

**UNECE**

# Smart Sustainable City Profile

GORIS, ARMENIA



**UNITED NATIONS**



UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE

# **SMART SUSTAINABLE CITIES PROFILE**

## **GORIS, ARMENIA**



**UNITED NATIONS**  
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## PREFACE

This smart sustainable city profile of the city of Goris, Republic of Armenia, has been produced under the framework of the project “United Smart Cities”<sup>1</sup>, coordinated by the United Nations Economic Commission for Europe (UNECE).

The profile for the City of Goris was requested by the State Urban Development Committee. This activity was led by the Housing and Land Management Unit of the UNECE Division of Forests, Land and Housing. It started with a fact-finding mission in February 2015, and was completed in 2017.

The project implementation was supported by financial and in-kind resources of the UNECE, the State Urban Development Committee of Armenia, the Regional Environmental Centre for Armenia, the Environment Agency Austria, the Organization of International Economic Relations (OiER), the United Nations Development Programme’s office in Armenia, and the Asian Development Bank. In-kind contribution was also provided by national and local experts. The successful conclusion of the profile would not have been possible without this generous support.

This is the first profile on smart sustainable cities in the UNECE region; however, in past years, similar studies on cities have been undertaken and published by the UNECE. These included reports on the Implementation of Human Settlements Policies on Urban Renewal and Housing Modernization for Vienna (1998), Bratislava (1999), Budapest (2000) and Ljubljana (2000). All these studies are available online at [www.unece.org/housing/publications.html](http://www.unece.org/housing/publications.html).

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<sup>1</sup> More information is available online at <http://www.unece.org/housing/smartcities.html>, and in Annex I.

## ACKNOWLEDGEMENTS

### INTERNATIONAL EXPERTS

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# EXECUTIVE SUMMARY

The purpose of this study is to analyse the current situation of the city of Goris by using the key performance indicators (KPIs) elaborated by the UNECE together with the ITU and other partners, to and support the municipality in setting up their priorities for action.

Upon the request of the State Urban Development Committee of Armenia, the UNECE and a team of international and local experts elaborated this Profile for the city of Goris. Goris was selected as a pilot city for three main reasons: its strategic position in the system of roads in Armenia, its rich cultural and historical heritage, and the commitment of its community and local government to make their city smarter and more sustainable.

This summary provides an overview of the situation of the city and, in particular, of the analysis of the economic, environmental and socio-cultural indicators for the city of Goris.

## GENERAL SITUATION

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Goris is a medium-sized city in Armenia and is located in the southern province of Syunik. It is situated 240 km south-east of the capital, Yerevan, and 67 km from the provincial centre, Kapan. The city currently has 23,200 inhabitants and is the second-largest city in Syunik. It was first settled in the Stone Age, and is considered one of the most important historical and cultural sites in Armenia. It is a favoured destination of many local and foreign tourists, and possesses a large number of hotels and inns.

Goris is also interesting from an environmental point of view, with its mild climate, beautiful landscapes and fascinating natural landscapes. However, it is quite prone to natural hazards, in particular to earthquakes and landslides.

The economy of the city is mainly based on light industry, and the city is home to several food-processing plants. Other quite developed industrial sectors are those of electric energy, food, textile and sewing, aluminium and metal-plastic products, woodworking and stone processing, and electronics. The Vorotan Hydropower Plant opened in 1989 in Goris and is considered one of the main providers of electrical power in Armenia. Other large industrial firms in Goris include the "Vosmar" company for asphalt concrete and crushed stone, the "Goris Gamma" for electronic devices, and the "Goris Group" for bottled spring water.

## URBAN DEVELOPMENT SITUATION

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The growth of Armenia's urban population reflects the country's historic changing social and economic circumstances, which were due, in particular, to industrialization. Although urbanization levels have been on a downtrend in recent years, since the 1960's, Armenia remains highly urbanized, with more than 63 per cent of its population living in urban areas. More than half of the urban population lives in Yerevan. Several challenges derive from the country's rapid urbanization, including disproportionate regional development, migration from rural areas, and a high unemployment rate. A more effective response to urbanization is hindered by a lack of intersectoral cooperation.

In the medium to long term, therefore, the main objective of urban policies is to define priorities in the implementation of an urban development strategy, and to create and improve a living environment for the whole population. In this regard, the introduction of multi-polar area development principles<sup>2</sup> consistently throughout the country aims to overcome the potential threat of unmanageable urbanization. Furthermore, the creation of a more balanced settlement system will help overcome existing disparities in regional development, and prevent high population density especially in high seismic zones.

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<sup>2</sup> Urban development serves to overcome the current regional development disparities. The principles of multi-polar development transfers the power of decision concerning local development to regions, provinces or cities and creates more balanced settlements. See Republic of Armenia: Second Poverty Reduction Strategy Paper, IMF, 2008, P.287, available at <https://www.imf.org/external/pubs/ft/scr/2008/cr08376.pdf> (last access 28 Oct. 2017)



### ECONOMY

Armenia was part of the former Soviet Union, whose dissolution in 1991 had serious consequences on the country's economy, because of its strong dependence on cooperation with other ex-Soviet republics, especially Russia. Armenia's economic reliance on remittances from abroad, especially from Russia, remained after its independence, due to the very large number of its working-age population living and working outside of the country. This is why the 1998 and 2014 Russian crises also gravely affected the economy of Armenia.

Armenia has also been greatly affected by the global financial crises in 2008-2009, which resulted in a dramatic increase in poverty. Rural regions were most affected, with about one third of the population living in poverty. Unemployment remains high, with general unemployment at 18%, including youth unemployment at 35 % (2014).

In Goris, unemployment is also very high. Young people perceive a lack of opportunities in the city, and the majority migrate to the capital or other larger cities which offer more job opportunities. A lack of jobs and infrastructure, and the remoteness of larger urban centres from Goris contribute to the low attractiveness of the city for young people.

The infrastructure for water and sanitation, flood protection and control, roads and transport facilities is in poor condition; the existing building stock is not maintained and is quite energy-inefficient. Despite the high penetration rate of Internet, in particular in households, there is still a lack of ICT infrastructure, in particular in the private sector and education.

The potential for economic improvement is very high. However, capacity-building and awareness-raising concerning the opportunities provided by ICTs, in particular in business creation and growth, and also in tourism, education and research, and environmental technologies, such as waste recycling, water treatment and renewable energy systems, is needed.

By the decision of RA Government 973-N from 28 July 2011, the city of Goris was declared a touristic center. Located at the crossroads of international transit routes, Goris has the potential to become a transit zone between Armenia and Iran and contribute to the formation of the Great Silk Road touristic route.

The legal framework of the housing sector in Armenia is not sufficiently developed, and some important issues are not regulated by law. This is one of the reasons why the condition of the housing stock is poor. Adequate maintenance, repair and management are needed. The quality of the housing stock and high housing expenditure in Goris reflect the country's situation, as many apartments and houses are in poor condition. This is the result of ineffective management by homeowners, and insufficient investment in the maintenance and repair of their property. In particular, historical buildings, whose maintenance is regulated by law and which form a large part of the housing stock, are in poor condition, since their owners either cannot afford the maintenance or cannot physically maintain them due to old age. There is a strong need for social housing in the city given the poverty levels. However, in Goris, less than 1% of the housing stock can be assigned to social housing, and this is insufficient to cover the needs.

### ENVIRONMENT

From an environmental point of view, the city is very rich in natural resources and in spring water which is supplied from the mountains and is of good quality. The same goes for the water supply in households, which is very reliable. Apart from the presence of two main roads within the city's boundaries, noise is not a big concern for the residents; dust and noise are restricted to a few areas close to the roads.

The main issues in terms of environment refer to waste management, the insufficient number of green areas, natural hazard adaptation and mitigation, and air quality. Concerning waste management, littering is a big issue, together with illegal waste dumping and burning. Air quality is not monitored in the city. This needs to be improved. Air quality monitoring stations should be built for at least the main cities in the country, because climate change adaptation is a priority for Armenia. The Government should help municipalities to limit their greenhouse gas emissions and improve energy efficiency in the residential sector.

Deforestation and overgrazing of pastures are also significant concerns. These phenomena reduce the usefulness, productivity, and biodiversity of the land, and cause desertification and erosion.

Disaster risk reduction is a key priority for all levels of government in Armenia. Measures have been taken to address this issue and minimize the risk of environmental disasters and their impact, such as the development of policies for disaster risk reduction and the preparation of seismic hazard assessment maps. Goris is located in a risky seismic zone and is frequently subject to floods from the river Vararakn. Floods represent a permanent danger for Goris' inhabitants and its infrastructure, in particular during the rainy periods, and they affect the city's urban topography. The existing flood control facility does not work, and preventive measures are non-existing. Since it is an earthquake-prone area, there is the need to develop awareness programmes for earthquakes and early warning systems, which will leverage on the recently elaborated seismic map for the city. There is also a need to create disaster mitigation and emergency response plans.

#### SOCIETY AND CULTURE

The socio-cultural aspect is crucial for a smart sustainable city. In this area, Goris performs quite well in education, culture and health. However, improvement is still possible through the introduction of ICTs in schools, libraries and hospitals; the encouragement of adult education and professional skill building; the promotion of a healthier lifestyle; and the building of cultural and recreation facilities. These would also benefit vulnerable groups. Social inclusion also shows positive results. In particular, gender equality is not perceived as an issue, and citizen participation is quite high.

The main issues in this area include insufficient maintenance of the current housing stock, safety and poverty.

#### FINANCIAL FRAMEWORK

Goris lacks a proper financial system. The budgetary capabilities of the municipality are highly restricted, with little room for manoeuvre. Within the country, there is only one financial system, one State budget, and the same donors and international financial institutions. The budget of the Goris municipality for 2015 was a little over 500 million Armenian Dram (AMD); 400 million AMD of this was allocated for the financing of major expenses. Some projects (e.g. street renovation) are financed directly by the State. The city owns real estate, which can be sold or leased in urban development operations.

Cooperation with international and public organizations is very strong. Many international donors and international financing institutions (IFIs) (such as World Bank, Asian Development Bank, Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ), and USAID) are already acquainted with the needs and possibilities of the city, and support diverse projects in Goris. Finding a common objective can facilitate the development of relevant projects and maximize synergies.

# INTRODUCTION

## THE SMART SUSTAINABLE CITY PROFILE PROCESS FOR GORIS

UN Sustainable Development Goal (SDG) 11 calls for the progress, from now until 2030, of cities and human settlements towards being safe, resilient, inclusive and sustainable.<sup>3</sup> To achieve this goal, several factors impacting urban life and development need to be improved, such as urban planning, social issues, citizen awareness and participation, the environment, sustainable transport, resource efficiency, and economic aspects. In order to support the implementation of the SDGs at the local level, the UNECE, together with other partners, launched the "United Smart Cities" project. More information on this project is presented in Annex I.

### PHASE 1: GETTING STARTED: THE EXPERT WORKSHOP AND THE STAKEHOLDER CONSULTATION

The fact-finding mission to Yerevan, the capital of Armenia, and to Goris, was undertaken from 9 to 13 February 2015. It was organized by the UNECE, the State Urban Development Committee of Armenia, the city of Goris, the United Nations Development Programme of Armenia, and REC Caucasus. The mission included interviews with representatives of stakeholders, desk research, an expert workshop and a stakeholder consultation.

During the stakeholder consultation, the methodology of the preparation of the smart sustainable city profile, which is based on indicators, was presented and discussed. Further, an interactive discussion with national and local experts was organized; the discussion allowed for the collection of information on data and perceptions related to the current situation of the city's environment, urban planning, energy-efficiency, and economic and social perspectives. The stakeholder consultation was organized using the "Pyramid 2030 Campaign" approach.<sup>4</sup>

On the last day of the mission, international experts and representatives of the State Urban Development Committee, UNDP Armenia, the Asian Development Bank Armenia Office, and the Ministry of Territorial Administration met and agreed on the cooperation details.

### PHASE 2. EVALUATING CITIES' PERFORMANCES WITH SMART SUSTAINABLE CITIES INDICATORS (SSCIS)

The city's performance was evaluated using the Smart Sustainable City Indicators (SSCIs), which were developed by ITU, and UNECE in consultation with other stakeholders in 2015. The list of the UNECE-ITU SSCIs includes 72 indicators which are grouped under the following structure:

- Pillars of sustainability: economy, environment, society and culture (see Figure I); and
- Thematic areas of indicators. Eighteen (18) major thematic areas were identified and each indicator was assigned to one specific topic. Some topics include specific sub-topics, which can be considered as keywords that more thoroughly define the nature of the indicators.

Typology of indicators:

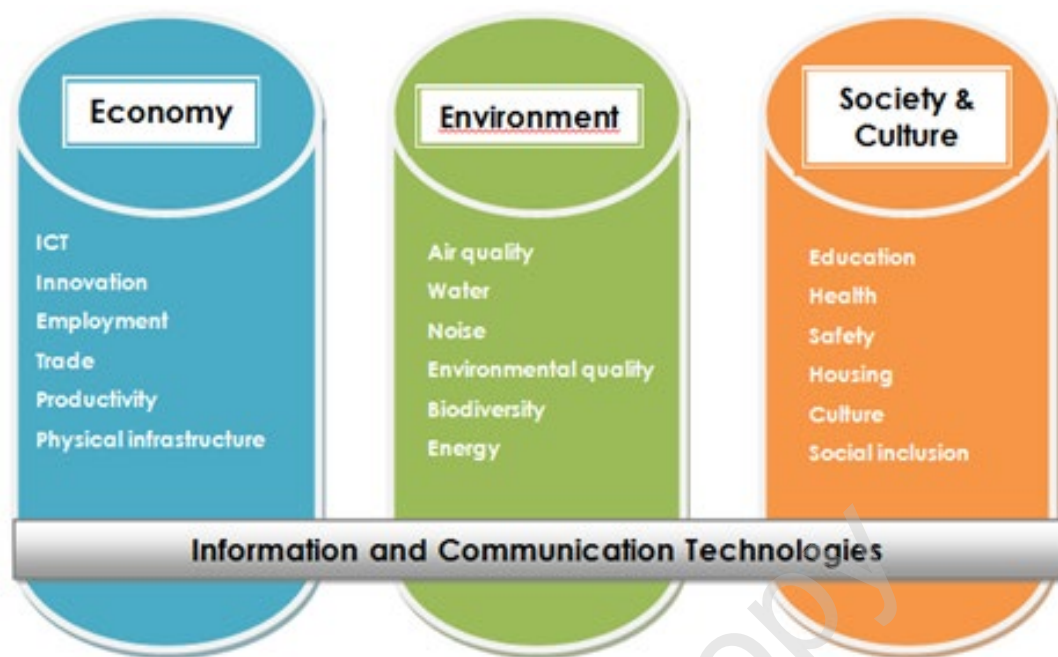
- (i) *Core indicators* can be used by all cities globally.
- (ii) *Additional indicators* may be used by some cities according to their economic capacity, population growth, geographic situation, etc. These indicators are optional, especially for self-benchmarking. They are not normative.

The above-mentioned indicators have been used to develop the Smart Sustainable City Profile of Goris. The Profile will help the city's stakeholders to understand the needs of the city in order to become "smarter" and more sustainable and to receive recommendations about its priorities. The full list of the UNECE-ITU SSCIs for Goris is presented in Annex II.

<sup>3</sup> UN SDGs, available at: <https://sustainabledevelopment.un.org/focussdgs.html>

<sup>4</sup> Source <http://pyramid2030.net/>

Figure I: The UNECE-ITU Smart Sustainable Cities Indicators



# PART I:

## OVERVIEW OF THE CITY OF GORIS

### INTRODUCTION

The city of Goris was selected as the pilot city for Armenia for three main reasons: its strategic position in the system of roads in Armenia; its rich cultural and historical heritage; and the commitment of its community and local government to make their city smarter and more sustainable.

### CHAPTER 1: THE REGION

Armenia is composed of ten *marzes* (regions)<sup>5</sup> plus the city of Yerevan, which is governed by its own local self-government. Syunik *marz* is situated in the south of the Republic of Armenia. In the north, the Syunik *marz* borders the Armenian Vayots Dzor *marz*; in the south, it borders Iran for 42 km; in the west, Nakhijevan (Autonomous Republic in Azerbaijan); and in the east, Azerbaijan. Therefore, the Syunik *marz* occupies a strategically important transit position with Iran.

The region has rich resources of natural raw materials, a large industrial capacity, and is one of the biggest administrative and economic regions of the country. However, it remains one of the less inhabited and economically developed *marzes*, mainly due to its distance from the capital and its lack of diverse means of transportation. Its most developed sectors are industry and agriculture.

It is the richest *marz* of the Republic in minerals and metals. The most important of them are non-ferrous metals (copper, molybdenum, zinc and others), precious metals (gold and silver), and non-metal useful minerals (construction and decorative stones, basalt raw materials, limestone and burnt shale marble, and granite resources).



Figure II: The *marzes* of Armenia

The region is famous for its historical and cultural heritage and for its natural landscapes. In the depths of the Shikahogh national park, on the right bank of the River Voghji, is located the Vahanavanq, one of the spiritual and cultural centres of the Syunik *marz*. This national park is an interesting sightseeing place with its unique

<sup>5</sup> The ten *marzes* are Aragatsotn, Ararat, Armavir, Gegharkunik, Kotayk, Lori, Shirak, Syunik, Tavush and Vayots Dzor.

environment, lush forests, narrow gorges, rich fauna, and historical and cultural monuments. The region hosts the biggest world sycamore relict park, which is situated in the River Tsav Pass, south of the town of Kapan, and occupies 120 ha of land. The Shaki waterfall, the highest waterfall (18 m) of the Small Caucasus Mountains, is situated 6 km from the town of Sisian.

One of the most attractive places in the region is the Tatev monastery complex, which was built in the ninth century and is considered as one of the best examples of medieval Armenian architecture.<sup>6</sup> Other famous cultural and historical monuments of the *marz* are the megalithic complex of "Zorac qarer", the castles of Baghaberd, Halidzor, and Vorotnaberd, the monasteries of Vorotna and Bgheni, the monastic complexes of Vahanavank and Ericavank, the mausoleum monument of Aghitu, the mausoleum hill of Sisian from the neolithic era, and the church and defensive towers of Meghri.

Concerning its transport infrastructure, freight and passenger transportation in the *marz* is implemented by road and electric means (in particular, cableway). The Armenia-Iran motorway passes through the *marz*, and it holds great importance for its economic development. In 2008, the "Kapan-Tsav-Meghri" motorway opened. The major motorway which connects Armenia to Artsakh (currently in the Nagorno-Karabakh region) and the only direct connection between Armenia and the Islamic Republic of Iran pass through the *marz*.

In 2010, the longest aerial tramway of the world, the "Tatever", came into operation (maximum height 380 m, length 5.7 km). It passes through the River Vorotan Canyon, stretching over mountains, and running from the village of Halidzor to the Tatev monastery complex.

However, it should be noted that, due to the difficult geographical context of a high mountainous region, a rather weak transport infrastructure and sometimes harsh weather conditions, moving between Yerevan and Goris is difficult, and Goris remains a relatively remote area away from the capital. In the longer term, however, with further transport infrastructure development, this link may improve.

## CHAPTER 2: THE CITY OF GORIS

### 2.1. TERRITORY DESCRIPTION

The city of Goris was founded in the historical province of Haband, on the left bank of the Vararakn River, in the Dzagedzor Valley. The Valley is surrounded with the Zangezur Mountains. The city has an average elevation of 1,385 metres above sea level. The surrounding mountains are famous for their medieval cave-dwellings carved out of the soft rock in the southern and eastern parts of the town. The Goris Wildlife Sanctuary is situated at the south-east of the town, at a height ranging between 1,400 and 2,800 metres above sea level, covering an area of 18.5 km<sup>2</sup>.

Located in an alpine climate zone, the weather of Goris is characterized with mild snowy winters and hot summers. The average temperature is -1.3°C in January, and +19°C in July. The annual precipitation level is between 500 and 600 mm.

The ancient Syunik Dzagik, called Dzagedzor or Zangezour, gave the Syunik region its name. It was formerly known as Zangezour, and its inhabitants were mainly experts in silk spinning, the carpet and tanning industry, stone, copper, silver, soap production, etc.

The city of Goris is surrounded both by flat and mountainous areas. Its reliefs are rather complex and rough, with irregular shapes. This geography and the local climatic conditions have significantly influenced the formation and development of the city.

In the north, the territory is surrounded by a plateau, whose edges form ravines and canyons. In the east, pyramids, columns, natural stones and high rocks give a unique view to the Goris landscape. In the west, the city is bordered by 4 and 5 level erosive terraces, with 25 to 40 metres of height difference between them.

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<sup>6</sup> National Statistical Service of the Republic of Armenia, *marzes* of the Republic of Armenia and Yerevan city in figures, 2012, p. 286.



The settlement's territory (about 600 hectares) looks like a huge amphitheatre made of ravines and hills (about 1 km diameter) with, almost at the centre, the raised citadel of Dzagedzor. Many natural and man-made caves are located in the area, and served as houses in ancient times.

The main reasons for Goris' development are its naturally protected position, its high mountain springs and the River Vararakn, its sunny slopes, its great number of caves, and the interconnection of several commercial roads. Thanks to its climatic conditions, its historical and cultural features and its infrastructure, Goris has the potential to become a well-established tourist centre. More specifically, since it is the centre of international transit routes, it could become a transit tourist zone between Armenia and Iran.

**Figure III: Some caves in the territory of Goris. Photo credit: D. Carriero**



## 2.2. HISTORICAL CULTURAL HERITAGE

The old city settlement occupied a relatively small but picturesque area of hills and rocks, forming a natural amphitheatre. One of the main transit trade routes ran from the western edge of the settlement, where the network of streets expanded up to the hills. There were four bridges across the River Vararakn, and mills and potteries were located on both banks.

Up to the eighteenth century, the caves served as dwellings. After the eighteenth century, one- or two-storey houses with stone walls, arch thresholds and wooden roofs were built, while the caves began to serve as additional abodes.

All the buildings of the area mirror the natural landscape and the spatial organization of the place. The spires of the church of St. Hripsime and Meliks' (Dukes) chapel can be seen on the hills. The view of the city is enhanced by neighbouring grotto settlements, underlining the natural landscape of the city, and its unique site. With the enlargement of the Trans-Caucasian road constructions (Goris–Kapan; Goris–Naghijevan; Goris–Julfa) in 1850 in the River Vararak (Goris) valley, the new town of Goris was founded, and the inhabitants of the grotto settlement settled there. In 1885, Goris received the status of regional centre, becoming the administrative and commercial heart of Zangezour (Syunik).

The new city of Goris was founded near the Old Goris in the valley of Vararak according to the plan designed by German architects. From the mid-nineteenth century, the settlement started to grow quickly and expand to the right bank of the river. A new rectangular-shaped town quarter was developed on the plain of the upland, with traditional one- or two-storey houses and a town centre. The historically valuable town centre was formed around the fair square, and occupied about 25-30 hectares. The principal streets were 24 m wide, and the secondary ones, 17 m. The public centre was constructed, with administrative and commercial buildings, villas, churches and other buildings. The facades of one- or two-storey villas were decorated with small balconies. The pavements were of stone and planted with trees, and irrigation streamlets were installed. Over the centuries, numerous monuments were built, which confer an originality to the city and emphasize its historical evolution.

**Figure IV: Part of the Noravank Monastery. Photo credit: D. Carriero**



The axis of the town was the road leading to Sisian, which, in the south, traversed the road leading to Old Goris. At this crossroads, the town centre started to develop, with the church and public buildings.

In order to protect cultural heritage sites, the State identified and listed historical buildings and monuments. Thus, entire urban areas, as well as separate fragments, were classified and evaluated as protected zones with specific protection regimes. Not all objects are given the same protection, depending on whether they are separate monuments, groups of monuments, urban areas, natural and town landscape, or historical settlements. During this process, in line with the Convention of Granada<sup>7</sup> (entered into force in Armenia in 2009), the boundaries of the historical-cultural area to be preserved were set, and options for further preservation were elaborated for city and tourism development purposes.

Since then, the protection of specific architectural forms, which are part of the cultural heritage of Goris, was considered an important measure of the city development process. From this point of view, the restoration of authentic and unique constructions in the city is a significant issue.

<sup>7</sup> The Convention of Granada is the Convention for the Protection of the Architectural Heritage of Europe. It was ratified in Granada in 1985. Further details can be found at <http://www.coe.int/en/web/conventions/full-list/-/conventions/treaty/121>



Taking into account the historical-cultural role of the city and its recreational capacities, Goris is recognized as a tourist centre of the Syunik *marz*, according to two Decisions of the Government of the Republic of Armenia (No 973-No. 10 of June 2011 and No. 77-A of 31 January 2013).

Thus, the development of city regulations involving the historical centre and its practical restoration must consider the comprehensive system of the city and protect its unique nature and landscapes.

### 2.3. ENVIRONMENTAL CONDITIONS

Goris has a temperate climate, with mild winters. The average annual temperature is 8.4°C. The amplitude is 16.9°C. The absolute minimum temperature is –27°C, and the absolute maximum is 33°C. The number of days with temperatures higher than 25°C is 59, and the number of days with temperatures below –10°C is 69. The average annual absolute air humidity is 8.6 GPa (gigapascal), and the relative humidity is 69%. It may decrease to 39%, for example, in summer at noon, and for 7-8 days per year it may even go below 30%. Average annual precipitation is 709 mm, and the maximum rate is observed in May, when it is 104 mm. The average annual wind speed is 1.7 m/s. Heavy winds ( $\geq 15$  m/s) in Goris are observed on average 15 days per year, but can sometimes be up to 33 days. Days with hard rainfall are often observed; very high precipitations of 72 mm in a day have been recorded for the city.

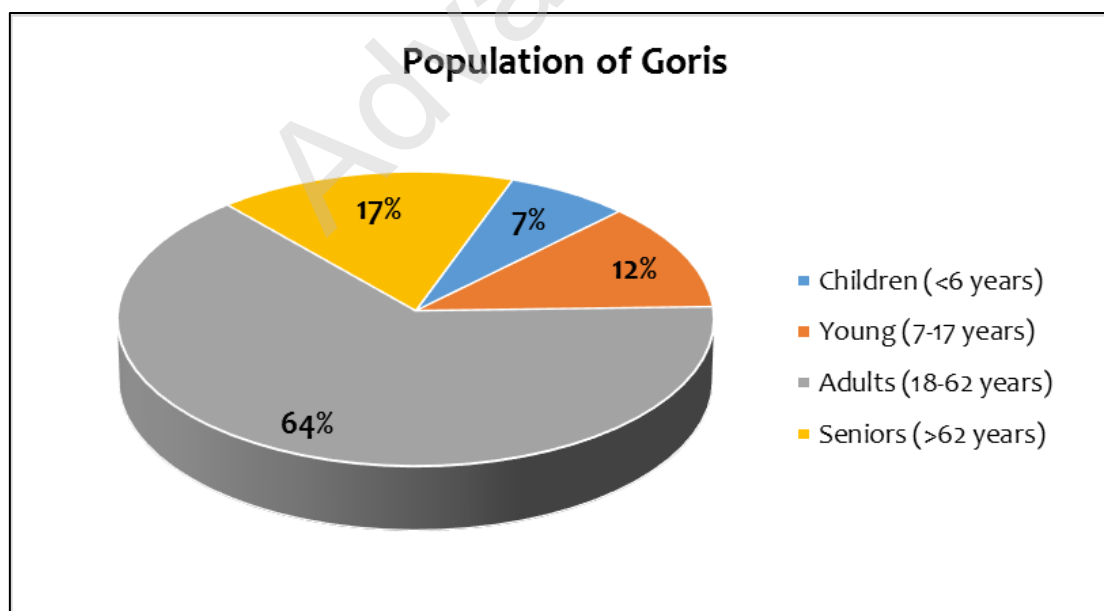
The city's engineering-geological and seismic-tectonic conditions are complicated. The territory of the centre is composed mainly of travertines. These cause empty spaces which bring about soil lowering due to the absorption of water by travertines. This dangerous area ranges for about 600 metres.

Around the tectonic plate along the river Vararakn and its zone of influence, where soil accelerations exceed 0.4 g, strengthened basements are a construction requirement. Furthermore, the soil waters rising through this part act with differing amounts of aggressiveness on concrete.

### 2.4. POPULATION AND DEMOGRAPHIC SITUATION

Goris has a population of 23,200, with 51.2 per cent of men and 48.8 per cent of women and it is rapidly aging.<sup>8</sup> Recently, emigration from the community of Goris has decreased, while some increase in the number of immigrants was noted.

**Figure V: Population of Goris**



<sup>8</sup> Data from the statistics of the municipality of Goris.

Goris' educational infrastructure consists of seven kindergartens and seven schools, of which four are secondary schools, two are high schools, and one is a special education school. Additionally, there are three vocational schools, for agriculture, pedagogy and crafts.

Sixty-five per cent of people over 17 receive secondary education, while vocational education amounts to 10 per cent. Forty-five per cent of citizens are graduates. Per year, about 250 students graduate from school. For higher education, this figure amounts to 210 people.

## 2.5. SOCIOECONOMIC CONDITIONS

The economic development of Goris is based on the production of electric energy, food, textile and sewing products, aluminum and metal-plastic products, woodworking and electronics. The most important enterprises in Goris are energy-production and construction companies. In particular, the cities' boundaries encompass the Vorotan Hydropower Plant, which consists of three power stations situated on the river Vorotan, in the Syuniq region.<sup>9</sup>

Despite the predominance of the industrial sector, the local population is first and foremost engaged in agricultural production, and stone-processing enterprises.

Other fields of work and economic activity are public services (hotels and restaurants), and the areas of education, culture and health care. Last but not least, a considerable number of individual business people are engaged in the areas of trade and services.

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<sup>9</sup> Ministry of Energy Infrastructures and Natural Resources of Armenia at <http://www.minenergy.am/en/page/533>

# PART II:

## LEGAL AND INSTITUTIONAL FRAMEWORK FOR URBAN DEVELOPMENT

### INTRODUCTION

Urban population growth in Armenia is closely preconditioned by past social and economic circumstances, particularly by industrialization, which resulted in the decrease of the rural population and the growth of the urban one from the early 1960s.

Urbanization has resulted in a number of changes, which include:

- disproportionate regional development;
- unfavourable demographic dynamics;
- migration from remote rural settlements, and underdevelopment of infrastructures and institutional structures in those areas;
- disproportionate development of rural areas;
- high level of unemployment and poverty among the young population (predominantly in rural areas);
- housing problems for young people, especially urban dwellers;
- ongoing increase of the number of elderly people, and an older population age structure, etc.

The introduction of multi-polar area development principles<sup>10</sup> consistently throughout the country aims to neutralize the potential threat of unmanageable urbanization. The creation of a more balanced settlements system is preconditioned by the need to overcome existing disparities of regional development, and to undertake measures for the prevention of undesirable growth of the population density especially in high seismic zones.

The main objective of urban policy is to define the priorities in the implementation of the urban development strategy, to create and improve a living environment for the whole population

In this part of the Profile, the legal and institutional framework for urban development will be examined with a special focus on land management and housing issues.

### CHAPTER 1: URBAN DEVELOPMENT AND LAND MANAGEMENT

#### CHAPTER 1.1: THE INSTITUTIONAL FRAMEWORK

##### *THE NATIONAL INSTITUTIONS*

The State Urban Development Committee<sup>11</sup> is the state authorized body for urban development. It is responsible for urban policy matters, spatial planning, architecture, housing, town and country planning, and building regulations.

It:

- elaborates guiding principles of the state policy in the sphere of urban development;

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<sup>10</sup> See footnote 2

<sup>11</sup> In October 2016, the Ministry of Urban Development of the Republic of Armenia became the [State Urban Development Committee](#).

- elaborates and submits drafts of laws and other legal acts on urban development for the consideration of the Government;
- elaborates spatial planning documents at national and regional level, and supervises their implementation after approval;
- implements inspectorial supervision of urban development activities;
- defines the sustainable development strategy for the country's settlements and territories; and
- conducts other authorizations defined by law.

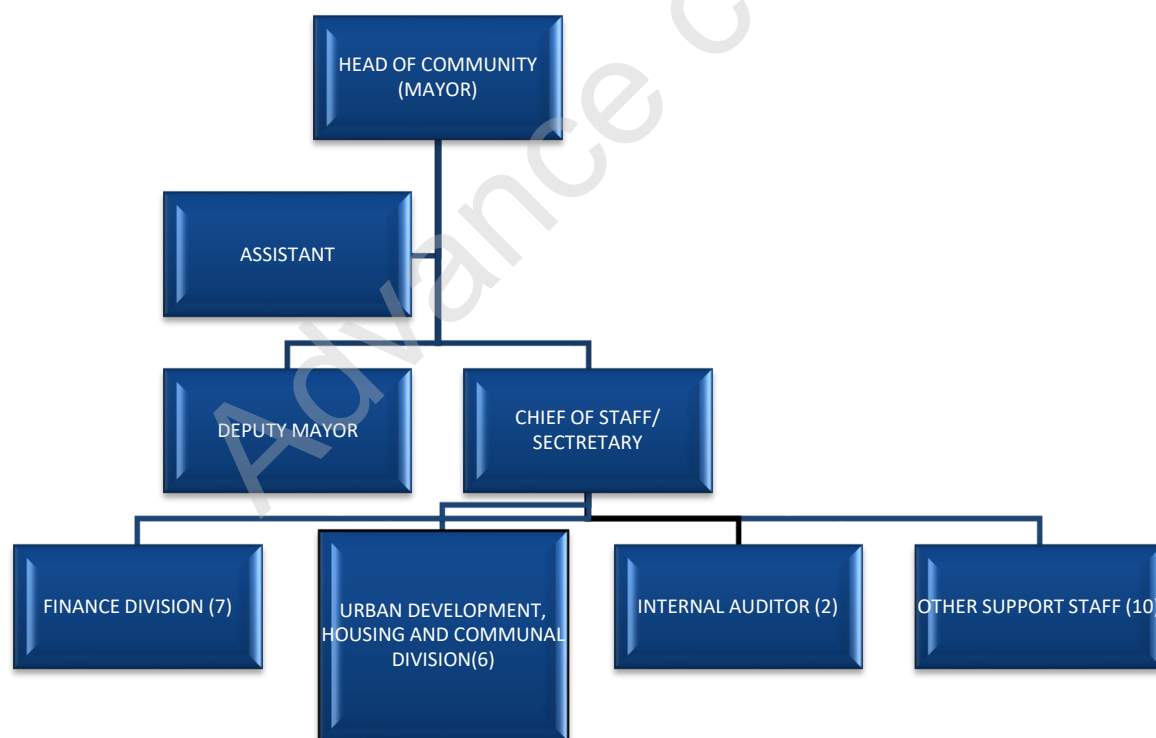
### THE REGIONAL INSTITUTIONS

Each *marz* governor supervises the activities of the heads of communities in the area of urban development. In particular, the *marz* governor is responsible for:

- suggesting changes in the *marz* administrative borders to the Government;
- giving conclusions on spatial planning documents;
- organizing housing and other constructions;
- supervising urban development activities;
- organizing and supervising utilities which are under the *marz's* jurisdiction (e.g. sewage treatment, water cleaning);
- organizing litter and waste recycling; and
- providing other authorizations defined by law.

These activities are performed in addition to the conventional regional development planning, whereby all *marzes* of the country, including Syunik, are obliged to design and implement regional development plans.

**Figure VI: The Community Council organigram**



### LOCAL SELF-GOVERNMENT

The Community Council of Goris comprises 15 members, elected for a period of 5 years. The number of municipal servants reporting to the Mayor is 28. Another 13 community budget organizations reporting to the municipality employ 316 staff.

After their election, the mayor designs a five-year socioeconomic development plan, which contains the city development strategy and an estimate of the available financial resources, and submits it to the Municipality

Council for approval, together with the draft municipality budget. The draft budget is a mandatory document, legally established to guide the activities of the local self-government over its term in office.

By law, the powers of local self-governments are mandatory, delegated and discretionary (voluntary). These include issues such as: the rights of citizens and economic agencies; finance; public order; defence; urban development and land use; utilities and amenities; transport; trade and services; education, culture and youth issues; health, physical culture and sports; and agricultural and environmental protection.

**Figure VII: Goris town hall. Photo credit: D. Vancutsem**



In particular, in matters of urban development and land use, mayors are assigned the following powers:<sup>12</sup>

- to compile the draft of the local master plan and the municipality zoning plan, which are submitted to the Municipality Council for approval;
- in accordance with the approved zoning plan, to submit to the Municipality Council for approval the individual areas and complexes to be built on;
- to notify the population of the municipality of planned changes in the urban environment;
- to issue planning permits and make architectural and construction designs compliant with the existing requirements;
- to issue construction (and demolition) permits and construction completion acts;
- to decide, in accordance with the procedures defined by the Municipality Council and with urban development master and zoning plans, on the lease and sale of municipality property, rental rates, and the floor price of auctioned property, and submit a proposal to the Municipality Council for approval;
- to allocate municipality lands to state and municipality budgetary institutions;
- to prevent and preclude unauthorized construction activities and land occupation, and to arrange for its demolition;

<sup>12</sup> Articles 37 and 38 of the Law on Self-Government. The Activity of the Chief of a Municipality (Mayor) in the Sphere of Urban Development and Land Use.

- to maintain accounts, to supervise the operation of the real estate of the municipality, to arrange for its repair, to compile yearly documentation on its inventory and to submit it to the Municipality Council for approval;
- to issue permission for outdoor advertisements in accordance with the municipality urban development charter; and
- to conduct other authorizations defined by law.

Furthermore, the mayor shall exercise the following powers delegated by the State:

- to carry out the land balance of the municipality in accordance with the established procedure;
- in accordance with the established procedure, to allocate, revoke and lease out lands solely on the basis of the contracts concluded by themselves, and, in cases and in a manner specified by law, alienate state-owned lands located in the territory of the municipality, in accordance with the master and zoning plans;
- to ensure the protection of geodetic points and border milestones of the municipality in accordance with the defined order.

Lastly, the mayor exercises the following voluntary powers:

- carries on the construction and capital repair of residential and other objects of social importance;
- carries out construction activities.

## CHAPTER 1.2: LEGAL FRAMEWORK (INCLUDING SPATIAL DEVELOPMENT AND LEGALLY BINDING PLANNING ISSUES)

In the Republic of Armenia, spatial planning is a multi-sectoral discipline, which is used as a coordination tool of both sectorial policies and of private and public interests. One of the primary guidelines of urban development policy in Armenia is the implementation of sustainable spatial development principles.

In terms of governance, spatial development issues are decentralized, and permissions related to construction activities are assigned by law to local authorities.

According to the "Law of the Republic of Armenia on Urban Development", the main issues regarding urban development are contained in spatial planning documents at national, regional and local levels, and serve as baselines for spatial development.

Spatial planning is a vital element for the creation of sustainable settlements. The sustainable development of plots, the preservation of natural and historical heritage, and the organization of a favourable spatial environment are determined by means of urban planning provisions and conditions of target use.

Environmental Impact Assessment (EIA) procedures have been incorporated into the planning system and are applied to public policies at the national level. The EIA system allows for full scoping of environmental statements by planning authorities.

Urban development documents are divided into two types: spatial planning documents and documents related to architecture and construction.<sup>13</sup>

The Government defines the procedures for the elaboration of urban development documents, relevant expertise issues on coordination, and their approval, amendment, or modification.

Spatial planning documents are subdivided in a hierarchical structure, with each subdivision covering the territorial organization at a specific scale:

- General Settlement Plan of the Republic of Armenia (national level);

<sup>13</sup> The list of these documents is defined by Article 17 of the Law on Urban Development.

- Spatial Plans of Regions or their parts (regional or micro-regional levels - *marzes*); and
- Master Plans and Zoning Plans (local level - communities).

#### *NATIONAL LEVEL*

The predominant role in the hierarchical structure is given to the General Settlement Plan of the Republic of Armenia (hereinafter referred to as "the Plan"). The Plan was approved by the Decision of the Government of the Republic of Armenia No. 610-N on 10 April 2003. It is an analytical working document, which sets down the general direction of the state policy in the area of urban development and spatial planning.

The Plan aims to define the basic direction of spatial development, improve the balance in the settlements system of the State, create a good living environment, and set the conditions for the sustainable development of territories and settlements.

The main provisions of the Plan must be taken into account during the elaboration of urban development project documents, as well as during the development of branch, state-targeted and community social, economic and territorial development programmes.

It has been elaborated taking into account issues related to natural resource management, the arrangement of urban development of areas, multiple-factor analysis (natural, geographic, demographic, social and economic, culture, ecological) and comprehensive assessment of the territory of the Republic.

#### *REGIONAL LEVEL*

The spatial organization of the region greatly depends on concrete conditions of zones with various ecological and economic regimes, ensuring the ecological balance of territories. The ecological balance includes the regulation of natural environments, and the reliable protection and reproduction of its basic components, namely air, water resources, ground-vegetative cover, and fauna. The criteria for the achievement of an ecological balance vary according to the zone, and depend on climate, hydrological and land use conditions, the degree of urban density of the population, etc.

The last amendments and supplements to the Law on Urban Development were adopted in December 2015. The Law aims to provide a legal framework to combine spatial planning documents at micro-regional and local levels for particular groups of communities. Furthermore, communities join together to solve spatial planning, urban development, land use and investment issues.

#### *LOCAL LEVEL*

Spatial development activities within the administrative borders of communities are regulated by the Master Plan and the Zoning Plan of the community.

The Master Plan, a strategic document for urban development, defines the main direction of the community's spatial development, and marks the phases of primary, medium and long-term land use and construction.

The Master Plan is developed at the request of the mayor and approved by the Community Council. It is then issued by the interdepartmental committee, which ensures the compliance of the city planning project documents with the requirements of the country's legislation and other legal acts related to the statutory goals and objectives of the concerned state governance bodies.

The Zoning Plan is an executive document, which defines the detailed conditions of a community's spatial development, and is the basis for permissions regarding land use and construction. Zones of different urban development value are defined depending on the presence of historical, cultural, architectural or landscape values, an assessment of land value, the density of the engineering and transport network, the number of objects of social importance, the attractiveness for investments, etc.

Construction permits (planning permission, building permission, exploitation permission) are delivered by the Head of Community in accordance with the procedures defined by Decision No. 569 of the Government of 19 March 2015. The Zoning Plan, like the Master Plan, is further approved by the Community Council.



In order to prevent problems in spatial development, every settlement — urban or rural — must have local spatial plans. This obligation is stated by the Land Code of the Republic of Armenia, the Law on Urban Development and other legal acts, based on which spatial plans are elaborated and which serve as a guideline for the distribution of community lands.

According to the requirements of Article 14.3 of the Law on Urban Development, the Master Plan is elaborated for all lands within the administrative borders of the community.

The procedure for the elaboration, expert examination, agreement, and approval of an amendment to the Master Plans of Communities was adopted by the Decision of the Government No. 1920-N of 29 December 2011, which also includes a corresponding provision on approving the Master Plan itself.

According to the legislation, spatial planning documents and their design tasks are subject to the agreement of some public administration bodies. To optimize the agreement process, an Inter-Agency Commission has been established by Decision of the Prime Minister No. 1064-A of 22 December 2009. Thanks to this coordination in the documents' examination process, the delay for obtaining an agreement has been significantly reduced.

Some spatial planning documents must be subject to a more complex expertise following the procedure defined by the Decision of the Government No. 569 of 19 March 2015. This is the case for documents related to the preservation of the environment; the preservation of historical and cultural monuments; the prevention of emergencies; the development of the communication, transport, and energy systems; engineering and other infrastructures; industrial safety; the productive use of natural resources; and the development of sanitation infrastructure.

Taking into account Article 19 of the Law on Urban Development for areas of particular urban development value (tourist centres, sections of interstate and republic state roads, heritage areas, specially protected areas), which are defined and regulated by special government decisions, a special regulation on urban development activities is applied. The list of special regulatory objects of urban development activities is defined by the Decision of the Government No. 729 of 26 June 2009. Special regulation mechanisms allow for the definition of additional norms and specific requirements on urban development activities, based on the particularities of the area.

The historical and cultural heritage of Goris is registered and protected by the State. The historic centre (Old Goris) is included in the special protected zone (Protocol Decision of the Government No. 21 of 31 May 2011), where any new construction activities can only be undertaken with the approval of the Ministries of Culture and Urban Development. The protection of historical and cultural monuments is regulated by law and related by-laws.

According to Article 26 of the Law on Urban Development, within the territory of the Republic of Armenia, control over urban development activities is carried out by the State Urban Development Committee.

#### *PUBLIC PARTICIPATION, AWARENESS-RAISING*

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The Law on Urban Development states that local self-government bodies must inform natural and legal persons about changes planned in the living environment, by means of publications in mass media, public consultations and presentations of programmes and projects.

The procedure to raise awareness on these planned changes, and the participation of civil society representatives in consultations on urban development programmes and projects and in the adoption of decisions, was approved by Decision of the Government No. 660 of 28 October 1998.



Figure VIII: The main square of Goris. Photo credit: D. Vancutsem



## CHAPTER 2: HOUSING

### CHAPTER 2.1: THE INSTITUTIONAL FRAMEWORK

Housing policy in Armenia is mainly developed and implemented by the State Urban Development Committee. Some aspects of the policy's implementation are handled by the *marzes* and the communities (local governments).

#### 1. Jurisdiction of the Government of Armenia:

The Government of Armenia is in charge of elaborating the housing policy for the country. In particular, it:

- elaborates policies regarding access to housing and to housing-related subsidies;
- sets maintenance standards for existing housing stock;
- regulates housing construction; and
- establishes urban development policies and procedures.

Most of the housing functions falling within the jurisdiction of the Government of Armenia are undertaken by the State Urban Development Committee. The Ministry prepares draft laws and develops projects for the implementation of government policies and programmes.

#### 2. Jurisdiction of Territorial Governing Bodies (*marzes*):

The *marzes* are mandated to:

- administer the regulation of housing construction;
- administer the purchase of homes with the state budget;
- oversee the housing stock in the territory outside the administrative borders of communities;
- prevent unauthorized construction in the territory outside the administrative borders of communities; and
- supervise the activities of the communities in the area of housing.

#### 3. Jurisdiction of Local Self-governing Bodies (communities):

The communities act as local self-governing bodies and are responsible for:

- administering the allocation and operation of houses and other shelter;
- working with condominiums regarding their issues (administration, maintenance);
- administering urban development and construction processes and regulations; and
- preventing unauthorized construction.

Furthermore, the housing policy is directly interrelated with policies that involve social aspects and support the implementation of social goals and the enhancement of living conditions of the population.

## CHAPTER 2.2: THE LEGAL FRAMEWORK

The Housing Code, which was first adopted during the Soviet period in 1982, was abrogated in 2005.

Currently, housing issues are regulated by:

- the Constitution, the Civil Code;
- the Law on Local Self-Government;
- the Law on Urban Development;
- the Law on Management of Multi-Apartment Buildings;
- the Law on Condominium, the Mortgage Law;
- Government Decree No. 1161-N (issued on 4 October 2007) on the Adoption of Obligatory Norms for the Maintenance of Common Shared Properties of Multi-Apartment Buildings;
- Government Protocol Decision No. 38 (issued on 29 September 2011) on the Five-Year Strategy Plan of Multi-Apartment Housing Fund Management, Maintenance and Exploitation of the Republic of Armenia; and
- Government Protocol Decision No. 53 on the Strategy on the Formation of the Social Housing Fund.

Other legal acts are considered subsidiary legislative means to regulate relationships in this domain.

The Government started 15 programmes in order to solve issues related to the provision of housing to homeless people, who lost their homes after the Spitak earthquake in 1988, and due to international conflicts and military actions in the region. The programmes also ensure the safety of citizens living in emergency housing and in active landslide zones. They include:

- the Earthquake Recovery Zone Complex Program, approved by law;
- the State Target Program related to the provision of housing for people forcibly displaced from Azerbaijan in 1988-1992, as well as for people displaced from Iraq and Syria;
- the State Target Programmes "Affordable housing for young families" and "Affordable housing for state employees"; and
- the State programme "on improvement of the housing conditions of the employees of state institutions".

## PART III:

# ANALYSIS OF THE INDICATORS

### INTRODUCTION

In this section of the Profile, an analysis of the indicators will be given.

As already mentioned in the Introduction, the fact-finding mission to Goris took place in February 2015. Hence, the data used for this analysis refers to the years 2015-2016, and the KPIs used are the UNECE-ITU KPIs for Smart Sustainable Cities which were approved by the UNECE Committee on Housing and Land Management in 2016.

Currently, the UNECE and the ITU are updating the Indicators within the framework of the “United for Smart Sustainable Cities” (U4SSC) initiative, and with the contributions of 14 other UN agencies and programmes and other partners. The most recent version of the Indicators is ready since June 2017, and will be presented at the seventy-eighth session of the Committee on Housing and Land Management.

**Figure IX: Picture of the stakeholder consultation. Photo credit: D. Vancutsem**



### CHAPTER 1: ECONOMY

This chapter presents key aspects considered essential for a stable economy, with special attention being paid to innovation and diversification among economic sectors.

Before assessing Goris’s economy in detail, it is necessary to present some key facts about the national economy. Armenia has been highly affected by the global financial crises in 2008-2009, resulting in a dramatic increase in poverty. Rural regions were most affected, with about one third of the population living in poverty - compared to 25 per cent in Yerevan. Since 2013, Armenia is in economic recovery, with a moderate growth rate ranging between 3 and 3.5 per cent, but barely exceeding inflation. The lack of job opportunities is a key issue. In 2014, the general unemployment rate stood at 18 per cent, and youth unemployment at 35 per cent. However, youth unemployment is recovering, after having reached a peak of 58 per cent in 2007.<sup>14</sup>

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<sup>14</sup> Information from the World Bank and the Asian Development Bank. Available at [www.worldbank.org/en/country/armenia/overview](http://www.worldbank.org/en/country/armenia/overview) and [www.adb.org/countries/armenia/economy](http://www.adb.org/countries/armenia/economy)

With regard to the economy pillar, the following areas were analyzed for Goris: employment, ICT infrastructure, innovation, physical infrastructure, productivity and trade.

### ICT infrastructure

According to the data, the level of penetration of ICTs as well as ICT knowledge and skills are quite high; in particular, the availability of computers in private households is satisfactory, and Internet diffusion is remarkably high and above the national average. However, as mentioned by several stakeholders gathered in Goris, there is still a lack of ICT infrastructure, in particular in the private sector and education.

Some other indicators show:

- computer presence in households is estimated to reach 80 to 90 per cent;
- Internet via fixed broadband is reported to amount to 50 per 100 people; and
- the availability of wireless broadband is 65 per 100 inhabitants.

### Innovation

The ability to innovate is an important factor in strengthening the economic power of a city. The Indicators show that Goris has an innovative and creative potential, which has not been exploited sufficiently.

Research and development (R&D) expenditures as a percentage of GDP can be used to indicate the degree of innovation in the economy. In Goris, R&D expenditures is reported to amount to 0.3% of the local GDP, which is above the national average of 0.02%.

### Employment

A general lack of job opportunities provoked high emigration over the past years. The current unemployment rate of 12 per cent is less than that of the national rate of 19 per cent.<sup>15</sup> It is estimated that 5 per cent of the current work force is employed in the creative industries. Another key issue is the high unemployment rate of young people under 30 years of age.

An employment trend could not be derived; employment increases and decreases in comparison to a baseline. According to stakeholders' comments, the high unemployment rate is caused by insufficient investment from both public (local and national authorities) and private sectors. From the collected information, although industries have been established in Goris, they are not functioning properly.

### Trade

Data on e-commerce and on intensive import or export were not available.

### Productivity

The local population is mainly engaged in agricultural production.

Energy and construction companies dominate the economic structure of the community. Some companies in other productive areas are also established in the surrounding area, such as: stone-processing, small and major power-generation, construction, and companies specializing in public services (hotels and restaurants), education, culture and health care.

Level of entrepreneurship is not satisfactory. Goris has 780 registered SMEs, among which some are not in real activity. No data referring to past trends (decrease or increase in the number of SMEs) was reported.

### Physical infrastructure

Goris is well equipped with basic infrastructure, but clearly lacks smart infrastructure, such as "smart" roads, public transport and recreational facilities.

The basic infrastructure for water and electricity supply seem stable. However, no economic data was collected during the mission.

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<sup>15</sup> World Development Indicators – database at <http://wdi.worldbank.org/table/2.5>

There is no transport between the flat and the sloping part of the city, or to the archaeological cave settlements. It is necessary to regulate and improve the street network, by building ropeways, elevators and paths.

Two transit roads pass through the territory of the city. The first (Yerevan-Goris-Stepanakert) passes through the northern edge, and the second (Goris-Kapan) through the centre of the city. This could cause problems with the sanitary protection zones<sup>16</sup> if they are not maintained.

The infrastructures for water, sanitation, flood protection and control, and transport facilities are not in good condition. The existing building stock lacks state-of-the-art insulation. As a consequence, a significant amount of energy is wasted by heating losses.

Based on the existing infrastructure, there are improvement opportunities in tourism, education and research, the promotion of regional products, and environmental technologies, such as waste recycling, water treatment and renewable energy systems.

The indicator assessment shows that:

- The reliability of the electricity system was indicated as 100 per cent. The existence of smart electricity meters in households is up to 40 per cent.
- Goris is poorly equipped with recreation facilities. On average, there is one per 1,000 inhabitants.
- Goris State University and Goris Medical Centre are key public infrastructures and job providers.
- The water distribution system has major technical problems and inefficiencies. Water losses are reported to amount to 54 per cent. However, Goris has a good water supply, and does not suffer from shortages.
- Access to the city is inadequate, since the road infrastructure is insufficient, train connections are sparse, and there is no airport. Road traffic efficiency is reported to average 30 to 40 kilometres per hour, which is rather low, probably due to poor road conditions. The number of cars is around 3,000. There are some parking problems but the city has no overall congestion-related issues.
- The rapid public transport system (including rapid bus transit, trams, light rail and subways) is reported to be 120 km in length, and the standard transport system, is 42 km in length, in the entire city region.

## CHAPTER 1.2: RECOMMENDED MEASURES

Key measures for improving the local economy, as recommended by both the city administration and the international smart city experts, are listed below:

- to improve cooperation with the local university and support the establishment of science-based SMEs;
- to improve the visibility of Goris in the long term by establishing a "Goris day", allowing local SMEs to present their profiles;
- to regulate and improve the street network, by building ropeways, elevators and paths;
- to change the roads in the city centre into pedestrian zones, so as to reduce transport noise and air pollution;
- to make the sanitary protection zone more environmentally friendly; and
- to improve local tourism by developing an activity plan for cultural events together with artists, gastronomical experts, and local SMEs.

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<sup>16</sup> A sanitary protection zone is the area around water sources and water facilities, where a special regime that excludes or limits the possibility of contamination or infection is in place. More information can be found at <http://survinat.com/2012/03/sanitary-protection-zone/>



## CHAPTER 2: ENVIRONMENT

The environment is a key aspect in understanding the “good health” of a city.

Goris is supplied with spring water from the mountains; hence, water resources are particularly abundant in the city and are of good quality. The same can be said for the water supply to households, which is reliable. The main issues in terms of the environment refer to waste management, green areas, natural hazard adaptation and mitigation, and air pollution, which is not monitored in the city.

In 2017 the Prime Minister of Armenia, Karen Karapetyan launched the “Clean Armenia” programme to be undertaken by the Ministry of Nature Protection. The programme focuses on natural landscapes, natural monuments, protected areas, cleaning gardens, expansion of green areas, and waste management mechanisms in urban communities.<sup>17</sup>

### CHAPTER 2.1: ANALYSIS OF ENVIRONMENTAL INDICATORS

With regard to the environment pillar, the following areas were evaluated: air quality, water, noise, environmental quality, biodiversity and energy.

#### Air quality

Concerning air quality issues, the lack of a monitoring station and a monitoring system for the city of Goris means data is lacking. However, the absence of heavy industry and heavy traffic in the city area led experts to assume that the city has no serious air quality problems. Greenhouse gas emissions and air pollutants present in the city boundaries are not monitored. The former are only monitored for the region of Syunik, with no monitoring stations in the city or in the territory of Goris, and the latter are monitored in the neighbouring cities.

#### Water

Concerning the quality of water and sanitation issues, the city performs very well. Water is supplied by spring water from the mountains. The freshwater supply is sufficient and the quality is controlled on a regular basis. The quality of drinking water is monitored by the relevant RA SNCO, the water supply company and the municipality. Samples of water are subject to regular microbiological, physical-chemical and radiological examinations, and the water is fully compliant with current drinking water standards. The whole population consumes piped water, since there are no local ground water wells.

All households have access to improved sanitation facilities that hygienically separate human excreta from human, animal and insect contact. The water saving in households, both with and without smart meters, is reported to be 40-50%.

The lack of a wastewater treatment plant is a crucial issue; pollution is caused by surface water and sewage entering the rivers. Wastewater is drained by a sewage water system but it is not treated before being ejected into the Vararakn river. This results in high organic pollution of the river downstream of the city. There is a lack of data concerning the drainage system management.

#### Noise

Noise monitoring is not carried out in Goris. However, based on periodic and/or selective measurements, it was reported that 40 per cent of the urban population were exposed to permanent noise pollution (> 55 dB). There are two major highways running through the city area. Noise and dust emissions are restricted to a few hot spots next to the highways with peaks of noise of 69 dB; otherwise the city standard averages 55 dB during the day and 45 dB at night.

#### Environmental quality

Environmental quality refers to a set of properties and characteristics of the environment, which influence human beings and other organisms. Commonly, the term can refer to various characteristics related to the natural environment or the built environment, such as air and water purity or pollution, noise, and the potential

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<sup>17</sup> <http://www.gov.am/en/news/item/8761/>

effects that such characteristics may have on physical and mental health. In this instance, environmental quality refers only to waste and electromagnetic fields.

Concerning waste, Goris, like the whole country, has a general problem with littering. In Goris, waste is collected on a regular basis and disposed of at the municipal dumpsite, where it is covered by layers of soil and considered unsafe. There is also a lot of illegal waste dumping and burning, causing high dioxin emissions. There is a general lack of awareness regarding the matter of waste management. There is no separate waste collection or recycling system in the whole country.

There is no available data regarding electromagnetic fields and the perception of environmental quality.

### Biodiversity

According to the Convention on Biological Diversity, biodiversity is “the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems”.<sup>18</sup> Biodiversity is the source of many ecosystem goods, such as food and genetic resources, and changes in biodiversity can influence the supply of ecosystem services. Ecosystem services provide food, fuel, shelter, medicines and other resources. Biodiversity depends on the climatic conditions, and is very sensitive to environmental changes, which can provoke mass extinctions. The United Nations declared 2011-2020 the Decade on Biodiversity.<sup>19</sup> The monitoring of native species is not carried out in Goris.

There are no protected areas in Goris, and some natural areas close to the city are in danger. Some are in threat of deforestation, while pastures are affected by overgrazing. This phenomenon reduces the usefulness, productivity, and biodiversity of the land, and is one cause of desertification and erosion, since it occurs when pastures are exposed to intensive grazing or sufficient recovery periods are not respected.

According to the city's stakeholders, there is a clear lack of public green areas in Goris. In fact, there is only one park, which needs maintenance and is insufficient to satisfy the needs of the citizens.

### Energy

Given that, by 2030, almost 5 billion people will live in urban areas, the energy sector will be profoundly affected, with regards to power growth and the expansion of the basic infrastructure. Energy efficiency can offer practical solutions to cities to meet their energy needs without sacrificing their development priorities, since energy-efficient activities are generally cost-effective. However, due to the high pressure on fossil fuels, the cities of the future will have to generate and consume energy produced from renewable sources. There is no available data on either the amount of renewable energy used or on the energy saving in households for the city of Goris.

## CHAPTER 2.2: RECOMMENDED MEASURES

Regarding the environment pillar, the following list of measures was generated during the stakeholders' consultation, and was later assessed by the team of local and international experts. Measures were analysed according to their benefits, the required resources and the possibility of realizing them on a short-term basis.

Key measures in the field environment are listed in below, and reported in part VI of this Report. Central issues are:

- to create new public green areas;
- to establish a waste management system and develop a public awareness programme “Waste is a resource”;
- to turn solid waste management into a business;
- to construct a simple waste water treatment plant; and
- to put in place an air monitoring system.

<sup>18</sup> Definition of biodiversity can be found at [http://www.biodiv.be/biodiversity/about\\_biodiv/biodiv-what](http://www.biodiv.be/biodiversity/about_biodiv/biodiv-what)

<sup>19</sup> Resolution 65/161, available at <https://documents-dds-ny.un.org/doc/UNDOC/GEN/N10/522/20/PDF/N1052220.pdf?OpenElement>

## CHAPTER 3: SOCIETY AND CULTURE

The sociocultural aspect is a crucial area for a smart sustainable city. From an educational point of view, Goris is well-equipped, and considers education as an important area for its development. It also has a functioning health system. The main issues in this area include the lack of recreation facilities and, in general, facilities for vulnerable groups; insufficient maintenance of the current housing stock and in particular of historical buildings; informal settlements; safety from natural hazards; and poverty.

Goris city was selected as a pilot project for the Kyiv Initiative of the European Union Cultural Heritage in Historical Towns (2009-2011) and pilot city of the project by the Council of Europe "Community-Based Urban Strategies in Historical Towns" (COMUS) in 2015-2017. Within the above-mentioned projects, urban development documents ("Initial Technical Document", "Baseline Plan", "Initial Technical Studies", "Feasibility Studies") were developed, a film about the city was shot and a brochure was published.

Goris is currently an observer member of the World Heritage Cities International Organization (OWHC) since 2015.

### CHAPTER 3.1: ANALYSIS OF THE SOCIETY AND CULTURE INDICATORS

With regard to the society and culture pillar, the following areas were evaluated: education, health, safety, housing, culture, and social inclusion.

#### Education

In the area of education, Goris has quite good results, with a good education system and good completion rates both in primary and secondary schools. The only issue is the lack of professionalizing or training courses, resulting in a lack of qualified and skilled people. Furthermore, the pyramid workshop reported a lack of recreation centres and sports infrastructures, which becomes problematic in the case of vulnerable groups, and disabled ones, in particular.

The indicators showed that 90 per cent of Goris' students are reported to be capable of using ICT devices, 65 per cent of inhabitants have completed higher education, and school enrolment has risen to 84 per cent. There is a 100 per cent literacy rate.

#### Health

In the health area, the performance of the city is quite satisfactory as well. Goris has two hospitals, one of which is specialized in cardiology. According to the opinions collected during the workshop, both hospitals work well and have enough beds for patients. However, the city needs a rehabilitation centre. Previously-collected data and the presence of a hospital specialized in cardiology are signs that heart disease could be an important health issue in Goris, or in the region at least. Looking at the results of the world health ranking,<sup>20</sup> the major cause of death in Armenia is coronary heart disease (29 per cent), followed by stroke (16 per cent) and lung cancer (5 per cent). Armenia ranks 8<sup>th</sup> in the world regarding the rate of coronary heart disease. The world health ranking also reports that, in Armenia, the main health issues are smoking, high blood pressure, obesity, cholesterol and diabetes, which are the main factors for the previously-mentioned causes of death. The country ranks 18<sup>th</sup> in the world for the percentage of men who smoke (47 per cent).

The analysed Indicators show that the general life expectancy in Goris is 74 years, which is higher than the national life expectancy in Armenia (71.5 years). There is no information regarding the share of medical resources or the maternal mortality rate.

#### Safety from natural disasters

Armenia is one of the 60 most disaster-prone countries in the world. Risks related to geophysical hazards (such as earthquakes, landslides and mudflows, hail storms, etc.) are very high. The 1988 Spitak earthquake killed thousands of people and caused great damage to property, including houses (517,000 people were left homeless).

<sup>20</sup> Available at <http://www.worldlifeexpectancy.com/country-health-profile/armenia> (last access 15 January 2016)



The Government has adopted important laws and resolutions on seismic hazard reduction and emergency management, and has revised design and construction regulations. In 2012, it adopted the National Strategy on Disaster Risk Reduction, which aims to strengthen disaster resilience, to improve the safety of individuals and society as a whole, and to contribute to sustainable development.

Goris is located in a high-risk seismic zone. The city is frequently subject to floods from the river Vararakn caused by snow melting from the mountains. During rainy periods, these flows represent a permanent danger for Goris' inhabitants, houses, historical monuments and infrastructures, and greatly affect its urban topography (i.e. changes of soil levels, etc.). The situation is exacerbated by the existing flood control facility which does not work.

The vulnerability assessment of the city shows the urgent need to implement preventive measures to control floods and to develop awareness programmes for earthquakes. In particular:

- (1). Flood risk: research suggests carrying out preventive measures in the areas identified as flooded or flood-prone areas, such as cleaning the Vararakn riverbed and flood channels; eliminating blockages; cleaning the bed of the Schori Dzor river and strengthening its dam; etc.
- (2). Earthquakes: In order to raise awareness on how to deal with an earthquake, training in kindergartens, schools and other institutions on earthquake protection could be carried out. In this regard, Goris' seismic zoning map was released in 2015 and a seismic risk map of the city approved by the Ministry of Emergency Situations.<sup>21</sup>

The inclusion of seismic risk assessment maps in economic development programmes will heighten awareness of the areas more prone to seismic risk when planning and implementing urban development activities at provincial and community levels.

There is no information in the fields of disaster mitigation plans, emergency response, information security or privacy protection.

### Housing

As mentioned in Chapter 2.1, the Republic of Armenia has a very strong housing policy which regulates both the housing and construction sectors. However, as stated in the Country Profile for Armenia,<sup>22</sup> the legal framework of the housing sector is not sufficiently developed, and some important issues (i.e. the provision of housing for socially vulnerable groups of the population; the creation of social and affordable housing and the regulation of the provision of such housing; the development of a service market for apartment building management; and the renovation and modernization of the existing housing stock) are not regulated by law.

In Goris, there is a problem regarding the maintenance of the current housing stock, which is quite old. Historical buildings, whose maintenance is regulated by law, form a large part of the housing stock, but their owners cannot afford the maintenance or cannot provide it because of incapacity due to old age. In several cases, inhabitants think that the municipality should pay for it.

According to data, access to adequate housing satisfactory, which means that housing expenditure does not amount to an excessive portion of the households' income.

Regarding housing expenditure, according to municipality representatives, all energy and utility costs of housing are estimated to amount to up to 60 per cent of total income in the winter. Housing expenditure is divided as follows: 35 per cent for gas; 26 per cent for electricity; 2 per cent for water; 1 per cent for sanitation; 3 per cent for municipal and state taxes and other utility costs; 3 per cent for garbage collection; and 30 per cent for rent. For reference, the average annual household income in Goris is 1.2 million Dram.

Slums are not considered an issue. There are 67 families of Syrian refugees currently living in temporary shelters in the city.

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<sup>21</sup> Both maps were approved according to Article 21 of the RA Law on Seismic Protection, Government Decree No. 1351-N of 25 October 2012 and Order of the Minister of Emergency Situations of the Republic of Armenia No. 100-N of February 12, 2013

<sup>22</sup> The Country Profile is available at <http://www.unecp.org/fileadmin/DAM/hlm/documents/Publications/cp.armenia.2017.pdf>

Regarding social housing, it is only possible to assign less than 1 per cent of the housing stock to social housing in the city of Goris, and due to this, the housing sector is facing several difficulties. Stakeholders pointed out that the houses provided by the municipality, and rentable at affordable prices, are insufficient to cover the needs of the city's population. This issue is common in the whole country. As indicated in the Country Profile, after Armenia's independence in 1991, mass privatization of the housing stock resulted in the emergence of a housing market. Armenia faced two problems: social housing stock almost disappeared, and a class of "poor homeowners", who could not afford the maintenance of their housing, emerged. Currently, Armenia has no legislation that ensures the development of affordable housing and the rental sector. The Government has adopted the National Strategy on Developing Social Housing Stock (2013), but it lacks regulations on a number of issues on social housing provision and the affordable rental sector. However, budget limitations make it impossible to effectively address the issues. At present, providing housing to families who cannot afford to purchase on the housing market (the homeless and those in need of better housing conditions) is a pressing problem. In recent years, in addition to families who became homeless after natural disasters (earthquakes, avalanches, landslides) and because of near-border military activities, families started living in unsafe houses which were supposed to be demolished, and refugees from the Middle East countries (ethnic Armenians) appeared.<sup>23</sup>

The quality of the housing stock is low, as many apartments and houses are in poor condition. This is the result of ineffective management by homeowners, and insufficient investment in the maintenance and repair of property by them, which is due, as mentioned before, to unaffordability and private/public competence reasons. According to the data, only 10 per cent of the housing stock can be classed as being of good quality, while 78 per cent is of modest quality, and 12 per cent is of poor quality. Furthermore, energy-efficiency measures are almost non-existent. Finally, the preservation of historical buildings is not adequately considered, especially in kindergartens and buildings where old people live. Neither group is physically or financially able to maintain these buildings in good condition.

There are no illegal settlements in Goris.

#### Culture

The cultural aspect is particularly important for the city of Goris. Due to its historical heritage and roots, its culture is part of the city's identity.

There are 56.93 hectares of historical and cultural areas. There are three libraries, but none of them can be qualified as a "smart library", that is to say, functioning as an information hub with access to Internet and electronic media.

Regarding the cultural infrastructure, in the city three museums, one gallery (and two private gallery-studios in a private house and in the nearby caves), one theatre, and one palace of culture, one children's art centre, and one cinema are located in Goris.

#### Social inclusion

The city performs quite well regarding social inclusion. According to the information collected during the workshop, 4 per cent of the population was born abroad. A significant percentage of refugees come from Iran and Syria. Migration is an important issue for the city, due to the lack of social housing and employment. According to municipal data, 17 refugee families need improvement in their housing conditions, 12 of which live in rented apartments, 3 in dormitories, and 2 in buildings customized for living. There are no homeless families among them, thanks to the provision of social housing to families that previously had no shelter.

Unemployment is the major issue for Goris; the young population, especially, perceive a lack of opportunities and perspectives, and uncertainty for the future, which incites young people to migrate to other countries, mainly to Germany and Great Britain, and sometime even further. Unemployment and low salaries generate poverty.

Gender equality is not considered an issue in Goris, since women seem to be very dynamic in the city's activities. However, according to previous data collected, only 15 per cent of city representatives are female. No information was obtained regarding gender income equity.

Public participation is quite high in the city. Even the fact-finding workshop in February showed high participation of the main urban stakeholders, including civil society. However, there is still a lack of awareness on how citizens can participate in the city decision-making processes. Goris complies with all aspects of the checklist:

- (1). the existence of rules and regulations to promote the participation of inhabitants in public affairs;
- (2). the existence of systems to promote inhabitants' engagement, such as online information and ICT-based feedback mechanisms;
- (3). the existence of a formal participatory process prior to policymaking, major public projects, etc.;
- (4). the existence of public decision-making to ensure gender and age equality.

No information is available regarding opportunities for people with special needs. However, as stated in Chapter 1.3, there is a special education school in Goris. There is a lack of infrastructure for disabled and old people. Furthermore, stakeholders mentioned that the centre for disabled people will close due to insufficient funds. The share of senior citizens older than 62 is 16 per cent, which is moderate, and the city's population has slightly declined in recent years due to a lack of job opportunities.

No information is available concerning the attractiveness of the city for skilled people.

## CHAPTER 3.2: RECOMMENDED MEASURES

With regard to the society pillar, the following list of measures was generated at the stakeholders' consultation, and later assessed by the team of local and international experts. Recommendations were made taking into account their expected benefits, the required resources, and the time required for their implementation.

Key measures in the area of society and culture are listed below, and are reported in Part V of this Report. Central issues are:

- to improve the city's economy and create more employment/business opportunities for people;
- to invest in social housing and in the maintenance of historical buildings;
- to invest in energy-efficient and resilient housing or alternative ways of housing;
- to promote a healthy lifestyle;
- to repair the existing flood control facility; and to implement effective and well-planned anti-flood measures such as the regulation of the riverbed and the anti-flood facility; and
- to engage in "smart education", with the use of ICT, and create courses to create professionals and skilled people; and
- to convert existing empty buildings to recreation or education centres.

# PART IV:

## FINANCIAL FRAMEWORK FOR URBAN DEVELOPMENT

### INTRODUCTION

According to the data provided and the comments from the relevant stakeholders, the city of Goris lacks a proper financial system. The budgetary authority of the municipality is highly restricted, with little room for manoeuvre. The purpose of finance is dynamic; it should serve the city's needs for development, and not just be used for maintenance, and for the calculation of the depreciation, of the existing social and physical infrastructure. This Part will cover this in more detail.

### CHAPTER 1: EXISTING FINANCIAL MECHANISMS FOR SUSTAINABLE URBAN DEVELOPMENT

Within the country, there is only one financial system, one state budget, and several donors and international financial institutions.

The Armenian financial sector is well represented in Goris. As of 31 December 2016, 17 commercial and 1 development banks<sup>24</sup> operate in Armenia. Six banks have fully functioning branches in Goris. There are nine ATMs for the six banks in Goris. Wages, pensions and social assistance are paid electronically. Bank accounts can be used for the electronic payment of bills, including accommodation rent. Therefore, Goris has a well-developed, although not immediately obvious, banking sector. The Law on Currency Regulation requires that all payments made within the country must be conducted in the local currency, the Dram (AMD).

The budget of Goris' municipality for 2015 was 505,189,611.40 AMD, 409,990,900 AMD of which was official grants. There was a (financial equalization) subsidy of 356,036,600 AMD. Of the official grants, 4,000,000 AMD is provided for the financing of major expenses. It is difficult for the municipality to get a commercial loan, and therefore some projects (e.g. street renovation) are financed directly by the Government. The city owns real estate, which can be sold or leased in urban development operations.

According to the Kyiv Initiative Regional Programme<sup>25</sup>, the municipality's budget in 2011 was 373,545,000 AMD. Details of income and expenditure can be seen in Table 1.

Table 1

#### Goris expenses in detail

<i>Revenues 2011 (Kyiv)</i>	<i>Revenues 2015</i>	<i>Cost structure 2011 (Kyiv)</i>
State subsidies: 83.3%	State subsidies: 81.2%	General public expenses: 21.6%
Income 16.7%, including:	Income 18.8%:	Economic relations: 5.6%
- Property and land taxes: 8.2%		Environmental protection: 7.6%
- State and local duties: 4.7%		Housing construction and municipal expenses: 4.0%
- Interest: 1.4%		Culture: 11.4%
- Other: 2.4%		Education: 42.7%
		Social security: 1.9%
		Other (reserve fund) <sup>26</sup> : 5.2%

<sup>24</sup> ACBA-Crédit Agricole Bank, Ardashinbank, Anelik Bank, Inecobank, VTB Bank (Armenia), AraratBank, Armbusinessbank, Byblos Bank Armenia, Mellat Bank, ARMECONOMBANK, Armswissbank, Converse Bank Armenia, Prometey Bank, Ameriabank, Artsakhbank, HSBC Bank Armenia, Unibank, Russian Agricultural Bank, and Panarmenian Bank.

<sup>25</sup> Kyiv Initiative Regional Programme - Rehabilitation of Cultural Heritage in Historic Towns Preliminary Technical File Goris. Council of Europe at <https://rm.coe.int/16806a3774#search=Rehabilitation%20of%20Cultural%20Heritage%20in%20Historic%20Town>

<sup>26</sup> Up to 50 per cent of the reserve fund can be channeled into the co-sponsorship of the communal programmes.

The share of own revenues, at 16.7 per cent, is lower than the average for Armenia's local governments, which was 28.9 per cent in 2011. The largest share of expenditures corresponds to education, at 42.7 per cent in 2011. Other local authorities averaged 32.5 per cent. However, in Armenia, communities continue to depend greatly on official national level grants.<sup>27</sup> There is no information as to the amounts devoted to capital expenditure; however, there was a drastic decline in capital subventions allocated to communities in the whole country due to the economic crisis.<sup>28</sup> However, if capital expenditures funded by receipts from the sales of non-financial assets are taken into account, capital expenditure goes up from 9.3 per cent to 28.9 per cent, with a large part corresponding to Yerevan.<sup>29</sup> It seems safe to conclude that the Goris municipality will likely have little room for manoeuvre to finance "smart and green investments", as most resources are already earmarked for recurrent expenses defined by legislation to fulfill its mandatory obligations.

## CHAPTER 2: OPPORTUNITIES FOR PUBLIC PRIVATE PARTNERSHIPS (PPP) OR OTHER FINANCIAL MECHANISMS

Typically, a public private partnership (PPP) will emerge when a private actor is convinced to invest time and resources in a project which will yield a strong return and which, at the same time, will produce socioeconomic benefits for the public sector. This topic will be discussed in more depth in Chapter 4.5 below.

In principle, the private partner risks some equity, which is enough of a risk buffer to attract loans and make the project "bankable". The amount of equity needed depends on the banks' assessment of the risks involved in the project. It is important to determine who the real promoter of a project is, so as to allocate responsibilities correctly, starting with the responsibility of providing the equity.

The volume of equity needed varies from one project to another. However, a start to the calculations can be made with equity of around 20 per cent of the total cost, the latter including fixed investment costs – generally upfront – and the first round of operating expenses until the project becomes self-financing from the income generated by it. It is therefore important to have a clear idea of the initial investment costs and of the operating costs per year of each of the projects proposed. Table 2 shows an example for a wastewater plant, one of the investments that it is recommended Goris carry out, according to this City Profile.<sup>30</sup> In order to identify the parameters of the project, a number of questions have to be answered as described in Chapter 7.

Table 2

### Example of investment and operating costs for a wastewater treatment plant

<i>Wastewater treatment plant for 1,000 people</i>	<i>Investment (EUR)</i>	<i>Operation (including energy) - Annual cost EUR/year</i>	<i>Investment (EUR)</i>
<i>Examples</i>	France 1998		Germany 2000
<i>Activated sludge</i>	230,000 ± 30%	11,500	380,000
<i>Aerated pond</i>	130,000 ± 50%	6,500	320,000
<i>Natural waste stabilization pond</i>	120,000 ± 60%	4,500	200,000

The information shown in Table above is old, and refers to well-off countries where the cost of labour is high. Nevertheless, it illustrates the difficulty in determining precisely the cost of a project, as it has to be adapted to each project's specific circumstances. The greatest difficulty is the "optimism bias", which is the tendency of promoters to be too optimistic in terms of forecasting project costs, scale, timing and benefits.

In order to set up a proper PPP for Goris, the first step is to identify clearly which recommendations should be addressed first, for example to set up monitoring stations for the city to find out the level of air and noise pollution caused by transit trucks, or to improve the quality of the Goris' river water.

<sup>27</sup> David Tumanyan, PhD, *Local Self-government in Armenia*, (2011), 5th edition, p. 113.

<sup>28</sup> Ibid, p. 114.

<sup>29</sup> Ibid, pp. 114, 131 and 133.

<sup>30</sup> A simple wastewater treatment facility could be realized on a low budget basis. Goris' waste water is mainly organic; a two-pond system (sludge separation and enhanced biologic treatment) with a sludge dryer (solar powered) and composter could be sufficient; (p. 32)

The next step would be to evaluate whether an investment to reduce the damage would be justified, and what the scale of such investment would be. For example, concerning the recommendations, strategies for refurbishing buildings would generate energy savings and create local jobs in insulation and window manufacture. These energy savings and indirect benefits can be evaluated to see whether they compensate for the Government's support for a PPP. In addition, the possibility of creating synergies between different areas in PPP strategies needs to be studied. For example, a water strategy could include wastewater treatment, flood prevention and hydropower.

The financial benefit of the project may be enough to allow an autonomous development of the project, relying only on the market forces and with no need for a PPP. In this case, the public sector may take the role of coordinator, so that different private projects will reinforce each other, benefit the whole society, and create a smarter city.

However, if a certain project is too costly in the short term, and its pay-back period too long to allow for purely private financing, the public sector will have to reduce the cost burden for the private promoter. This public contribution may come in the form of grants, or land if the municipality owns land and has a large enough budget. In case the public authority owns lands, it can provide it directly, or just provide the use of it, either through a lease contract or for free.

Another possibility of supporting promoters is through fees obtained through betterment levies, where property owners are taxed according to the increase in value of their property brought about by public works. Conversely, if property owners improve their own property in the same direction promoted by the local authority, their property taxes could be reduced for a short term. Direct users could also be asked to pay charges when the use of the facility is important enough, for example a parking fee applied only during the tourist season.

As local authorities cannot take out loans, they have even less access to capital markets. However, the Government can securitize specific funds directed to cities in need.

Smart city investments are based on ICT, and therefore cities need to develop partnership with private companies that bring this technology. That is why the companies in Armenia which could provide this technology and have an interest in developing their activities in Goris should be identified. Projects intended to improve citizen participation are relatively cheap because they use existing IT equipment.

### CHAPTER 3: AVAILABILITY OF FUNDS

The different funds available have limited potential, but those of the banking sector are good insofar as loans are likely to be repaid. The municipality of Goris cannot take out a loan, but private partners can, if they bring their own equity. International donors and IFIs could be attracted if projects are sound, and could bring proportionate socioeconomic benefits.

Cooperation with international and public organizations is high. In Goris, there are several international donors and IFIs (e.g. World Bank, Asian Development Bank, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), and USAID), which are already acquainted with the needs and possibilities of the city. The large number of organizations requires the coordination and concentration of efforts towards the objective of a smart and sustainable city. Donors would be willing to sponsor new projects in Goris only if those projects are of better quality than the proposals from other parts of Armenia. As for private funds, in a globalized world, their supply is unlimited so long as the project is profitable.

The projects carried out recently by the different donors and IFIs, as reported by the Community of Goris, are shown in the table below.

Table 3

**List of recent projects in the city of Goris, and related donors**

<i>Donors</i>	<i>Projects</i>
CHF International (Cooperative Housing Foundation)	<ul style="list-style-type: none"> <li>• The building of fences around the city's main waste collection points</li> <li>• The modernization of the lighting system of the city's park</li> </ul>
Save the Children	<ul style="list-style-type: none"> <li>• The reconstruction of six primary schools</li> <li>• The reconstruction of a cultural centre, named after Minstrel Ashot</li> <li>• The reconstruction of two primary schools</li> </ul>
German Organisation for Technical Cooperation (GTZ)	<ul style="list-style-type: none"> <li>• The improvement of the irrigation network. The restoration of the Spandaryan irrigation ditch and channel, and of the Shorin Gorge irrigation ditch</li> <li>• The reconstruction of the hostel's roof</li> <li>• The restoration of the sewage system</li> <li>• The refurbishment of the municipality's administrative services centre for citizens</li> </ul>
Eurasia Foundation	<ul style="list-style-type: none"> <li>• The construction of information centre</li> </ul>
USAID RTI	<ul style="list-style-type: none"> <li>• The development of a garbage removal strategy, and the adoption of a garbage removal concept</li> <li>• The provision of a scavenger machine</li> </ul>
UNHCR	<ul style="list-style-type: none"> <li>• The building of two apartment buildings for refugees</li> </ul>
Swiss Agency for Development and Cooperation	<ul style="list-style-type: none"> <li>• The building of apartments for socially disadvantaged families</li> <li>• Social apartment programme for 20 families</li> </ul>
Goris-Vienne (France) twinning cooperation	<ul style="list-style-type: none"> <li>• The creation of a tourism information centre</li> <li>• The creation of a French house (centre for French speakers)</li> <li>• The provision of medical equipment for a medical centre in Goris</li> <li>• The provision of monthly financial assistance to five primary schools</li> <li>• The provision of necessary equipment for the lighting network expansion, and the implementation of this programme by the "electricians without borders" organization</li> <li>• The provision of fireproof clothes and other property</li> <li>• The implementation of archaeological excavations in the St. Hripsime church and its surroundings in the area of the old Goris settlement, and the restoration of the church by the country's culture organization and the Ministry of Culture of Armenia</li> </ul>
"Hayastan" All Armenian Fund and the Armenian community of Marsel	<ul style="list-style-type: none"> <li>• The building of the regional cardiology centre</li> </ul>
World Bank (loans)	<ul style="list-style-type: none"> <li>• The restoration of Goris' medical centre building</li> <li>• The construction of Syunik region's first instance court building</li> </ul>
Asian Development Bank (ADB) (loans)	<ul style="list-style-type: none"> <li>• A programme of drinking water line restoration works carried out by Armenian Water and Sewerage Closed Joint Stock Company</li> </ul>
Millennium Challenge Armenia Fund	<ul style="list-style-type: none"> <li>• Restoration works on the third category irrigation network</li> </ul>
Social Investment Fund	<ul style="list-style-type: none"> <li>• The restoration of a high school building</li> </ul>

As seen in this Profile, the city has issues with solid waste management and wastewater treatment, energy efficiency in housing, flood prevention, the insufficient maintenance of buildings, the preservation of historical buildings, the high unemployment rate, a lack of training courses, sport infrastructure, traffic and pedestrian accessibility.

The most attractive projects are those that generate revenue or socioeconomic benefits. Revenue can be generated through payment by the following stakeholders: direct users, polluters, indirect beneficiaries, and taxpayers. In all cases, they need to see their benefit or service. Financial mechanisms are a link between the initial expenses and the final benefits, which have to cover the funds advanced in one way or another.

Financial mechanisms depend on the actors. Public utilities companies can be involved, for instance in the case of the electrical grid, and as they are solvent they have access to banking loans. Otherwise, ICT firms can make in-kind contributions or use the city as a demonstration project independently. In other cases, the municipality or the public transport firm is involved.

The question now is to what extent users can be involved. For example, in the case of the by-passes foreseen in the Physical Infrastructure section in Part III of this Profile, trucks in transit could be requested to pay tolls to finance the by-pass, saving them time and fuel. Any increase in the value of the real estate along the current transit roads could also be used – through betterment levies - to finance the by-passes.

The capacity of firms and citizens to bear charges is limited, and depends on their economic situation and on their willingness to invest money and time in the development of Goris as a smart city.

While Goris' potential in tourism and culture is great, the industrial and economic sectors are, conversely, weak. As mentioned in Part I, the active companies located in the city are part of the following main spheres:

- Electricity production;
- Agricultural production;
- Construction stone processing;
- Major and ongoing construction;
- Wholesale and retail trade of building materials;
- Household and food retail trade; and
- Provision of services in the area of tourism.

Among them are the firms listed below:

- **Gamma** open joint stock company (OJSC) specializes in the production of accurate devices, and currently has a small production;
- The textile factory, **Textile Zangezur CJSC**, specializes in the production of goods from heavy duty fabrics, and currently operates at 10-20 per cent of its potential;
- **Goris knitwear factory** OJSC specializes in the production of knitwear, but is currently not operational;
- The "**Bonus Building**" company was established at the "Goris "Microengine"" factory in 2007. Its main activity is sandwich-panel production;
- There is a branch of **Armen-carpet OJSC** in Goris but it is not operational;
- **Elola** company specializes in dairy products; and
- **Zangezur Copper and Molybdenum Combine (ZCMC)** is a mining industry enterprise situated in Kajaran in the province of Syunik.

Active companies also export their production. Moreover, more than 16 hotels and guesthouses with international clients operate in Goris. There are also a military barracks, which brings additional spending capacity to the city.



## CHAPTER 5: LINK BETWEEN POLICY AND THE BANKING SYSTEM

The Armenian banking system is robust and well-developed and, as mentioned above, there are several IFIs and international donors active in Goris.

One problem on the supply side is that banks ask for high collateral and provide short maturities, usually, not longer than 10 years. Voluntary participation is crucial. The city owns real estate, which can be sold or leased and, given the scarcity of municipal budgetary funds, this could be what attracts PPP to the city.

## CHAPTER 6: ROLE OF NATIONAL OR LOCAL FINANCE AUTHORITIES

National or local finance authorities should participate in any endeavour, in particular with the local banking community, as advisers regarding, and links with, Yerevan's financial institutions. Local banks can also help determine whether a project is bankable or not, and what it needs to become bankable.

Given the fact that local banks ask for high collateral and international donors are very strict when assessing the viability of projects, project appraisal has to be very rigorous. International donors and IFIs expect governments to finance a part of any project, in order to demonstrate the importance of the project for the beneficiary country. Therefore, the willingness of an international donor to invest will be to no avail if the Armenian authorities show no interest. In this respect, since Goris has been selected by the State Urban Development Committee as the pilot city to become a smart city, it would be expected that it will be given the means (funds, commitment, etc.) to implement the Profile's recommendations. The example of Goris could be replicated and scaled up in other cities.

One of the problems that national financial authorities can help with is to deal with depreciation risks. Hedging exists, but it can become very expensive. Income for the projects should be in the national currency, since it is not prudent to take debt in dollars or euro, as the highest risk is if the Dram depreciates, reimbursement costs in hard currency would be hard to meet. A possibility would be to obtain loans in Russian rubles, as the Armenian economy is, to some extent, linked to the Russian one, in particular through remittances. However, in this case risk coverage would also be needed (e.g., if the price of oil recovers). Moreover, Armenian commercial banks may not be acquainted with this kind of lending product. The national financial system in Drams is negligible, with maturities of under 8 or 10 years, and high collateral requirements. International donors and IFIs ask that the exchange rate risk be covered by the Central Bank of Armenia. This could also be necessary if loans are taken out in rubles.

Therefore, the best outcome would appear to be to convince an international donor to lend in a hard currency, with long maturities and reasonable collateral requirements, while having the exchange rate covered by the Central Bank of Armenia. Other possibilities would be to have recourse to the limited possibilities and strict conditions of domestic banks, or to explore the possibility of borrowing in ruble, perhaps with official hedging or guarantee support from Armenian or Russian official financial institutions. In any case, projects should be sound enough to satisfy the most stringent due diligence appraisal.

## CHAPTER 7: GENERAL RECOMMENDATIONS FOR A GOOD FINANCIAL IMPLEMENTATION PLAN

According to the suggested recommendations shown in Annex I of this Profile, a kind of "financing guide" could be drafted. Some of these projects are very clear and specific, like constructing a wastewater treatment plant. However, some other projects, such as attracting foreign investment, or facilitating entrepreneurship and the opening of new business, are extremely broad as, in the absence of a large consumer market, firms are attracted by good communications, a skilled workforce, legal security and affordable building land for SMEs and firms in general.

However, judging from developments in European towns with a similar cultural and tourist leaning, it seems safe to assume that, sooner or later, a road bypass will be constructed on the Yerevan-Iranian border axis, and an industrial zone will be created connected to it, in order to free the centre of Goris from heavy traffic and industrial sites, while gradually creating a pedestrian commercial zone in the main street there. Touristic-

cultural cities should be clean, keeping industry at arm's length. This "standard" vision would require implementing several larger, costly public projects (e.g. a waste water treatment plant, and in the future a bypass and an industrial zone) and many smaller projects in the centre of the city, either publicly or privately financed. PPPs could be used for large or small projects, although they are more appropriate for the former.

Many of the projects identified in the list of recommendations, presented in Annex I, could be implemented by redeploying the current municipality budget or by creating new ones; some could be carried out by asking the residents or commercial sponsors for voluntary contributions, whether monetary or in-kind; only a minority of the projects currently envisaged could require having recourse to the financial system. With this in mind, the following guidelines are proposed for a "financial implementation plan":

1. **Simplicity of financial schemes:** Given the existing regulatory constraints and scarcity of financial resources, Goris' financing schemes should be kept simple and robust. Even the larger projects do not require complex financing structures; in any case, these would not be available, as the financial instruments that the Armenian financial system deploy are good but quite basic. Moreover, the city has little experience in the setting up of PPPs or project finance schemes, even those that are purely public.
2. **Keep a close watch on transaction and organization costs:** PPPs involve transaction and organization costs. These are very low when only coordination between parties is involved, but they increase when contractual relations are established, and grow even more if project vehicle firms are set up, which does not seem necessary in the case of Goris. Thus, all alternatives have to be compared to find the most efficient and economical one, including purely public or purely private production of goods and services.
3. **Prefer the city's own funds:** It is better, as a general rule, to favour using the city's own funds than relying on external or third-party funds, which need to be reimbursed and remunerated. If external funds are used, it is better to first opt for grants, from either the Government or international donors, or both, or concessional loans from IFIs. These partners bring a great deal of "know-how" to projects, and can (generally) be trusted. The project manager would possibly need to be an Armenian public enterprise or ministry, given the existing constraints. International donors will not provide grants, though, if the country does not bring in its own (smaller) layer of subsidies, and IFIs will also ask for government guarantees, including those related to exchange rate risks. Revenue could be generated from the sale or rent of new industrial land, for logistics and industry, alongside the new Yerevan-Iran bypass.
4. **Assign priority to the maintenance and repair of existing assets:** The maintenance and repair of Goris' existing assets should, in principle, be given priority over new works. Moreover, in general, local human resources and human capital should be given preference over external ones, as Goris has a regional pool of expertise, in particular concerning health services and education.
5. **Select reliable partners:** Well-established, solvent partners, with a good track record, should be preferred. Those bringing in more equity should be chosen. As for loans, those with fixed interest rates should be preferred over those with flexible rates, and those in the local currency over those in foreign currency.
6. **Complete the project within time and budget:** The project should be completed in time and within the budget, avoiding cost overruns and delays where interest costs can snowball.
7. **Be careful about grace periods and long maturities:** Grace periods (i.e. the time when no capital or principal of the loan is to be reimbursed) and long maturities are useful but expensive, as interest keeps compounding while the capital is not reimbursed or is paid back slowly. Similarly, interest on long-term loans is generally higher than that on shorter term loans, as the risks involved over a longer period are higher.
8. **Establish a long-term financial plan:** It is crucial for the city to establish a long-term financial plan (e.g., up to 2026) for the implementation of the current smart city programme. The financial plans of the programme and its projects should show all committed and foreseeable cash-flows for each year, including all initial outflows during the construction period, and subsequent outflows and inflows when the project becomes operational. The financial rate of return, derived from the comparison between discounted outflows and inflows, could also be worked out, if inflows (e.g., taxes or fees for waste collection or water consumption) exist.

9. **Make sure that expenses can be covered:** The municipality should make sure that all possible capital expenses (e.g., work progress certificates, debt service) and recurrent expenses (wages, lease payments, rent, and maintenance) will be covered by either a safe and legally established revenue and by the municipality budget, or by the firm in charge of the project.
10. **Find new ways to generate income:** In practice, getting a loan is very difficult for Goris' authorities because of the need to ask for governmental authorization and to provide guarantees to commercial banks. Since the city's budget is very limited and is already dedicated to current expenses, new resources should be found, for example by enforcing the principles that the "polluter should pay" and that the user should pay for the services of the infrastructure used.
11. **Determine attractive and financially feasible projects:** The first step in determining attractive projects is to identify the main urban infrastructure and public equipment gaps, for which there is an evident unsatisfied large demand. This was the aim of this Report, and a list of activities with a priority score is given below. Once the list has been drawn up, the most feasible projects in financial terms should be identified and implemented, paying attention to the linkages between them.
12. **Assess the socioeconomic benefits of projects:** Potential international donors/IFIs will expect the socioeconomic benefits to be greater than the cost of the project. An in-depth evaluation of these benefits should be carried out (e.g., pollution reduction, health improvements, time savings, energy savings, safety improvements).
13. **Reach critical mass:** Possibilities of collaboration in the surrounding area should be studied, in order to widen funding opportunities for projects of shared interest. For example, cleaning wastewater and repairing the flood control facility (EN5) benefit the populations downstream.
14. **Give priority to small and medium projects:** Since, in practice, only companies can take out loans, PPPs become more important, as they are the only way to attract debt financing to the city. Private promoters should provide an equity layer proportionate to the risks incurred. Since the Armenian banking sector provides maturities that are quite short, around eight years, the payback period of investments should also be short, allowing investors to recover some 12 per cent of the debt-backed investment per year, including financing costs and the reimbursement of debt principal. This could be suitable for small and medium projects.
15. **Consider whether a project is fully or partially self-financing:** A project can be fully or, more often, partially self-financing if it generates revenues. The revenues could be user charges, charges for polluters, or betterment levies on indirect beneficiaries. User charges, such as taxes, are not popular; however, they have the advantage of being borne by the beneficiary of the service and not by the general public. Typically, users agree more easily to pay small fees, such as parking charges in city centres, or tolls for individual tranches of major infrastructure like tunnels or bridges, or bags for solid waste collection.
16. **Present the reforms like a package of complementary and valuable items:** The reform agenda has more chances of succeeding if it is presented as a package where measures complement each other and different stakeholders benefit from different items. These measures do not need to come about simultaneously. Instead the package can correspond to a long-term vision unfolding in different short-, medium- and long-term stages (in periods of from two to five years, as indicated in the recommendations). Foreign and national investors would have an interest in the long-term development of Goris, and would be very interested in knowing the investment plans of the municipality for the next 10 or more years.
17. **Plan for projects which envision a smarter and more sustainable Goris:** A large package would possibly pass if it was anchored within another large project. For example, the road bypass within the project of the commercial main street. A possible first step to a full urban renewal development plan for Goris could be to create a smart building in a single new or refurbished landmark, signalling the city's commitment to a smart and green future.

## **BOX 1: EXAMPLES OF FINANCING FOR MEDIUM AND LARGE PROJECTS**

### **MEDIUM PROJECT: WASTE-WATER TREATMENT PLANT**

In such cases, the city of Goris could establish leasing arrangements with private firms, where the latter provide turnkey projects. This means that the construction risks and the financing costs of the construction lie with the contractor carrying out the construction.

The city could provide land, to reduce the cost of construction, either selling it, or providing it for free or with a low rent. In this case, the city could be in charge of the operation and the risks derived from it, or it could leave the operation in the hands of the construction contractor.

In either case, it could also establish fees for waste-water treatment in proportion to water consumption and kinds of use. Contractors would, in all likelihood, be granted exclusive rights of provision of the service, as a way of centralizing scarce demand to a single supplier.

### **LARGE PROJECTS: ROAD CONSTRUCTION AND THE CREATION OF THE INDUSTRIAL AREA**

In such cases, the participation of international donors is needed. This would require providing grants, and IFIs making long-term loans available (up to 20 years) with grace-periods proportionate to the construction period (up to 4 years).

# PART V:

## SUMMARY OF THE RECOMMENDATIONS

### INTRODUCTION

With regard to the three pillars of economy, environment, and society and culture, a key outcome of the expert workshop and stakeholder consultation was a first list of measures that are absolutely necessary to improve the economic, environmental and sociocultural situation of the city of Goris. This list was evaluated based on expert opinion (from the Environment Agency Austria (EAA), the UNECE and International Society of City and Regional Planners (ISOCARP)). The measures were analyzed according to their benefits, the required resources, and whether they could be realized on a short-term basis.

It is clear that the proposed recommendations have financial implications and therefore in the Annex I, recommended measures are listed for projects to be implemented in the city of Goris in order for the city to become smarter and more sustainable. As recommended under the financial part, the city of Goris should start to implement activities that have lower costs while seeking funding for some of the priority activities of greater importance through project proposals and discussions with private and banking investors. As a general comment, the experts suggest that a close cooperation among national government, banking and private sector is encouraged since all of these recommendations would need strong support from these stakeholders.

### SUMMARY OF RECOMMENDATIONS

#### ECONOMY

Financial measures are important for increasing the employment rate and improving the living conditions of the inhabitants of the city of Goris. In this regard, the attraction of foreign investment is critical. In order to facilitate this process, the municipality should present a good investment plan which includes the financing of infrastructure rehabilitation, skills improvement and land prices information. This could make the region or the city more attractive to investors, and ensure a more stable economic situation.

Another important economic measure for increasing the competitiveness of the city is entrepreneurship and the creation of good and easy access to finance for start-ups and entrepreneurs. Some relevant actions could be: the creation of incubators for start-ups which offer free office space over three years or until the business becomes profitable. As a longer-term action, a technopark could also be hosted in the city. The development of SMEs would require national investment in the form of tax relief and fiscal advantages for entrepreneurs, and information and awareness programmes to support them. Due to the high level of education in the city, and strong investment in this field, academic institutions should encourage students to network and to exchange information and expertise at the local, regional and national levels, by organizing conferences, seminars and field visits.

Goris focuses on its cultural and historical heritage which, in turn, can attract tourists. In order to foster tourism, several actions could be implemented within a relatively short-term period. These include: the creation of a tourist information centre, maybe in an existing historical building; city promotion through various events; and improvement of the city's webpage information.

The introduction of affordable and cleaner technologies for the city is one of the most important priorities for Goris' development. This process will take from two to five years to develop, and will see the realization of several activities, including: the construction of a biological sewage plant; the use of regional natural stones for buildings and infrastructure; the improvement of insulation and the efficiency of windows. On a financial level, the reduction of property taxes could be implemented for new buildings built using local stone or for the replacement of existing windows with energy-efficient materials. This particular measure would require the development of skills and stronger cooperation with the relevant stakeholders.

As mentioned above, the housing stock is quite old and in bad condition, but it is abundant. Existing buildings or abandoned facilities could be converted and reused, for example to host SMEs, with the help and support

of the city administration, or could be transformed into recreation centres or community centres for young or old people.

Fostering economic growth would require the improvement of road efficiency and environmental quality. Some recommended actions would include the revision of the entire street plan for the city and, in particular, the regulation and improvement of the street network by building cable cars, elevators and pedestrian roads, and removing the main roads from the city centre so as to reduce transport noise and pollution.

A general recommendation in all three areas is to find and introduce urban solutions which include ICTs.

## ENVIRONMENT

Environmental measures for the city of Goris mostly refer to the construction of new, or the reparation of existing, infrastructure. In particular, the construction of a wastewater treatment plant, green areas, green sanitation protection zones, and air quality monitoring systems are needed, together with the reparation of the existing flood control facility. These infrastructure projects should be financed using appropriate financing mechanisms, for example a PPP model, to support the sustainability of the project itself and the training of the relevant personnel.

Due to the fact that waste is a significant problem in Goris' and its surroundings, a waste management plan should be developed. This would include awareness-raising regarding waste collection and disposal; the identification of possible job opportunities in this area; and punitive measures for illegal behaviour or incentives for recycling. Public awareness is critical, hence courses at school level would also be fundamental.

## SOCIETY AND CULTURE

The key recommendations in the areas of society and culture deal mostly with housing, safety from natural disasters, education and health.

Some of the measure are related to the economic dimension of this Profile and to the creation of a more competitive and stable financial framework. Large scale activities and programs targeting job creation and opportunities for employment of the local population should be put in practice and will have significant positive impact on the socio-economic situation of Goris and prevent internal and external migration processes.

As mentioned above, housing and the maintenance of historical buildings are big concerns for the city, due to the lack of affordable and social housing, the poor condition of the housing stock and the unaffordability of its maintenance. In order to overcome these issues, there is no need to build new houses, but an investment is needed for the conversion of existing buildings, especially historical buildings, into business, social and recreation centres. Through the use of governmental incentives, apartments could be retrofitted to become more energy efficient or to install sensors and other ICTs. At the same time, new housing options should be investigated, such as co-habitation which involves shared maintenance costs and lower expenditures.

Taking into account UN Sustainable Development Goal 11, the city's development measures should take into account the principle of "universal design", and create buildings, products and environments that are equally accessible also to vulnerable groups, including old people and people with disabilities.

Education, in particular on ICTs and information sciences, should be pursued and strengthened, as well as training courses for adults and the elderly, and civic education in schools.

Since Goris is greatly affected by earthquakes and floods, the elaboration of disaster mitigation plans and early warning systems are much needed. At the same time, flood-prone areas in the city need preventive measures, and investments should be made for the cleaning of the Vararakn riverbed and flood channels; eliminating blockages; cleaning the bed of the Schori Dzor river and strengthening its dam, etc.

Finally, due to the high incidence of cardio-vascular diseases due to obesity issues, it is also recommended to have healthy-lifestyle courses in schools and companies, and health campaigns.

# ANNEX I:

## TABLES ON RECOMMENDED MEASURES

This Annex lists all the recommended measures, their relative actions, and a priority score ranging from 1 (highest priority) to 3 (lowest priority). It also shows the benefits and resources/efforts which are given in H (high), M (medium) and L (low) scores.

### ECONOMY

Measures and implementation			Objectives		Resources and efforts (technical, human, financial)	Recommended Activities	Priority
<b>Affordable technologies to improve infrastructure</b>	medium term: 2-5 years	H	To start introducing affordable technology, for the transition to a smarter and more sustainable city	H	Specific knowledge and expertise needed in the city administration for efficient planning and implementation; cooperation with financial institutions and funding donors	<ul style="list-style-type: none"><li>• Biological sewage plant</li><li>• Use of regional natural stones for buildings and infrastructure</li><li>• Improvement in energy-efficiency in windows</li><li>• Reduction of property taxes on new buildings built using local stone</li><li>• Reduction of property taxes on buildings refurbishing their windows with energy-efficient materials</li></ul>	1
<b>Tourism and culture information and promotion</b>	short term: <2 years	M	To foster tourism and the local identity	L	Activity plan in cooperation with artists, gastronomical experts, cultural events, adventure and nature tourism, and with the region of Syunik	<ul style="list-style-type: none"><li>• Creation of a tourist information centre, maybe in an existing building</li><li>• City promotion through various future events, as well as a business fair to promote local companies and attract students from universities</li><li>• Improvement of the Goris homepage regarding events and tourist infrastructure</li><li>• Search for result-linked subsidies</li></ul>	1
<b>Attract foreign investments</b>	long term: >5 years	H	To create new jobs, enhance the competitiveness of the city, and increase economic growth	H	Invest funds to make the region more attractive to investors Ensure a stable economic situation	Present a good investment programme concerning communications infrastructure, skills improvement and land prices	1
<b>Facilitate entrepreneurship and the opening of new businesses</b>	medium term: 2-5 years	H	To create new jobs, enhance the competitiveness of the city, and increase economic growth/development	M	Public investment in fostering innovation with an appropriate mix of direct and indirect financial instruments	<ul style="list-style-type: none"><li>• Create good and easy access to finance for start-ups</li><li>• Offer subsidised office space for SMEs for specific period of time (incubation period). Existing</li></ul>	1



<b>Affordable building ground for new SMEs</b>					Development of information and awareness programmes, such as an "entrepreneurship day"	buildings and abandoned facilities (brownfields) could be reused with the help and support of the city administration • Attract more registered SMEs and new SMEs; a new technopark could be created	
<b>Creation of a proper framework for growth</b>	long term: >5 years	H	To enforce the creation of a strong private sector; and  To build a base for stable growth	H	Need for ministerial actions throughout the country  Requires support from the central Government <sup>31</sup>	Attract foreign investment, and facilitate entrepreneurship and the opening of new business	1
<b>Decentralization of national investments (social equity)</b>	long term: >5 years	H	To foster economic development in the region	H/M	The Government should financially contribute to the Goris smart city exercise	Free up some capital that can be invested in the territory	3
<b>Conversion of existing buildings into recreation centres</b>	short term: < 2 years	H	To make the city more attractive Increase the living environment and living conditions  To increase health condition of inhabitants (sport centres)  and the sense of community by involving inhabitants in the project  To use existing buildings and resources	M	Financial efforts to support the conversion of existing buildings are required.  In kind contributions of inhabitants, artisans, local workers can also sought.	Consider finding sponsors in particular in the IT sector. Subsidies and publicity can also bring resources.	3
<b>Science based industry</b>	medium term: 2 - 5 yrs	H	To use knowledge and skills of Goris' citizens, of the university of Goris and their network	M	Experience and networking is needed; a promoting co-operation with SMEs and the university has to be initiated	• Deploy knowledge and skills of Goris' citizens, of the university of Goris and their network • Promote exchanges just by providing places where to meet	2
<b>Improve road efficiency</b>	medium term: 2 - 5 yrs	H	Improve road efficiency and environmental quality	M	Public-private partnerships can be used in all cases as funds need to be sought	• Remove the roads from the city territory to free the centre from transport noise and pollution and turn existing road into pedestrian areas; • Regulate and improve the street network, by building cable cars, elevators and pedestrian streets	1

<sup>31</sup> According to Article 15, Part 3 of the RA Law on Property Tax and Article 10 of the RA Land Tax Law, the Council of Aldermen may establish land tax and land tax privileges in accordance with the procedure established by the Government of the Republic of Armenia.

## ENVIRONMENT

<i>Measures and implementation</i>		<i>Objectives</i>		<i>Resources and efforts (technical, human, financial)</i>		<i>Activities</i>	<i>Priority</i>
<b>Create new green public areas and sanitation protected zones</b>	short term: <2 years	H	To increase living conditions and improve the health of inhabitants; To reduce CO <sub>2</sub> in air	L	Funds from the municipality Crowd (citizen) funding Citizen's "in-kind contributions" in terms of working hours should be considered	<ul style="list-style-type: none"> <li>• Creation of green public areas</li> <li>• Green sanitation protection zones</li> </ul>	1
<b>Establish waste management facility (i.e. collection and treatment)</b>	short term: <2 years	H	Littering, back yard burning and illegal dumps affect the whole city. Turning waste into a resource that provides job opportunities is a new business avenue in Armenia that has not yet been explored	M	The municipality could set fines for illegal behaviours, and implement paying services for customers, in addition to having its own resources. Employ a collectivity to manage waste collection in public parks/areas	<ul style="list-style-type: none"> <li>• Introduce fines for illegal discharges, make inhabitants pay for waste collection (e.g. by selling municipality plastic bags), grant the exclusive use of recycling value to collection entrepreneur</li> <li>• Establish a waste management plan and identify job opportunities in this area</li> </ul>	1
<b>Public awareness "waste is a resource" programme</b>	short term: <2 years	H	To improve the environmental conditions of the city and make the city more attractive to people and tourists	L	This measure could be mostly achieved by the municipality with its own resources	Bring speakers from the local university, energy companies, the Government and concerned NGOs, using as few subsidies as possible	1
<b>Build a wastewater treatment plant</b>	medium term: 2-5 years	H	To improve the river water quality, for a positive impact on tourism	M	A simple wastewater treatment facility could be realized on a low budget basis, since Goris wastewater is mainly organic: a two-pond system (sludge separation and enhanced biologic treatment) with sludge dryer (solar powered) and composter	<ul style="list-style-type: none"> <li>• Launch a competition to provide wastewater treatment plant services through a leasing agreement</li> <li>• Introduce fees on the volume of water consumed and the kind of use, to pay for the lease agreement</li> <li>• Develop the plant</li> </ul>	2
<b>Monitor air and water quality</b>	medium term: 2-5 years	M	To improve the environmental quality of the city. Air pollution is not considered a major problem in Goris, as none of the polluting plants function, and the number of cars are limited on all streets except Syunik Street	M		Create an air pollution monitoring system	3

## SOCIETY AND CULTURE

<i>Measures and implementation</i>		<i>Objectives</i>		<i>Resources and efforts (technical, human, financial)</i>		<i>Activities</i>	<i>Priority</i>
<b>Construction of social houses (housing)</b>	long term: >5 years	H	To help people buy/rent a house in the city. Citizens complained about the lack of social houses. People cannot afford to buy/rent a house	H	Very high capital expenditure, but huge benefits for people. Resources could be found in the form of subsidies to the buyers/renters, and in the city's funds	<ul style="list-style-type: none"> <li>Provide rent-free land, retaining municipal ownership</li> <li>Make citizens pay soft rents, provide targeted subsidies, e.g. linked to energy efficiency</li> </ul>	1
<b>Encourage co-housing (housing)</b>	medium term: 2-5 years	M	To help people buy/rent a house in the city. An alternative solution to social housing, since it could give the same result, but is cheaper. Its benefits include interaction among neighbours for social, practical, economic and environmental benefits	H	High capital expenditure but huge benefits for the people. Resources could be found in the form of subsidies to the buyers/renters, and in the city's funds. The municipality could restore current buildings and adapt them	Encourage a favourable (national or local) tax treatment, permits and targeted subsidies	2
<b>"Healthy minds for healthy people" awareness programme</b>	short term: <2 years	M	To improve health of people. Many diseases and deaths could be avoided by adopting a healthy lifestyle	L	Costs include hiring a doctor/nurse who could give courses in schools or, when needed, renting a room for adult courses. Campaigns should be aided by local health professionals, as Goris is a regional pool of expertise. Rooms could be provided, and wages of health professionals could be supplemented	<ul style="list-style-type: none"> <li>Health courses in schools and companies</li> <li>Health campaigns</li> </ul>	2
<b>Creation of professional courses for young people and adults</b>	short term: <2 years	M	To foster skills and encourage continuous learning for adults	L	Resources could include hiring teachers and maybe renting a room (not necessary for evening courses). Local academic professionals could be used, as Goris is a regional centre for higher and professional learning	Creation of adult courses, vocational training and professional training for adults, older people and young people	2
<b>Maintain historical buildings (housing)</b>	long term: >5 years	M	To reinforce the cultural identity of the community	H	Medium to high capital expenditure, depending on the intervention. Find high quality commercial sponsors, use crowdfunding, seek support from region or central government	Maintain historical buildings	3
<b>Restore and maintain cultural heritage</b>	medium term: 2-5 years	H	To support local identity and tourism	H	Smart fundraising to restore existing sites of cultural heritage is necessary. Find high quality	Restore and maintain cultural heritage sites	2

commercial sponsors, use crowdfunding, seek support from region or central government

<b>Repair the current flood control facility</b>	medium term: 2-5 years	M	To better contain floods which occur on a regular basis	M	See whether costs could be shared by the river community; seek support from regional or central government	Reparation of the current flood control facility	2
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## ANNEX II:

# ANALYSIS OF THE INDICATORS: TABLES

### Economy Indicators tested in Goris, according to data availability and relevance

Indicator name	Unit	Reported data	Relevance	Assessment and comments	Description
<b>C1.1.1 Internet access in households<sup>32</sup></b>	[%]	40-60%	medium	The participants in the stakeholders' consultation estimated a 75% household penetration. This is quite a high value but is similar to the average value reported for Armenia by the national statistics.	Proportion of households with Internet access for any household member via a fixed or mobile network at any given time
<b>C1.1.2 Electronic device penetration<sup>33</sup></b>	[%]	40-90%	low	The availability of computers in private households is satisfactory. The national average was 57% in 2014. <sup>34</sup>	Proportion of households with at least one computer or similar device (tablet, smart phone, etc.)
<b>A1.1.2 Wireless broadband subscriptions</b>	[%]	65%	medium	The reported figure of 65% is possible due to the rapid growth of ICT usage. According to ITU-UNESCO, mobile broadband subscriptions were 34% countrywide in 2014. <sup>35</sup>	Wireless-broadband subscriptions per 100 inhabitants
<b>A1.1.3 Fixed broadband subscriptions</b>	[%]	50%	medium	The reported figure is possible due to the rapid growth of ICT usage. In 2014, fixed broadband subscriptions in Armenia (at the national level) amounted to 9.1 per 100 inhabitants (ITU-UNESCO). <sup>36</sup>	Fixed (wired) broadband subscriptions per 100 inhabitants
<b>C1.2.1 R&amp;D expenditure</b>	[%]	10-15%	medium	The reported figure is exceedingly high, compared to the national average of 0.24% between 2005 and 2014. The EU target according to the Lisbon strategy is 3% of GDP.	This indicates the R&D expenditure at city level
<b>C1.3.1 Employment trends</b>	[%]	12% baseline missing	high	A general lack of job opportunities caused an emigration trend in the past.	Improvement in employment figures compared to a baseline

<sup>32</sup> Data provided by Goris Municipality in 2015

<sup>33</sup> Data provided by Goris Municipality in 2015

<sup>34</sup> National Statistical Service of the Republic of Armenia, Armenia Millennium Development Goals Indicators. Available at: <http://www.armstat.am/en/?nid=180>

<sup>35</sup> ITU, UNESCO (2015): The State of Broadband 2015. Available at: <http://www.broadbandcommission.org/documents/reports/bb-annualreport2015.pdf>

<sup>36</sup> Ibid.

<b>A1.3.1 Creative industry employment</b>	[%]	5%	high		Proportion of employees working in start-ups and in the creative industry in the city compared to the total employed workforce
<b>A1.3.2 Tourism industry employment</b>	[%]	5%	high		Proportion of employees working in the tourism industry in the city compared to the total employed workforce
<b>C1.4.1 e-Commerce transactions</b>	[No./cap.]	No data available	low		Number of e-commerce transactions per capita
<b>A1.5.3 SME trends</b>	[No./1,000 inhabitants]	38/1,000 inhabitants	high	780 SMEs are registered in Goris.	Increase in SMEs, compared to a baseline
<b>C1.6.1 Smart water meters</b>	[%]	100%	medium	Available data provided by the Marzpeteran (the Marz Governor office).	Proportion of water consumers (including households, companies, etc.) with smart water meters
<b>A1.6.1 Water system leakages</b>	[%]	54,5%	medium	Annual consumption of drinking water given as 1,629,600 m3, with losses of 54.5%. Although losses are high, Goris is rich in water and does not face water shortages.	Percentage of water lost in the water distribution system
<b>C1.6.2 Smart electricity meters</b>	[%]	40%	low	Experts refer to 572.5 kWh/inhabitant, from the national statistics for Goris households.	Proportion of electricity consumers (including households, companies, etc.) with smart electricity meters
<b>A1.6.2 Sporting facilities</b>	[No./1,000 inhabitants]	1/1,000 inhabitants	medium		Number of total sports facilities (free and fee-paying) per 1,000 inhabitants
<b>C1.6.3 Reliability of the electricity system</b>	[%]	100%	low		Share of all EVs (Battery Electric Vehicles (BEVs), Plug-In Hybrid Electric Vehicles (PHEVs), Range Extended Electric Vehicles/Range Extender (REEVs/REXs), Fuel Cell Electric Vehicles (FCEV)) in public fleets, compared to total vehicles
<b>C1.6.4 Public transport network</b>	[km/km <sup>2</sup> ]	1)120/50 1)120/6* 2)42/50 2)42/6* [km/km <sup>2</sup> ]	medium	Data without an asterisk refers to the city administrative area outside the city itself; other data refers to the urbanized area of the city.	Accumulative total of various transport networks in the city area (in km per km <sup>2</sup> )
<b>Goris pedestrian infrastructure</b>	[km/km <sup>2</sup> ]	7.7 [km/km <sup>2</sup> ]	low	Indicator added by Goris Municipality. City street network total length of 77.8 km, including 57.8 km of sidewalks, and 20 km of low-intensity traffic roads. Indicator applies to the built-up (urbanized) area of the city and to the 250 m pedestrian street (part of Komitas St.).	The total length of pedestrian, car free and traffic calming streets divided by the city surface area

<b>Real travel time (public transport)</b>	minutes	15		Indicator added by Goris Municipality.	Average time in minutes for a one-way work trip. This is an average, over all modes of transport.
<b>C1.6.5 Road traffic efficiency</b>	[km/h]	30-40 km/h	medium		Annual average speed measured during specific hours for public transport vehicles on the major roads everyday (in km/h)
<b>C1.6.6 Real-time public transport information</b>	[%]	0%	low		Proportion of public transport stops and stations with real-time traffic information available (via electronic bus bulletin boards, smartphone apps, etc.)
<b>C1.6.7 Share of EVs</b>	[%]	0%	low		Share of all EVs (BEV, PHEV, REEV/REX, FCEV) in public fleets, compared to total vehicles
<b>A1.6.3 Traffic monitoring</b>	[%]	0%	low		Proportion of streets with traffic monitoring systems (e.g., using sensors to produce traffic volume maps, etc)
<b>Goris urban development and spatial planning documents</b>	[yes/no]	yes yes/no	medium	Indicator added by Goris Municipality. The General Settlement Plan of RA (strategy of the country for territorial and economy development planning) approved in 2004 and monitoring started in 2008. The Master Plan of Goris city was approved in 2006. Currently, 'ARMPROJECT' OJSC is carrying out work on amending the Master Plan and developing a detailed plan of the city's historical centre (in progress).	Existence of strategic city planning documents promoting compact development, mixed urban land use, and avoiding urban sprawl
<b>A1.6.4 Integrated management in public buildings</b>	[%]	0%	medium		Proportion of public buildings using integrated systems to automate building management and create a flexible, effective, comfortable and secure environment. NOTE – integrated systems include building management, communication and control systems, etc.



## Environment indicators tested in Goris according to data availability and relevance

<i>Indicator name</i>	<i>Unit</i>	<i>Reported data</i>	<i>Relevance</i>	<i>Assessments and comments</i>	<i>Description</i>
<b>C2.1.1 Air pollution</b>	[PM10 and PM2,59]	No data available	low	Air pollutants are monitored in neighbouring cities. It can be assumed that air pollution is not a major problem, due to low traffic and the absence of heavy industry.	Ambient air pollution concentrations of ozone and particulate matter (PM10, and PM2.5), which are the major pollutants
<b>C2.1.2 GHG emissions</b>	[ton/capita]	No data available	high	They are monitored for the entire region of Syunik. There is no relevant data for the city of Goris.	Amount of CO <sub>2</sub> equivalent emissions per capita
<b>A2.1.1 Air pollution monitoring system</b>	[%]	No data available	low		Proportion of city area covered by outdoor ICT-based monitoring systems for particles and toxic substances. NOTE - ICT-based systems refer to air quality monitoring systems with sensors, which transmit measurements to a data centre for air quality control and management in real time. In addition, the systems provide information to the public through ICT channels.
<b>C2.2.1 Quality of water resources</b>	[% of sample tests]	100%	high		Index of compliance with standards relating to water quality parameters for drinking water
<b>C2.2.2 Wastewater treated</b>	[%]	0%	high	Goris has no waste water treatment plant.	Proportion of wastewater that is treated, in order to reduce pollutants before being discharged into the environment, based on the level of treatment (primary, secondary or tertiary)
<b>C2.2.3 Household sanitation</b>	[%]	98.50%	low		Proportion of households with access to improved sanitation and facilities that hygienically separate human excreta from human, animal and insect contact
<b>A2.2.1 Water saving in households</b>	[%]	40-50%		Refers to water saving in households, both with and without smart meters.	Existence of water saving in households. Included in a checklist: to distinguish between households with and without smart meters

<b>A2.2.2 Drainage system management</b>	[%]	No data available	medium		Proportion of the drainage systems monitored in real time. NOTE – monitoring includes both inspection and checking
<b>Price of water</b>	[USD/1,000 l]	0.38	medium	Indicator added by Goris Municipality. Previously collected data.	Median price paid per 1,000 litres of water in US dollars, at the time of year when water is most expensive. Subsidies o should be taken into account
<b>C2.3.1 Exposure to noise</b>	[%]	40%	high	69 dB (Syunik highway area): standard, 55 dB, daytime; 45 dB nighttime.	Proportion of city inhabitants with noise levels above international/national exposure limits at home
<b>A2.3.1 Noise monitoring</b>	[%]	No data available	medium	Noise monitoring is not carried out in Goris.	Proportion of the city area with ICT-based noise monitoring
<b>C2.4.1 EMF consideration</b>	checklist	No data available	low		Reference to ensure city policies operate efficiently, and comply with EMF exposure standards
<b>C2.4.2 Solid waste treatment</b>	[%]	100%	high	Goris has a 100% solid waste collection. However, the treatment and management of solid waste is insufficient to meet the needs of the city. Backyard burning, irregular landfills and littering are present in the city area.	Percentage of solid waste: a) removed to sanitary landfills; b) incinerated/burnt in open areas; c)incinerated in an incinerator; d) disposed of to an open dump; e) recycled; f) other
<b>C2.4.3 Perception of environmental quality</b>	[%]	No data reported	low		Proportion of city inhabitants satisfied with the urban environment
<b>C2.5.1 Green areas and public spaces</b>	[%]	(i) 3.85% (ii) 1.3%	high	There is a clear lack of public green areas in Goris.	Proportion of municipal territory allocated to publicly accessible green areas and public spaces
<b>C2.5.2 Native species monitoring</b>	[%]	No reported data	medium		Change in number of species in relation to a baseline year
<b>A2.5.1 Protected natural area</b>	[%]	0%	medium	There are no protected natural areas in the administrative territory of Goris	Percentage of terrestrial area that has been reserved by law or other effective means to protect part or all of the enclosed environment
<b>Accessibility of green areas and public spaces</b>	[%]	70%	high	Indicator added by Goris Municipality. Percentage of the urban population with access to public areas and/or green areas within 500 metres. Alternative Indicator proposed by local experts	Percentage of the urban population with access to public areas and/or green areas within 500 metres

<b>C2.6.1 Renewable energy consumption</b>	[%]	No data available	medium	Proportion of renewable energy consumed in the city
<b>C2.6.2 Energy-saving in households</b>	[%]	No data available	medium	Existence of energy-saving in households. Included in a checklist is the distinction between households with and without smart meters, and with and without home automation systems
<b>A2.6.1 Renewable energy generation</b>	[%]	No data available	medium	Renewable energy generation compared to renewable energy consumption

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## Sociocultural indicators tested in Goris according to data availability and relevance

<i>Indicator name</i>	<i>Unit</i>	<i>Reported data</i>	<i>Relevance</i>	<i>Assessment and comments</i>	<i>Description</i>
<b>C3.1.1 Students' ICT capability</b>	[%]	90%	medium		Proportion of students/pupils with access to ICT skills in school
<b>C3.1.2 Adult literacy trends</b>	[%]	99,6%	low	Actual adult literacy is reported to reach 99.60%. However, no baseline was referred to	Improvement in the adult population who can both read and write, with understanding, a short simple statement on everyday life, compared to a baseline
<b>C3.1.3 Higher education ratio</b>	[%]	65%	medium		Proportion of city inhabitants with higher education
<b>Goris school enrolment</b>	[%]	1. 83.9% 2. 85,5% 3. 82,3%	low	Indicator added by Goris Municipality. The first figure refers to the number of students in general education for the years 2014-2015, the second refers to girls, and the third to boys	Percentage of females and males enrolled at primary, secondary and tertiary levels in public and private schools
<b>Goris student ratio</b>	[%]	6%	low	Indicator added by Goris Municipality	Number of university students per urban population
<b>C3.2.1 Electronic records</b>	[%]	No data available	low		Proportion of city inhabitants with electronic health and/or medical records
<b>C3.2.2 Sharing of medical resources</b>	[%]	0%	low		Proportion of hospitals, pharmacies and health care providers using ICT for sharing of medical resources, such as hospital beds, and medical information, especially electronic medical records
<b>C3.2.3 Life expectancy</b>	[years]	74 years	medium		Average life expectancy indicates the number of years a newborn infant is expected to live
<b>C3.2.4 Maternal mortality trends</b>	[%]	0%	medium		Reduction of maternal mortality at births, compared to a baseline
<b>A3.2.2 In-patient hospital beds</b>	[No./100,000 inhabitants]	585	low	The number of hospital beds is 119. The Indicator is expressed as the number of public hospital beds per 100,000 inhabitants, based on 205,000 inhabitants in Goris	Number of in-patient public hospital beds (the numerator) divided by 100,000 (the denominator), expressed as the number of in-patient public hospital beds per 100,000 of the city's population
<b>A3.2.3 Health insurance</b>	[%]	No data available	high		Proportion of city inhabitants covered by health insurance
<b>Citizens per doctor ratio</b>	[inhabitants /doctor]	235,6	medium	Indicator added by Goris Municipality. 87 doctors working in Goris	Number of urban citizens per doctor
<b>C3.3.1 Vulnerability assessment</b>	checklist	Qualitative answer	high	Preventive measures to mitigate and limit flooding: (i) Cleaning the Vararakn river bed and flood channels (ii) Eliminating river blockages	Assessment of various natural hazards at city level

				(iii) Cleaning the bed of the Schori Dzor river (iv) Strengthening the dam Preventive measures to mitigate and limit the impacts of earthquakes: (i) Training on earthquake protection in kindergartens, schools and other institutions (ii) A seismic risk map of the city of Goris was produced by the Department of Geological Sciences Institute, and approved in 2006	
<b>C3.3.2 Disaster mitigation plans</b>	checklist	No data available	high		Presence of financial (capital and operating) plans and technical systems with a reasoned set of priorities, based on disaster resilience impact achieved
<b>C3.3.3 Emergency response</b>	checklist	No data available	high	154 crimes were recorded in 2014	Existence of emergency response for urban safety issues, such as violent crime, road accidents, fire control, gas leakage, street lighting, etc.
<b>C3.3.4 Information security and privacy protection</b>	checklist	No data available	low		Existence of systems, rules and regulations to ensure information security and privacy protection in the public service. This should also include the proportion of public services and devices that ensure information security and privacy protection Proportion of disasters and emergencies with timely alerts
<b>A3.3.1 Disaster and emergency alert</b>	[%]	No data available			
<b>A3.3.2 Child Online Protection (COP)</b>	checklist	No data available			Existence of rules and regulations to ensure COP. This also includes the proportion of public web services and devices that ensure COP
<b>C3.4.1 Housing expenditure</b>	[%]	60%	high	A value of up to 60% in the winter was estimated by participants of the city administration at the first workshop in Goris, for all energy and utility costs of housing as a percentage of income. This can be split as follows: 35% for gas; 26% for electricity; 2% for water; 1% for sanitation; 3% for municipal and state taxes and other utility costs of the building; 3% for garbage collection; and 30% for rent. The expenditures are related to an average annual household income of 1.2 million Dram in Goris.	Average housing expenditure, including rent, mortgage, utility services, maintenance, energy-efficiency repairs, and other repairs as a percentage of household income
<b>C3.4.2 Slum reduction</b>	[%]	Alternative indicators provided	medium	Slums are not considered an issue. There is a temporary problem due to refugees from Syria, with currently around 67 families living in temporary shelters	Reduction of city inhabitants living in slums, compared to a baseline
<b>Social housing</b>	[%]	0,001%	medium	Indicator added by Goris Municipality	Social housing as percentage of total dwellings
<b>Quality of the housing stock</b>	[%]	Good-10%, modest-78%, bad-12%	medium	Indicator added by Goris Municipality	Average quality of houses in different classes (good, modest, bad)
<b>Illegal houses</b>	No. and %	0	medium	Indicator added by Goris Municipality	Number and percentage of illegally built or occupied houses
<b>C3.5.1 Smart libraries</b>	[No./100,000 inhabitants]	0	low	There are 3 libraries in Goris but they are not smart	Number of smart libraries per 100,000 inhabitants

<b>C3.5.2 Cultural infrastructure</b>	[No./100,000 inhabitants]	4.8	medium	There are 3 museums, 1 gallery (2 private gallery-studios in a private house and in the caves), 1 theatre, 1 palace of culture in Goris, 1 childrens' art centre, and 2 cinema buildings "Zangezur" and "Avangard" (not functioning)	Availability of the cultural infrastructure such as cinema, theatres, museums etc. per 100,000 inhabitants
<b>A3.5.1 Historical and cultural area</b>	[%]	9.5% of the residential area and 5.6 % of the urbanized area	medium	There are 56.93 hectares of historical and cultural areas	Percentage of specially protected areas that has been reserved by law or other effective means to protect cultural and natural heritage
<b>C3.6.1 Public participation</b>	checklist	1) yes, 2) yes, 3) yes, 4) yes	high	The checklist includes: (1) existence of rules and regulations to promote the participation of inhabitants in public affairs; (2) existence of systems to promote inhabitants' engagement, such as online information and ICT-based feedback mechanisms; (3) existence of formal participatory process prior to policymaking, major public projects, etc; (4) existence of public decision-making to ensure gender and age equity	Promotion of city inhabitants' participation, checked in the checklist
<b>C3.6.2 Gender income equity</b>	[%]	No data available	medium		Rate of income equity between men and women
<b>C3.6.3 Opportunities for people with special needs</b>	checklist	No data available	medium	The checklist includes: public buildings: infrastructure available; education: higher education possible; job availability; and ICT: availability of customized services and information	Proportion of public services and benefits provided to people with special needs
<b>C3.6.4 Attractiveness for skilled people</b>	[%]	No data available	medium		Share of foreign-born population with a specific skill
<b>A3.6.1 Gini coefficient</b>	[No.]	Not discussed			
<b>Local government expenditures</b>	USD	USD 562,000	medium	Indicator added by Goris Municipality	Total local government expenditures in USD annually, for all local governments in the metropolitan area, averaged over the last three years
<b>Active ageing index (&gt;65 years)</b>	[%]	18%	medium	Indicator added by Goris Municipality	Senior citizens aged over 65 years, as a percentage of the total urban population
<b>Resident population density</b>	[Inhabitants /km <sup>2</sup> ]	21,000/1,008.25	medium	Indicator added by Goris Municipality. Inhabitants per km <sup>2</sup> urbanized area: 21 inhabitants per ha	[Total resident population]/[urbanized area], measured in capita per km <sup>2</sup> . This indicator is relevant for several issues; (i) high population density can be critical in case of natural hazards, and (ii) a densification over time avoids land consumption

# ANNEX III:

## RELEVANT LEGISLATION ON URBAN DEVELOPMENT

### RELEVANT LAWS OF THE REPUBLIC OF ARMENIA

1. Civil Code
2. Land Code
3. On administrative territorial division of the Republic of Armenia
4. On urban development
5. On local self-government
6. On the elections of local self-government bodies
7. On oversight and control of urban development activities
8. On apartment building management
9. On state registration of rights to property
10. On environment impact assessment and expertise
11. On historical and cultural immovable monuments, use and preservation of historical environment
12. On seismic protection
13. On the protection of atmospheric air
14. On freedom of information
15. On local duties and fees
16. On financial equalization
17. On property tax
18. On land tax
19. On waste
20. On garbage collection and sanitation
21. On energy saving and renewable energy
22. On state technical oversight in the energy sector and energy consumption field
23. On road transport vehicles.

### DECISIONS OF THE GOVERNMENT OF THE REPUBLIC OF ARMENIA

24. The Concept Paper on reforming the process of the elaboration and approval of urban development project documents of communities (settlements) of the Republic of Armenia (No. 36 of 3 September 2009)
25. The procedure for the elaboration, expert examination, agreement, approval of, and amendment to, Master Plans of Communities (No. 1920-N of 29 December 2011)



- 26.** On development of building permits and other documents in the Republic of Armenia and the repeal of a number of decisions of the Government of the Republic of Armenia (No. 596-N of 19 March 2015)
- 27.** The procedure for awareness-raising on planned changes in the environment, and the participation of representatives of the public in consultations on urban development programmes and projects and in the adoption of decisions (No. 660 of 28 October 1998)
- 28.** The procedure for proposing objects for special regulation in urban development activities, separating their areas and carrying out urban development activities in these areas (No. 792-N of 26 June 2009)
- 29.** On declaring several cities of the Republic of Armenia (Jermuk, Tatev, Goris, etc.) as tourism centres (No. 948-N of 28 July 2005, No. 1064-N of 18 September 2008, No. 848-N of 15 August 2009, and No. 973-N of 28 July 2011)
- 30.** On approving the order of the elaboration, expertise, agreement, approval, amendment and monitoring of the Master Resettlement Plan of the Republic of Armenia (No. 2164-N of 19 December 2002)
- 31.** On approving the General Settlement Plan of the Republic of Armenia (No. 610-N of 10 April 2003)
- 32.** On approving the order of regional spatial plans and their elaboration, expertise, agreement, approval and amendment (No. 997-N of 8 August 2003)
- 33.** On approving the order of settlement area zoning projects' elaboration, expertise, approval and amendment (No. 408 of 14 May 2001)
- 34.** On approving the National Strategy for Disaster Risk Reduction in the Republic of Armenia and the Action Plan for the implementation of the National Strategy for Disaster Risk Reduction (No. 281-N of 7 of March 2012)
- 35.** On including seismic hazard assessment maps in the development programmes for *marzes* and settlements of the Republic of Armenia, envisaging actions for seismic risk reduction aimed at the prevention of emergency situations (No. 1351 of 25 October 2012)
- 36.** On approving the list of measures aimed at honouring the commitments of the Republic of Armenia arising from the Environmental Convention of the Republic of Armenia (No. 1594-N of 10 November 2011)
- 37.** Strategy on Ageing Issues and Social Protection of the Elderly Population and its Implementation Action Plan (No. 31 of 2 August 2012)
- 38.** The Perspective Development Strategic Programme of the Republic of Armenia for 2012-2025 (No. 442-N of 27 March 2014)
- 39.** On developing tourism in Goris (No. 973-N of 10 June 2011)
- 40.** On approving Goris' tourism development project (No. 77-A of 31 January 2013).

# ANNEX IV:

## UNITED FOR SMART SUSTAINABLE CITIES (U4SSC) AND THE UNITED SMART CITY (USC) PROJECT

### THE U4SSC INITIATIVE

In May 2016, the UNECE and the International Telecommunication Union (ITU) jointly launched United for Smart Sustainable Cities (U4SSC).

U4SSC is a global smart city initiative which provides an international platform for information exchange, knowledge-sharing and partnership-building, with the aim of formulating strategic guidance to achieve the Sustainable Development Goals (SDGs) and implement the New Urban Agenda and other international agreements.

Besides the ITU and the UNECE, 14 other United Nations agencies, programmes, funds and secretariats support this initiative, including the Secretariat of the Convention on Biological Diversity (CBD), the Food and Agriculture Organization of the United Nations (FAO), UN-Women, the United Nations Commission for Africa (UNECA), the Economic Commission for Latin America and the Caribbean (ECLAC), the Secretariat of the United Nations Convention to Combat Desertification (UNCCD), UN-Habitat, the United Nations Environment Programme (UNEP), the United Nations Environment Programme Finance Initiative (UNEP-FI), the Secretariat of the United Nations Framework Convention for Climate Change (UNFCCC), the United Nations Industrial Development Organization (UNIDO), the United Nations University Institute for the Advanced Study of Sustainability (UNU-IAS), the World Meteorological Organization (WMO) and the World Trade Organization (WTO).

The key functions of U4SSC are:

- to generate guidelines, policies and frameworks for the integration of ICTs into urban operations, based on the SDGs, international standards and urban key performance indicators (KPIs); and
- to help streamline smart city action plans, and establish best practices with feasible targets that urban development stakeholders are encouraged to meet.

Within the framework of U4SSC, the UNECE and the ITU developed, together with the other 14 UN entities and several partners, KPIs for smart sustainable cities, which will soon become an international standard, and will work on the Smart Sustainable Cities Index. The standard and the Index are being elaborated based on the UNECE-ITU Smart Sustainable Cities Indicators, used to develop this Profile.

### THE USC PROJECT

The “United Smart Cities” Project was launched in May 2014 during the “Land Information Systems for Smart Cities” workshop at the Geospatial World Forum 2014 in Geneva, and represents the implementing arm of the initiative.

The main objectives of the Project are:

- to promote knowledge and best practice transfer concerning sustainable urban development;

- to promote sustainable development in cities at a global level;
- to help national and local authorities to develop policies on sustainable urban development;
- to establish partnerships and cooperation between stakeholders;
- to identify and develop smart financing mechanisms;
- to extend the concept of smart cities to low- and medium-income economies; and
- to improve inhabitants' quality of life and help cities make the most efficient use of their resources.

At the general level, the Project will deliver the following outputs.

**Smart Sustainable Cities Profiles:** the Profiles are studies of the current situation of a city. By using the above-mentioned KPIs, the Profiles measure the city's performance against the Indicators. They furthermore provide recommendations for the city to implement, in order to improve its sustainable urban development. A city action plan could be developed by the local experts with the support of international experts when funds are available.

**United Smart Cities platform:** the online platform, which can be found at <http://unitedsmartcities.com/>, provides a place where stakeholders can share expertise, good practices, and lessons learned, in relation to smart and sustainable urban development.

**Capacity-building and training:** capacity-building aims to train, educate and raise awareness, at national and local level, on issues concerning smart sustainable cities. Several conferences, workshops and events are organized by the UNECE and its partner organizations to fulfill this aim.

Each Project consists of three main phases, which are briefly described below:

**Phase 1 (Fact-finding mission and Smart Sustainable Cities Profiles)** - International and national experts, municipality staff and other relevant stakeholders meet in the city requesting the action and, during a workshop, called the pyramid workshop, they discuss the needs of the city and its main challenges. The stakeholders are given information about the "United Smart Cities" Project, the UNECE smart sustainable cities definition, and the process involved in the project. The stakeholders work out key measures to make the city smarter and more sustainable. Key Indicators, taken from the UNECE-ITU Smart Sustainable Cities Indicators list, are proposed to monitor the process.<sup>37</sup> The result of this phase is the elaboration of a Smart Sustainable City Profile with recommendations.

**Phase 2 (City Action Plan)** - The list of key measures, discussed in Phase 1, is converted into an Action Plan. This Plan is developed by experts, the Government and the municipality, and contains a clear list of funding sources and the timeline for the implementation of the recommendations. A monitoring plan with targets is also developed.

**Phase 3 (Implementation and Evaluation)** - Sustainable solutions are implemented. Experts monitor the implementation of the Plan throughout, and verify the process. Progress is evaluated based on regular progress reports that use the Indicators.

This Project will be first tested in selected pilot cities, mainly in countries with economies in transition or in developing countries. Furthermore, in parallel with the implementation of activities in the pilot cities, a wider network of cities, which already have solid experience in promoting smart city approaches and which can share their experiences, will also be set up. This

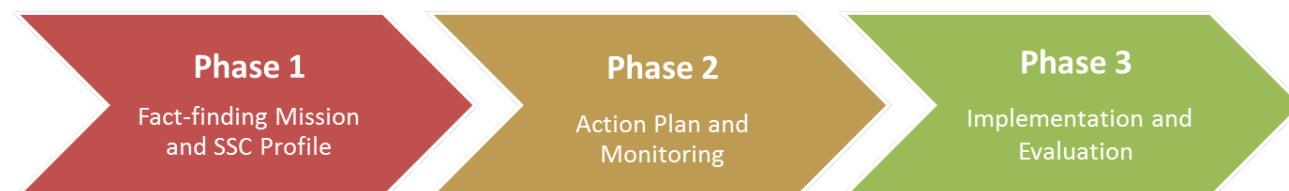
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<sup>37</sup> UNECE-ITU Smart Sustainable Cities Indicators. Available at:  
[http://www.unece.org/fileadmin/DAM/hlm/projects/SMART\\_CITIES/ECE\\_HBP\\_2015\\_4.pdf](http://www.unece.org/fileadmin/DAM/hlm/projects/SMART_CITIES/ECE_HBP_2015_4.pdf)

network of cities will be supported by an online platform, where cities can showcase their results and exchange best practices and lessons learned.<sup>38</sup>

Finally, in order to foster cooperation, share experiences and support local authorities and stakeholders in understanding the smart cities concept and implementing sustainable initiatives, a series of events and capacity-building workshops will be organized in the countries involved.

**Figure X The United Smart Cities Process**



**Phase 1:**

What: relevant stakeholders meet and discuss the needs of the city and its main challenges. Key indicators are proposed to monitor the process.

Result: Smart Sustainable City Profile with recommendations

**Phase 2:**

What: key measures are converted into an action plan with a clear list of funding sources and the timeline for the implementation of the recommendations. A monitoring plan with targets is also developed.

Result: Action Plan and Monitoring Plan

**Phase 3:**

What: the Action Plan is implemented. Experts monitor the implementation and verify the process.

Result: progress evaluation is based on a regularly published progress report.

<sup>38</sup> The platform was launched in September 2015, and can be found at: <http://unitedsmartcities.com/>

# ANNEX V:

## UNECE-ITU SMART SUSTAINABLE CITIES INDICATORS

<i>Area</i>	<i>Topic</i>	<i>No.</i>	<i>Indicator</i>	<i>Typology</i>
Economy	T1.1 ICT infrastructure	1	C1.1.1 Internet access in households	core
		2	A1.1.1 Electronic device penetration	core
		3	A1.1.2 Wireless broadband subscriptions	additional
		4	A1.1.3 Fixed broadband subscriptions	additional
		5	C1.2.1 R&D expenditure	core
	T1.2 Innovation	6	C1.2.2 Patents	core
	T1.3 Employment	7	C1.3.1 Employment trends	core
		8	A1.3.1 Creative industry employment	additional
		9	A1.3.2 Tourism industry employment	additional
	T1.4 Trade – e-Commerce	10	C1.4.1 e-Commerce transactions	core
		11	A1.4.1 Electronic and mobile payments	additional
	T1.4 Trade – export/import	12	A1.4.2 Knowledge-intensive export/import	additional
	T1.5 Productivity	13	A1.5.1 Companies providing e-services	additional
		14	A1.5.2 Computing platforms	additional
		15	A1.5.3 SME trends	additional

Environment	T1.6 Physical infrastructure – piped water	16	C1.6.1 Smart water meters	core
		17	A1.6.1 Water system leakages	additional
		18	C1.6.2 Smart electricity meters	core
	T1.6 Physical infrastructure – electricity	19	C1.6.3 Reliability of electricity system	core
	T1.6 Physical infrastructure – health	20	A1.6.2 Sporting infrastructure	additional
		21	C1.6.4 Public transport system	core
		22	C1.6.5 Road traffic efficiency	core
		23	C1.6.6 Real-time public transport information	core
		24	C1.6.7 Share of Electric Vehicles (EVs)	core
	T1.6 Physical infrastructure – transport	25	A1.6.3 Traffic monitoring	additional
	T1.6 Physical infrastructure – buildings	26	A1.6.4 Integrated management in public buildings	additional
		27	C2.1.1 Air pollution	core
		28	A2.1.1 Air pollution monitoring system	additional
	T2.1 Air quality	29	C2.1.2 GHG emissions	core
		30	C2.2.1 Quality of water resources	core
		31	A2.2.1 Water saving in households	additional
		32	C2.2.2 Waste water treatment	core
		33	C2.2.3 Household sanitation	core
	T2.2 Water	34	A2.2.2 Drainage system management	additional
	T2.3 Noise	35	C2.3.1 Exposure to noise	core

Society and Culture	T2.4 Environmental quality	36	A2.3.1 Noise monitoring	additional
		37	C2.4.1 Electromagnetic field (EMF) consideration	core
		38	C2.4.2 Solid waste treatment	core
		39	C2.4.3 Perception of environmental quality	core
	T2.5 Biodiversity	40	C2.5.1 Green areas and public spaces	core
		41	C2.5.2 Native species monitoring	core
		42	A2.5.1 Protected natural areas	additional
		43	C2.6.1 Renewable energy consumption	core
	T2.6 Energy	44	A2.6.1 Renewable energy generation	additional
		45	A2.6.2 Energy saving in households	additional
		46	C3.1.1 Students' ICT capability	core
		48	C3.1.3 Higher education ratio	core
	T3.1 Education	49	A3.1.1 e-Learning systems	additional
		50	C3.2.1 Electronic records	core
		51	C3.2.2 Sharing of medical resources	core
		52	A3.2.1 Adoption of telemedicine	additional
	T3.2 Health	53	C3.2.3 Life expectancy	core
		54	C3.2.4 Maternal mortality trends	core
		55	A3.2.2 In-patient hospital beds	additional
		56	A3.2.3 Health insurance	additional



	57	C3.3.1 Vulnerability assessment	core
T3.3 Safety – disaster relief	58	C3.3.2 Disaster mitigation plans	core
	59	C3.3.3 Emergency response	core
T3.3 Safety – emergency	60	A3.3.1 Disaster and emergency alert	additional
	61	C3.3.4 Information security and privacy protection	core
T3.3 Safety – ICT	62	A3.3.2 Child Online Protection (COP)	additional
	63	C3.4.1 Housing expenditure	core
T3.4 Housing	64	C3.4.2 Slum reduction	core
	65	C3.5.1 Smart libraries	core
	66	C3.5.2 Culture infrastructure	core
T3.5 Culture	67	C3.5.1 Protected cultural heritage sites	additional
	68	C3.6.1 Public participation	core
	69	C3.6.2 Gender income equity	core
	70	C3.6.3 Opportunities for people with special needs	core
	71	C3.6.4 Attractiveness for skilled people	core
T3.6 Social inclusion	72	A3.6.1 Gini coefficient	additional

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# Smart Sustainable City Profile

## Goris, Armenia

The UNECE Committee on Housing and Land Management, is an intergovernmental body representing all 56 UNECE member States. We provide countries with a forum for compiling, disseminating and exchanging information on housing, urban development and land administration.

The Smart Sustainable City Profile provides an analysis of the city performance on urban development activities, including business and economy, social issues, urban planning, governance, energy, and infrastructure, etc. The Smart Sustainable City Profile identifies areas where action is required, and makes relevant practical and financial recommendations to enhance the quality of life by creating livable, green, more connected and inclusive cities.

For further information on our work, you are welcome to visit our website:  
[www.unece.org/housing](http://www.unece.org/housing)

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