waste Management

1. Improvement of Institutional System. Strengthening control over the use of funds collected.
2. Improvement of enforcement mechanisms of sub-legislative acts. Application of Fines and penalties.
3. Purchase of 5 vehicles (watering, cleaning, waste handling ;
4. Purchase of garbage bins.
5. Establishment of new landfill and conservation of old one.
6. Design and establishment of landfill for construction materials.
7. Strengthening control over the cleanliness near booths.
8. Environmental education and upbringing.

STRATEGIC GOAL – Improved City and Clean Environment

Tactical goal	Problem	Activity	Responsible	Term	Cost	Indicator
Institutional changes in the field of waste management	Establishment of trash removal infrastructure under municipality	Making appropriate decision	Municipality	2-4 year		Availability of relevant structure
Establishment of basis to implement functions of new created structure	Establishment of Material-technical base	Purchase of vehicles for trash removal	Municipality	2-4 year		Technically armed structure
		Signing of contracts	Municipality	1 year		
Effective waste management		Organization of trash removal	Utility Department of Municipality	5 year		
		Purchase of new technology for combustion of solid waste	Municipality/Organizations implementing trash removal	5-10 year		
Neutralized Old landfill	Recultivation of old landfill with an areas of 8000 sq.m	Development of design of landfill conservation	Municipality	1 year		Availability of project
		Organize tender of conservation organization	Municipality	6 month		Contract with winner organization
		Implement landfill conservation	Municipality	1 year		Conserved landfill
Availability of legal landfill of solid domestic waste	Establishment and use of landfill of solid domestic waste	Land allocation	Municipality	6 month		
		Fencing of area		6 month		
		Establishment of concrete base and construction of landfill		6 month		
Implementation of	Establishment of	Sign contracts with		1 month		

effective trash removal	material-technical base for mobile trash removal	workers				
		Purchase of fuel		1 month		
		Purchase of disinfect materials		6 month		
		Purchase of new trash bins		6 month		
		Renovation of old trash bins		6 month		
		Purchase of new vehicles		6 month		
		Capital renovation of old vehicles		6 month		
Availability of landfill of construction materials	Establishment of landfill for construction waste	Allocation of area for landfill of construction materials	Municipality	6 month		
		Create prerequisites for construction trash removal	Municipality	regular		
		Removal of construction waste	Municipality	regular		
Absence of accumulated waste in city countryside and nearby areas	Elimination of accumulated waste in districts of Shamakhyan, Takhta, Kaghni Khacvh	Organized movement of waste	Municipality	regular		
		Burial of accumulated waste	Municipality	6 month		
		Control areas of accumulated waste and apply penalties	Municipality	regular		
	Improvement of esthetic appearance of the city	Organization of cleaning days				
		Involve population in city cleaning control procedure				



STRATEGIC GOAL – Improved water quality

Tactical goal	Problem	Activity	Responsible	Term	Cost	Indicator
Clean Surface flow	Reduction of impact of landfill and accumulated waste	Neutralization of accumulated waste	Municipality or tender based organization	1 month		Improved surface water quality
	Dust reduction	Street cleaning and watering	Municipality or tender based organization	regularly		Reduction of substances in river water
	Limited impact of recreational zone	Regulation of trash removal of rest houses and food serving facilities located along the river	Municipality or tender based organization	regularly		Clean Riverbed
		Limiting the construction of new food serving facilities along the river	Municipality			Reduction of number of household facilities along the river
	Improvement of riverbed	Cleaning of riverbed from mechanical waste	Municipality or tender based organization	Once a 2 year		Clean riverbed
	Biodiversity Conservation	Removing barriers limiting fish movement	Municipality or tender based organization	Once a 2 year		Natural Fish reproduction
	Reduction of household stream water impact	Construction of stream water treatment facility	Municipality “Water Supply and Sewerage” CJSTC	3 year	5 million	Reduction of water saprobity
		Expansion of water drainage system by 20%	Municipality “Water Supply and Sewerage” CJSTC	2 year		
Improvement of water supply system	Renovation of water supply internal network	Inventory and local inspection of current system	Municipality “Water Supply and Sewerage” CJSTC	6 month		Selected organization
		Prepare or order design and estimate documents; Conduct tender	Municipality	6 month		
		Repair deemed water drainage network (Khorhurdner Street)	“Water Supply and Sewerage” CJSTC	1 year		Regular water supply
		Monitoring of works conducted	Municipality	3 month		Sufficient drinking water quality
	Establishment of water supply network	Local inspection of current system; Inventory and local inspection	Municipality “Water Supply and Sewerage” CJSTC	6 month		Selected organization

		Prepare or order design and estimate documents; Conduct tender	Municipality	6 month		
		Construction of new pipeline (200 liner/meters)	“Water Supply and Sewerage” CJSTC	1 year		Regular water supply
	Improvement of conditions of Daily regulating water reservoirs	Reconstruction of sanitary zone of Daily Regulating Water Reservoir of Takhta District Construction of damaged fences	“Water Supply and Sewerage” CJSTC	1 year		high drinking water quality
		Purchase of cleaning items/materials	“Water Supply and Sewerage” CJSTC	6 months		
		Monitoring of work implemented	Municipality	3 months		

STRATEGIC GOAL – Formed environmental behavior

Tactical goal	Problem	Activity	Responsible	Term	Cost	Indicator
High environmental culture	Increase of environmental activism of city's residents	Provision of information, raising awareness	Municipality, "Dilijan" National Park, Mass Media, NGOs, schools			
		Organization of urban cleaning days	Municipality and other organizations operating in the city			
		Organization of environmental measurements	"Dilijan" National Park, NGOs, schools			
		Organization of environmental TV programs with local Mass media support	"Dilijan" National Park, NGOs			
		Encourage the best environmental works	Municipality, "Dilijan" National Park, Mass Media, NGOs, schools			
High environmental knowledge	Transfer of additional environmental knowledge	Conduct additional classes on local nature	"Dilijan" National Park, Schools			
		Conduct field visits and get familiar with site biodiversity	"Dilijan" National Park, Schools			
		Organization of contests to check environmental knowledge	Department of Education of Municipality			

THE LIST OF LITERATURE

In development of Local Environmental Status Report of Dilijan town following documents, such as reports, references and publications by Dilijan Municipality, Center of Ecologanoosphere research of National Academy of Sciences of RA, Institute of Hydro-ecology and Ichthyology of Scientific Center of Zoology and Hydro-ecology, Institute of water Problems and Hydro technique, “Surface water and situation of air basin of residential areas” 2009-2011 by Environmental impact monitoring Center of RA Ministry of Nature Protection have been used.

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Regional Environmental Center of the Caucasus (REC Caucasus) is an independent, not-for-profit, non-advocacy organization, registered in spring of 2000 to work for environment and sustainable development for the Caucasus.

www.rec-caucasus.am; www.rec-caucasus.org