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"JOINT INTEGRATED POLICY FOR LOW-CARBON ECONOMY IN CROSS-BORDER REGION"

Ref. No.CB006.1.11.165



POLICY PAPER

s-border municipalities between Bulgaria
and Macedonia

ABSTRACT

A low-carbon economy (LCE), low-fossil-fuel economy (LFFE), or decarbonized economy is an economy based on low carbon power sources that therefore has a minimal output of greenhouse gas (GHG) emissions into the biosphere, but specifically refers to the greenhouse gas carbon dioxide. No-one knows what the future holds. But based on our knowledge today, in 2017, we can make some reasonable estimates about the difference we can make if we implement the big changes set out in our policy for a low carbon economy.

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INTRODUCTION

About the project

The main objective of project “Joint Integrated Policy for Low-Carbon Economy in Cross-Border Region” is to contribute directly to the transition of the Cross-Border Region’s Economy from Carbon-intensive to Low-carbon basis as a part EU effort to transition the Europe’s economy. To achieve this objective, the projects partners will implement a direct cross-border joint protection and monitoring of natural resources in 9 border municipalities, as well as creating prerequisite for Low-carbon Economy and Sustainable Development in this area. Joint analysis of carbon emissions in the region will show the real state of the Carbon Footprint (CO₂ emissions) and Greenhouse Gases (GHG), also giving ideas about necessity for their reduction.

All of these activities aim to craft a Joint Policy for Low-carbon Economy, which could contribute by acting as guidance for the regional authorities and other stakeholders, towards transition to Sustainable Cross-Border Development.

To achieve this, a joint research activities, inventories, information and know how exchange will be implemented. Joint network will be established with participation of all stakeholders from both sides of the border, representing Public, Private and Civil Sectors. Additionally a system for coordination, information and experience exchange between the project municipalities will be jointly developed and joint workshops will be held on in Cross-Border Area. This way the project will contribute to establishment of direct contacts between the local actors in both border regions.

In frame of this project following Municipalities are beneficiary from this project:

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Bulgaria:

- Blagoevgrad
- Simitli
- Kresna
- Strumiani
- Sandanski

Macedonia:

- Berovo
- Delcevo
- Pehcevo
- Vinica

LOW CARBON ECONOMY

DEFINITIONS

A low-carbon economy (LCE), low-fossil-fuel economy (LFFE), or decarbonized economy is an economy based on low carbon power sources that therefore has a minimal output of greenhouse gas (GHG) emissions into the biosphere, but specifically refers to the greenhouse gas carbon dioxide. GHG emissions due to anthropogenic (human) activity are the dominant cause of observed global warming (climate change) since the mid-20th century. Continued emission of greenhouse gases will cause further warming and long-lasting changes around the world, increasing the likelihood of severe, pervasive and irreversible impacts for people and ecosystems.

Globally implemented low-carbon economies are therefore proposed by those having drawn this conclusion, as a means to avoid catastrophic climate change, and as a precursor to the more advanced, zero-carbon economy.

Concepts such as green economy, green growth and low carbon economy became increasingly popular within the international discourse of institutions such as the OECD, UN and EU in connection to the financial crisis in 2008 as potential ways out of the economic crisis (Olsen 2012; Allen & Clouth 2012). Each of the concepts has been used in a variety of ways covering a range of concerns such as green innovation or climate change mitigation (Huberty et al. 2011; Allen & Clouth 2012).

The United Nations Environment Programme (UNEP) defines green economy as an economy "that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities". UNEP's definition is considered as the most widely used definition of green economy emphasizing the importance of "getting the economy right" as a precondition for achieving sustainability (EEA 2011; UNEP 2011).

As one of the most active pioneering bodies in developing approaches to green growth, the OECD has defined the concept as "fostering economic growth and development while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies. To do this, it must catalyze investment and innovation which will underpin sustained growth and give rise to new economic opportunities" (OECD 2011).

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The European Environment Agency (EEA) states that even though the concept of green economy is still debated, several institutions share a common understanding of it as an economy "in which policies and innovations enable society to generate more of value each year, while maintaining the natural systems" (EEA 2011). The concepts of green growth and green economy do not replace the concept of sustainable development. Instead they complement the concept of sustainability by emphasizing the importance of the economy, and especially of innovations, for achieving sustainability (Olsen 2012).

When it comes to the concept of the low carbon economy, the focus is specifically on greenhouse gas (GHG) emissions. The concept of the resource-efficient low carbon economy has also been used. The concept emphasizes the central role of resource-efficiency and energy efficiency for the economy. The low carbon economy has generally been understood as "an economy that produces minimal GHG emissions" (Regions for Sustainable Change 2013). It has also been defined in a relatively narrow sense as an economy "which is characterized by activities which emit low levels of carbon dioxide into the atmosphere" (Levy 2010).

The European Commission (EC) creates a vision of a low carbon society as follows "we will live and work in low-energy, low-emission buildings with intelligent heating and cooling systems. We will drive electric and hybrid cars and live in cleaner cities with less air pollution and better public transport" (EC 2012). The main objectives connected to the transition towards a low carbon economy are related to increased energy efficiency, clean and renewable energy, as well as green GDP via technological innovation, involving all sectors. The aim is to identify practices and technologies that produce less GHG emissions while not compromising economic growth. The use of renewable resources as well as energy efficiency shall be increased both in production and consumption (Regions for Sustainable Change 2013). In this respect, green growth is understood as means to make the transition to a sustainable (low carbon) economy (OECD 2009).

To facilitate the shift towards a low carbon economy, a mixture of measures is needed in the form of comprehensive policy responses to reduce carbon intensity. Governments must develop and provide supporting policies and measures, as well as financial resources (Regions for Sustainable Change 2013). The low carbon economy concept emphasizes the essential role of energy efficiency. Energy efficiency can involve the technical efficiency of energy services and/or non-technical factors such as behavior. According to the OECD and the International Energy Agency (IEA), individual behavior is an aspect of energy efficiency and brings together both technical and non-technical factors. Energy efficiency actually builds on both improving the technical energy performance and improving energy management or organization (OECD & IEA 2012).

LOW CARBON ECONOMY IN EU POLICIES

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In the Europe 2020 Strategy, the European Commission (EC) outlines three priorities: smart growth, sustainable growth and inclusive growth. Under the priority of sustainable growth, competitiveness, combating climate change and clean and efficient energy are highlighted actions. Under “Clean and efficient energy”, specific objectives have been defined: 20% increase in energy efficiency, 20% of energy from renewable sources that shall help to reduce oil and gas imports, as well as costs and emissions, to secure energy supply and to create jobs. A resource efficient and low carbon economy is the policy goal (EC 2010).

“Resource efficient Europe” is one of the flagship initiatives under the Europe 2020 Strategy and aims “to increase certainty for investment and innovation by forging an agreement on the long-term vision and ensuring that all relevant policies factor in resource efficiency in a balanced manner” (EC 2011c). Thus, the flagship initiative provides a long-term framework for actions in a variety of policy areas, such as climate change, energy, transport, industry and biodiversity and stresses the importance of coordination between the areas (EC 2011c). The initiative published two relevant roadmaps, which are described in the following:

In 2011, the Roadmap for moving to a competitive low carbon economy 2050 was whereby the EU set up targets related to climate efforts and emphasized the need for innovation and green growth. The roadmap states that energy efficiency will be a key driver in the transition process. The EU could use approximately 30% less energy in 2050 than in 2005. The roadmap further includes an analysis of the current situation in terms of GHG emissions in different sectors and sets sectoral targets for decreasing the emissions. The biggest reduction goals are set to the “power” sector (93-99% reduction by 2050) and the “residential and services” sector (88-91% reduction by 2050). The overall target is to reduce the domestic emissions of the EU by 80% by 2050 compared to 1990 (EC 2011a).

It is stressed that to facilitate reductions in all sectors, innovation and new green technology needs to be promoted. Further, large and sustained investments are needed to develop and establish, amongst other things, various forms of low carbon energy sources, passive housing, carbon capture and storage systems, advanced industrial processes and electrification of transport which are key components of low carbon economy. According to the roadmap, the increase in public and private investment is estimated to be approximately 270 billion euros annually. It is essential, but also challenging, to unlock the investment potential of the private sector and individual consumers and promote additional public-private financing mechanisms (EC 2011a).

The Roadmap to a resource efficient Europe was also published in 2011 and outlines how to “transform Europe's economy into a sustainable economy by 2050”. It identifies the key challenges and opportunities in three action lines including transforming the economy, addressing the natural capital and tackling key sectors. The roadmap identifies three conditions that must be fulfilled to reach the target of becoming a resource efficient, low carbon economy.

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- First, Europe will have to take coordinated action in a wide range of policy areas assisted with political support and visibility.
- Second, it is essential to act rapidly because of long investment lead-times. Many actions require an upfront investment and have long pay-back times even though they can bring actual economic benefits for the EU in the following decades.
- Third, consumers must be empowered to move to resource-efficient consumption and to drive continuous innovation (EC 2011b). In March 2013, the EC adopted a Green paper on a 2030 framework for climate and energy policies.

The paper contributes to developing the 2030 framework and builds on the experiences and lessons learnt from the 2020 framework while also taking the long-term targets of the roadmaps for 2050 into consideration. The green paper discusses, among other things, what kinds of mid-term targets should be set for 2030, how to promote coherence among policy instruments and how to address the differing capacity of EU Member States in EU policy. It does not provide solutions, but turns to the Member States, EU institutions and other stakeholders for their views concerning lessons learnt from the 2020 framework, targets to be included and instruments to be used (EC 2013a).

The need for a transition towards a new energy paradigm is establishing in the minds. However the decision-making process is mainly in the hand of national administrations and large energy companies, who have vested interests in maintaining a status-quo, that is, in privileging a centralized-supply approach. On the other hand, society stakeholders would benefit from a more decentralized-supply and demand-oriented paradigm: consumers to pay less; independent producers to increase their return on investment; craftsmen and SME to develop refurbishment activities; energy service companies to enlarge their markets;

TEN STEPS FOR TRANSITION ON LOW-CARBON ECONOMY

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Step 1. Ensure the availability of adequate and regularly updated information and data on the regions' emissions characteristics.

Step 2. Decouple emissions and energy use from growth through multiple energy efficiency and renewable energy solutions.

Step 3. Develop policies for energy efficiency and increase the use of renewables.

Step 4. Develop integrated strategic and policy planning for low-carbon development.

Step 5. Prioritise cost-effective low-carbon measures that have benefits for the climate, the economy and the social domain.

Step 6. Establish adequate institutions with delineated responsibility and secure strong regional leadership for achieving low-carbon growth.

Step 7. Actively involve business stakeholders, scientists, academics and the public in the decision making process.

Step 8. Raise awareness among the public and the business sectors to encourage low-carbon consumer and production choices.

Step 9. Use regional public investment funds as a catalyst for investing in low-carbon development by prioritizing spending in stimulating the decarbonization of the economy.

Step 10. Regularly monitor the region's emission performance to identify where reductions are most efficient.



ABOUT THE CROSS-BORDER REGION

GEOGRAPHICAL LOCATION

The Bulgarian part of the cross border region that is included in the project area is situated in SW Bulgaria along the Middle Struma River valley and covers area of 2854,52 sq.km..which combines the territories of five municipalities Blagoevgrad, Simitli, Kresna, Strumiani and Sandanski.

Municipality of Blagoevgrad

Fig. 1. Blagoevgrad municipality



Blagoevgrad municipality is situated in the northwestern part of Blagoevgrad Province with area of 620.12 km².It borders with Kyustendil Province in the north, Razlog Municipality in the east, Simitli Municipality in the south and Republic of Macedonia in the west. The municipality is lying in the western part of the Rila mountain to the East and Vlahina mountain to the West and the middle part of the valley of Struma River. Trough the municipality center of Blagoevgrad flows river Bistrica. The municipality is situated 100 km from Sofia in the north and Kulata in the south on the international road E79. The relief is predominantly mountainous in the East and the West part of the municipality and flat and hilly along the Struma river valley, the highest point is The Big Bear Peak (2617 m.a.s.l.) . The most parts of the municipality are covered with forests. Small subsidiaries of Struma river form the water resources of the region. The snow-melting during the spring and the summer in Rila and Vlahina increases the river debit. The Bistrica river flows through Blagoevgrad and Struma river goes west of the town. There are thirty hot mineral springs in the municipality, few of which are situated even in Blagoevgrad. The predominant soils are cinnamon forest soils in the low foot hills of the

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mountains, brown forest soils in the Rila and Vlahina mountain and alluvium soils along the rivers. Close to the town is situated the Rila National Park and one of the oldest reserves in Bulgaria – "Parangalitsa"

Municipality of Simitli

Fig. 2. Simitli municipality



Municipality of Simitli /529 km²; 14,712 inhabitants/ is located in kettle of Simitli, along the middle course of Struma River, on the slopes of the four mountains - Rila, Pirin, Vlahina and Maleshevska. The municipality borders with municipalities of Blagoevgrad, Razlog and Kresna and with the Republic of Macedonia. The municipal center - the town of Simitli is situated at a crossroad. Through it passes strategically important for our country and for the European Union roads to the Republic of Greece and Republic of Macedonia. The geographical location and the well developed infrastructure makes possible the cross-border economic and cultural cooperation and the tourism development. The relief is diverse but hilly and mountainous dominate. Within the municipality territory falls the east slopes of the mountains Vlahina and Maleshevska and parts of the National park "Rila" and National Park "Pirin". Through the territory passes picturesque river Struma, paving its way between the mountains and forming two of the most beautiful gorges - Oranovo and Kresna. Fault structure of landscape has determined the emergence of dozens of mineral springs with healing properties which are a real treasure and a prerequisite to turn the municipality into balneological center. The climate is transitional Mediterranean - in the lower parts and mountainous - in the higher. This determines the rich and diverse flora and fauna. The predominant soils are cinnamon forest soils in the low foot hills of the mountains, brown forest soils in the Rila, Pirin and Vlahina mountain and alluvium soils along the rivers. Within the municipality are found brown coal (in the village of Brezhani – the Pirin coal basin), coal (in Suhostrel), lignite (in Oranovo - the Simitli

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coal basin), shale (in Brezhani, Pirin Coal Basin), lead and zinc (at Suhostrel), feldspars and pegmapshti (in rural Upper and Lower Osenovo).

Municipality of Kresna

Fig. 3. Kresna municipality



Municipality of Kresna is one of the smallest municipalities in southwest Bulgaria, with an area of 341 km² and a population of 5,487 inhabitants. Covers part of the Struma River in Kresna Gorge and parts of western spurs of North Pirin and Northeastern slopes of the mountain Maleshevska. It borders on the municipalities of Simitli, Razlog, Bansko, Strumyani and Republic of Macedonia. The town of Kresna /3,428 inhabitants/ is the administrative, economic and cultural center of the municipality. Situated at 42 km south of Blagoevgrad and at 23 km northwest of the town of Sandanski. Through it passes the international road E-79 and the railway line Sofia – Kulata - Athens. The terrain on the territory of the municipality is mountainous, hilly and valley. The climate is transitory Mediterranean and in the higher parts - mountain. Through the municipality flows the Struma River and its tributaries - Vlahinska river, Oshtavska and Breznishka River. In the villages of Dolna Gradeshnitsa, Oshtava, Stara Kresna, Gorna Breznitsa and Vlahi many hot mineral springs are gushing. Forest fund is rich - mainly coniferous forests in Pirin and deciduous - in Maleshevska Mountain. In the southern part of Kresna Gorge / 25 km / is the reserve "Tisata" where is the largest natural habitat of juniper in Europe. Through Kresna Gorge passes the so-called Aristotelian path of migrating birds where over 100 species nest. 5 km south of Kresna is situated the village of Dolna Gradeshnitsa known for its healing mineral springs. 2 km northeast of the village are 11 mineral springs with water temperature 48-68°C. Near Kresna there are many attractive natural sights and attractions - the picturesque Kresna gorge, the reserve "Tisata", the protected area "Moravska" /

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184.3 ha / in the Maleshevska Mountains, the second largest habitat of juniper and other Mediterranean vegetation.

18 km southeast of the town in the Pirin Mountains is the beautiful resort area "Sini Vruh" as a suitable starting point for walking tours in the mountains. An important natural resource for tourism and recreation in the municipality is the mountains, the warm and soft climate, combined with the wealth of mineral waters.

Municipality of Strumiani

Fig. 4. Strumiani municipality



Municipality of Strumyani /366 km², 5,787 inhabitants/ includes parts of the Middle Struma valley, western slopes of the Pirin Mountain and the eastern slopes of the mountain Maleshevska. It includes 21 settlements and only Ilindentsi village is situated in the foothills of Pirin Mountain. The municipality of Strumyani borders with the municipalities of Kresna, Sandanski, Bansko, Petrich and the municipality of Berovo /R. Macedonia/. Administrative, economic and cultural center of the municipality is the village of Strumyani. The village is located in the northern part of Sandanski valley on the left bank of the Struma, at 12 km northwest of the town of Sandanski, near the international road E-79. Through the municipality also passes the planned "Struma" highway, part of Eurocorridor № 4. The village of Strumyani has a station of the international railway line Vidin - Sofia - Kulata - Thessaloniki - Athens. The relief of the relatively small territory is very diverse, mostly mountainous, characterized by picturesque rocks with more than 30 caves. Through the municipality flow the rivers Struma, Lebnitsa, Tsaparevska, Sedelska, Shashka and Zlinska. Forest fund is rich. Within the scope of the municipality falls a part of National park "Pirin" and the reserve "Sokolata" in Maleshevska Mountain, which protects 250 years old, high-stem primary forest of oaks and typical for the area of Maleshevska mountain flora and fauna. The climate is transitory Mediterranean, in



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the high mountain parts - mountainous. Natural and geographical conditions in the municipality are favorable for growing thermophilic crops such as tobacco, orchards, vineyards and all kinds of early vegetables specific for our country. Mild winter allows the cultivation of figs, pomegranates, almonds, olives and others. Near the village of Palat was found the largest fluorite deposit in the Balkans. The deposits of marble in the village of Ilindentsi are significant. The municipality also has considerable stocks of limestone and granite

Municipality of Sandanski

Fig. 4. Sandanski municipality



Municipality of Sandanski /998,4 km², 41,167 inhabitants/ is the largest territory in Blagoevgrad district, with 54 settlements - the towns of Sandanski and Melnik and 52 villages. The municipality is

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located among the majestic Pirin Mountain and the borders with Greece and Macedonia. The municipality occupies a great part of the large Sandanski-Petrich basin with a picturesque valley of the middle current of Struma River. Administrative, economic and cultural center of the municipality is the town of Sandanski, which is situated in the southwest slopes of the Pirin Mountain, along the banks of the river Sandanska Bistritsa. Sandanski has the highest number of sunny days in the country 2506 hours. Agricultural areas in the municipality occupy 347,477 acres or 34.84% of its territory and the forest 543,450 ha - 54%. The municipality has the following nonferrous minerals - deposits of marble in the village of Pirin and the village of Ploski; mining of granite above the village Lilyanovo and production of sand, gravel and rubble along the Struma River. Municipality of Sandanski is characterized by wide variety of terrain - flat in the valley of the Struma River, mountain, highland and foothill in the mountains Pirin, Slavyanka, Ograzhden and Maleshevska. This relief diversity determines wide variations in altitude as in the high mountains of Pirin, it reaches over 2800 meters (highest point Mount Kamenitsa - 2822 m above sea level) and 2,000 meters Slavyanka, and is most low in the valley of the Struma River. The municipality covers parts of the National Park "Pirin", listed as World Heritage by UNESCO. There are a number of remarkable forms of relief within the territory - Zheleznishka valley, the picturesque gorge of the river Pirinska Bistritsa above the village of Pirin, the peaks Kuklite and Zabut, the large cirques Goliamo Spano Pole and Malko Spano Pole, Glavnishki and Mandrishte with beautiful cirque lakes known as "Crystal eyes of Pirin", mountaineering - Mount "Yalovarnika" and the area "Konska poliana" (Horse meadow), the impressive Sokolova skala and Kazanite of Dolenska river, Popinolashki and Kashinski waterfalls and undeniably unique natural phenomenon Melnik pyramids, a protected landmark territory. The rich diversity and relief forms and the variety of natural attractions are a good resource and potential for tourism development. Because of its hydro-sulphate content mineral springs are an exceptional natural wealth of the municipality. The sources are classified in class IV system Carstens-Alexandrov. Along the Struma River exist 80 mineral springs, grouped into 13 fields, with temperature 42-81°C. Sandanski is recognized as the best natural treatment clinic for diseases of the respiratory tract. Year-round resort Sandanski is known as center of Bulgarian and international tourism, a starting point for the town of Melnik and Pirin Mountains. Not far from the resort are situated the places of Popina Luka and Turichka cherkva.

CLIMATE CHARACTERISTICS

The climate is transitional-continental in the north parts of the region with strong Mediterranean influence on the South. The weather is mild in the winter and hot in the summer in the valley of Struma river and in the lower parts - 80% of the territory of the municipality. In the higher parts of the municipality which occupies 20% of its territory the climate is mountainous. The mean average temperatures are 12,4 °C and the mean average temperature in July is 16,5 °C. The monthly average maximal temperature varies between +4,7 °C and - 6,1 °C in the winter months and between +30,6 and 30,8 °C in the summer months. The monthly average minimal temperature varies between -3,2 °C and -2,7 °C in the winter months and between +15,3 and 16,0 °C in the summer months. The project is co-funded by EU through the Interreg-IPA CBC Bulgaria-the former Yugoslav Republic of Macedonia Programme

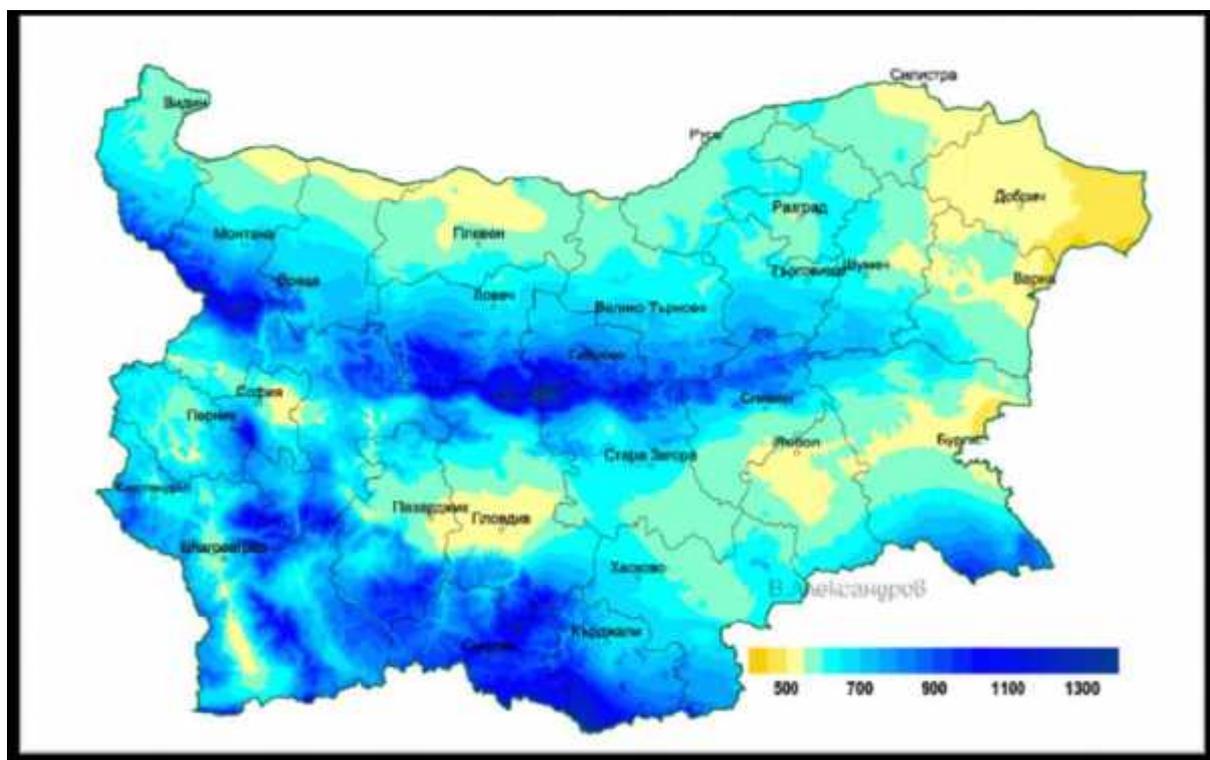


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mountainous territory of the region has mountainous climate with mild and short summer and long and cold winter. The average annual precipitation rate is around 500 mm/year and varies along the region as the southern parts of the region are the driest. In the mountainous parts of the region the annual precipitation rate is higher and can reach above 1000mm/year. The maximum of the precipitation rate is during the late autumn-early winter and the minimum is during the summer.

Fig. 5. Precipitation rate in Bulgaria in mm/year



ADMINISTRATIVE ORGANIZATION

Municipality of Blagoevgrad

The population of the municipality according to the last count in 2011 year are 77,441 people. They live in 26 populated places. Men are 48%, women 52% of the population. The municipality is highly

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urbanized - 91% of all the people live in Blagoevgrad. The mountainous villages are very sparsely populated.

Municipality of Simitli

Its territory includes the administrative center Simitli and 17 villages of this 17 villages only Simitli is a town. The population of the municipality is 14 120 people according the 2012 census.

Municipality of Kresna

Its territory includes the administrative center the town of Kresna and 7 villages. Of this 7 villages only Kresna (3879 inh.) is a town. The population of the municipality is 6062 inhabitants according the 2012 census.

Municipality of Strumiani

Strumiani is rural municipality and due to this reason, the administrative center of the municipality is the village of Strumiani. It has 5,787 inhabitants that live in 21 villages spread out uneven on the municipality territory. The biggest settlement is the village of Mikrevo which has 2276 inhabitants. The municipality center the village of Strumiani is on the second place with 917 inhabitants.

Municipality of Sandanski

The population of the municipality according to the last count in 2011 year is 40 470 they live in 54 populated places. The biggest city is Sandanski which has 26255 inhabitants. The mountainous villages are very sparsely populated, but because Sandanski is a rural municipality almost 40% of the population lives in small villages scattered around Sandansko-Petrich kettle.

ECONOMY IN THE REGION

Municipality of Blagoevgrad

There are few big industrial subjects in the municipality and they are concentrated in Blagoevgrad. The biggest tobacco factory in Bulgaria is situated here. Trade and services form significant part of the municipal economy (50 % of the municipal GDP) as the biggest part around 90% of the companies are small with up to 9 employees. The presence of two universities and a lot of young people (15000 students) is boosting the local economy and also providing qualified labor force. Agriculture and forestry are also important parts of the regional economy and they give 11% of the local GDP. There are more than 10 hotels in Blagoevgrad. Visitors can see a neighborhood with old houses "Varosha" also Blagoevgrad is one of the main gates to the Rila National Park. The hot The project is co-funded by EU through the Interreg-IPA CBC Bulgaria–the former Yugoslav Republic of Macedonia Programme



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mineral water in Blagoevgrad is not widely utilized, but there is communal bath. The mountains in the region offers a lot of places for hiking and picnic. All the cultural institutions are in Blagoevgrad - the theater, museums, art galleries and cultural centers.

Municipality of Simitli

The industry has the leading role in the GDP of the municipality and gives above 60 % of it. Coal industry has been structurally defining for the municipality for many years. The activity is currently concentrated in mine “Oranovo”.Simitli has a key transport importance. It serves as a road link in different directions – to Razlog, Bansko, Gotse Delchev, Drama, Sandanski, Kulata, Thessaloniki and Athens - the main European corridors. Mineral water is actively used for greenhouse production. In Simitli operates great base for greenhouse production of vegetables and flowers. Profiling industries in which work most of the active population, are mainly the forestry and wood processing, textiles and agriculture. The traditions of agricultural production in the municipality were formed under the influence of the natural resources in the middle course of Struma River. The main crops - tobacco, vegetables, fruits, vineyards and pasture farming are the most suitable sub sectors for the municipality and give the appearance of agriculture.

Municipality of Kresna

Economic development of Kresna municipality is influenced by the favourable warm climate, rich forests, international road E-79 and the presence of marble in the area. In total in the municipality are operating 256 companies, but the majority of them are small. Agriculture is specialized in viticulture, greenhouses, early vegetables and tobacco. Forests cover about 70% of the municipality and are important not only for timber and wood processing, but also for tourism, herbs and mushroom picking, hunting and last but not least - the development of livestock. Industrial production is covered by two companies - one for the processing of marble, and another for extraction and processing of natural stones and a number of textile companies. The largest company in the municipality - "Energoremont-Kresna" JSC has customers not only in the country, but also in Germany, Serbia, Montenegro, Macedonia, Israel and Belgium. The international road E-79 is a precondition for the good development of trade. Along the road you can find many comfortable restaurants, diners, shops and motels.

Municipality of Strumiani

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The area of the municipality of Strumyani is one of the hottest in the country, which defines conditions for the development of highly thermophilic crops - fruit, early vegetables and others. The mountainous nature of the relief, with a large percentage of pastures and meadows favours the development of livestock industry which is however with decreasing trends. Economic structure of the municipality of Strumyani is determined primarily by the mining and processing industry. Development of extractive industries is determined by the presence of deposits of marble fields on the territory of the municipality of Strumyani near the village of Ilindentsi. For that reason successfully operates a large plant for the extraction and processing of marble, and numerous workshops for the processing of marble, some of which have established positions in the country and abroad. Quartz and pyrite are also mined. Near the village of Palat was found the largest fluorite deposit in the Balkans. The economic profile is complemented by several sewing and woodworking companies that provide a big part of the employment of the population. Specific natural resources create favourable conditions for development of ecological tourism, opportunities for recreational activities, sports, fishing, gather wild fruits and herbs. The international road E-79 favours the development of trade and services and sectors of the economy.

Municipality of Sandanski

Principal economical branches in the municipality are tourism, clothing industry, food industry, wood processing, manufacture of medical products and construction. The food industry has a strong position in the local economy. Production of wines and spirits, soft drinks, dairy products and others are traditional. By improving the current state of agriculture it is expected to increase the development of food industry. Clothing industry is characterized by dominant participation of foreign investors (Greek, German and French). In recent years, this sector fell off in its development. Pharmaceutical and medical industries are of great importance for the job market. Due to their principal export orientation, this sub sector is one of the main exporters of industrial products to the international markets. The active development of construction in the municipality of Sandanski in the years before the economic crisis formed a significant number of small and medium size construction companies in the municipality. The economic crisis had a strongly negative effect in this sector and many small construction companies suspended their business. Metalworking - one of the priority sectors in the past today has a really reduced presence in the local economy. Agriculture is practiced in all villages of the municipality. It is the main source of income in rural areas, in the form of natural personal properties. An important place in local economy occupies tourism which has great potential. Sandanski has established itself as a modern tourist centre for the treatment of respiratory diseases and carrying out of medical procedures with mineral water. Traditional institutions are balneology and spa centres. Sandanski is known as the best natural asthma clinic in Europe. The resort is recommended for treatment of various lung diseases, chronic rhinitis, sinusitis, neurological disorders, skin allergies, some kidney and urological diseases.

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INFRASTRUCTURE (BUILDINGS, TRANSPORT, ENERGETIC SECTOR IN GENERAL)

Municipality of Blagoevgrad

The municipality has a very favorable location. E79 international road passes through Belo Pole threshold and the western parts of Blagoevgrad alongside with Struma River and connects the region with Sofia on the north and Greece in the south. There is a parallel railway, which leads to Greece, but now due to the policy of the Greek rail operator there are no trains between Sofia and Athens. There is also a road connection with Republic of Macedonia via Logodazh. The fourth class municipal roads need improvement. Blagoevgrad has two bus stations and a train station situated in the western part of the town. Buses connect Blagoevgrad with Sofia, Plovdiv, Sandanski, Petrich, Goce Delchev, Kyustendil, Dupnitsa and other destinations in the region as well as most of the villages in the municipality. There are international bus lines to Greece and Republic of Macedonia. Trains connect the municipality with Sofia, Pernik, Dupnitsa and Sandanski and other smaller settlements alongside Struma river. There is a train stop in Belo Pole, train station in Blagoevgrad and another train stop in the southern part of Blagoevgrad.

Municipality of Simitli

The municipality has a very favorable location. E79 international road passes through Simitli kettle alongside with Struma river and connects the region with Blagoevgrad and Sofia on the north and Greece in the south. There is a parallel railway, which leads to Greece, but now due to the policy of the Greek rail operator there are no trains between Sofia and Athens. There is also a plan for road connection with Republic of Macedonia via Vlahina mountain and the main road to Bulgarian biggest ski resort – Bansko, pass through the municipality. The fourth-class municipal roads need improvement. Simitli has one bus stations and a train station situated in the east part of the town. Buses connect Simitli with Sofia, Plovdiv, Sandanski, Petrich, Goce Delchev, Kyustendil, Dupnitsa and other destinations in the region as well as most of the villages in the municipality. Trains connect the municipality with Sofia, Pernik, Dupnitsa and Sandanski and other smaller settlements alongside Struma river.

Municipality of Kresna

The municipality is situated on E79 international road which passes through Kresna kettle alongside with Struma river and connects the region with Blagoevgrad and Sofia on the north and Greece in the south. There is a parallel railway, which leads to Greece, but now due to the policy of the Greek rail operator there are no trains between Sofia and Athens. The fourth class municipal roads need improvement. Kresna has one bus stations and a train station situated in the central part of the town. Buses connect the town of Kresna with Sofia, Plovdiv, Sandanski, Petrich, Goce Delchev,

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Kyustendil, Dupnitsa and other destinations in the region as well as most of the villages in the municipality. Trains connect the municipality with Sofia, Pernik, Dupnitsa and Sandanski and other smaller settlements alongside Struma river. Kresna is one of the gate to Pirin National park.

Municipality of Strumiani

The municipality is situated on E79 international road which passes through Strumianikettle alongside with Struma river and connects the region with Kresna, Simitli, Blagoevgrad and Sofia on the north and Greece in the south. There is a parallel railway, which leads to Greece, but now due to the policy of the Greek rail operator there are no trains between Sofia and Athens. The fourth-class municipal roads need improvement. Strumiani has one bus stop and a train station situated in the municipality center. Buses connect the town of Kresna with Sofia, Plovdiv, Sandanski, Petrich, Blagoevgrad, Dupnitsa, Sofia and other destinations in the region as well as most of the villages in the municipality. Trains connect the municipality with Sofia, Pernik, Dupnitsa and Sandanski and other smaller settlements alongside Struma river.

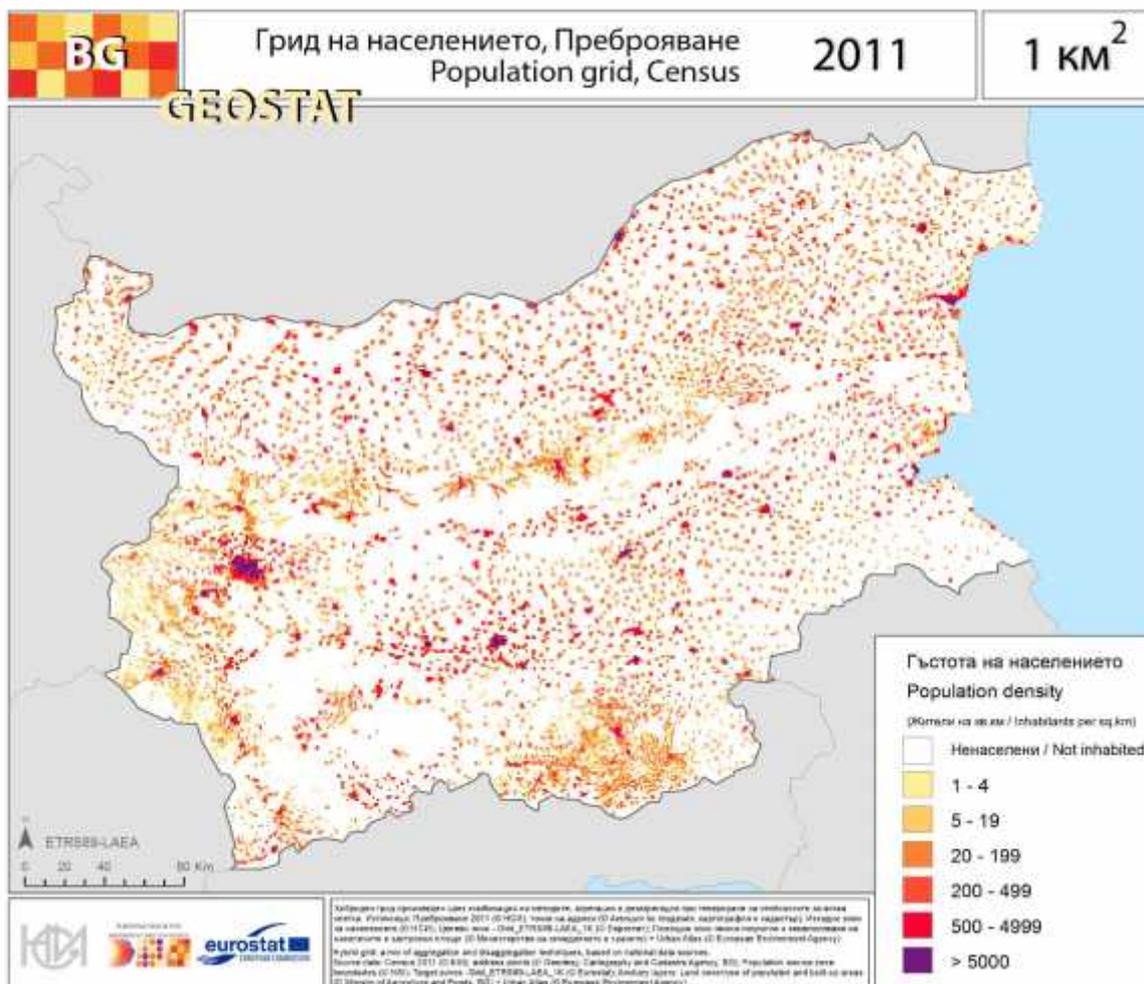
Municipality of Sandanski

The location of Sandanski Municipality at the same distances from the economic and transportation centers of Sofia and Thessaloniki (Greece) /160 km/ provides intensive traffic. Through its territory passes the international road E-79 and railway Sofia - Kulata - Athens. The train station is situated outside the city borders and there is also a bus station. Because of the large number of small villages the the fourth class municipal road network is well developed but it needs improvement in many locations.

DEMOGRAPHICAL DATA



Fig. 6. Population density in Bulgaria



Municipality of Blagoevgrad

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Fig. 7. Dynamics of the population

Blagoevgrad Municipality

Year	1975	1985	1992	2001	2005	2007	2009	2011
Population	58,812	72,498	78,810	78,175	77,346	76,257	76,812	77,441

Sources: Census 2001, Census 2011

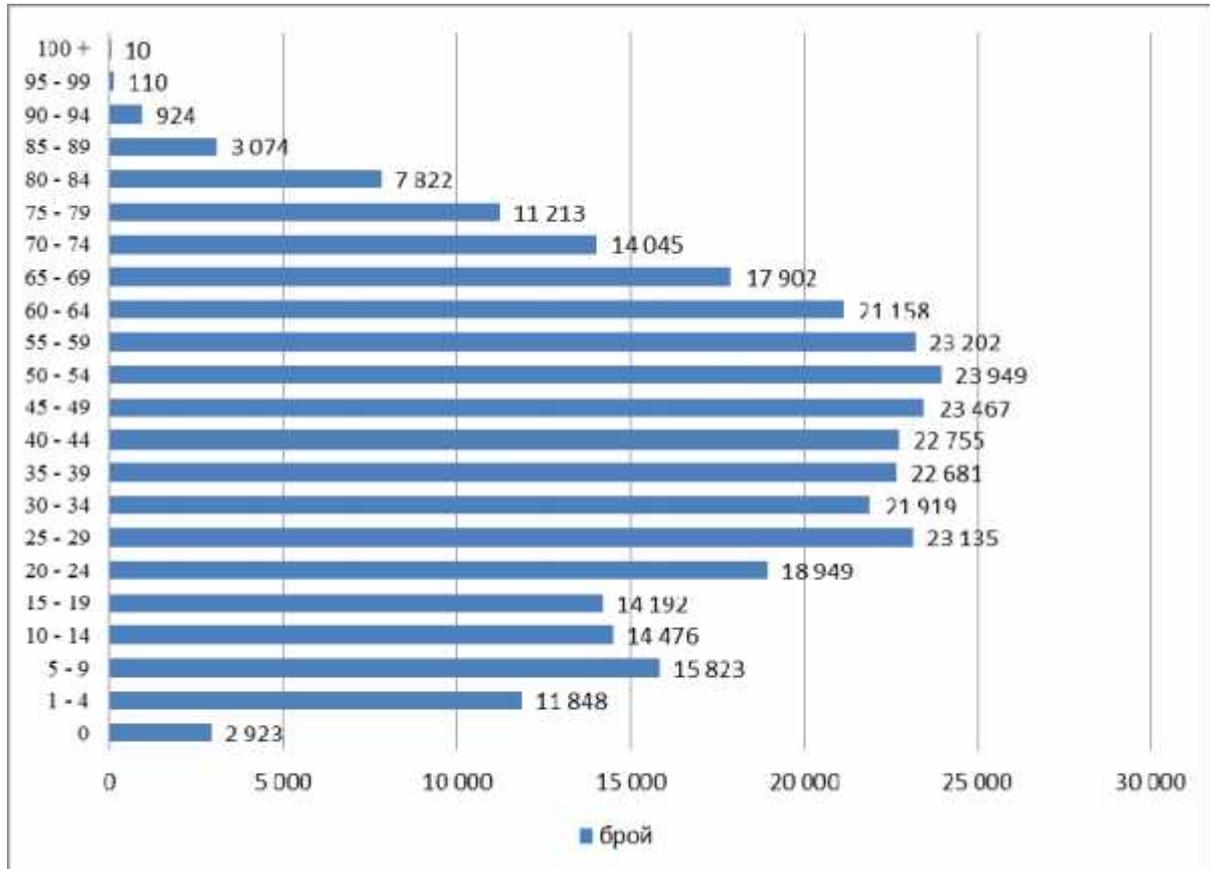
Fig. 8. Structure of the population in Blagoevgrad municipality

Age	Total			In the cities			In the villages		
	Total	Man	Women	Total	Man	Women	Total	Man	Woman
Total	77 441	37 183	40 258	70 881	33 887	36 994	6 560	3 296	3 264
0-4	3 547	1 842	1 705	3 317	1 734	1 583	230	108	122
5-9	3 001	1 548	1 453	2 768	1 425	1 343	233	123	110
10-14	2 927	1 488	1 439	2 696	1 371	1 325	231	117	114
15-19	4 653	2 213	2 440	4 384	2 066	2 318	269	147	122
20-24	8 364	3 690	4 674	8 041	3 531	4 510	323	159	164
25-29	6 048	3 018	3 030	5 674	2 823	2 851	374	195	179
30-34	5 808	2 948	2 860	5 404	2 743	2 661	404	205	199
35-39	5 739	2 919	2 820	5 325	2 685	2 640	414	234	180
40-44	5 409	2 620	2 789	5 010	2 400	2 610	399	220	179
45-49	5 473	2 628	2 845	5 074	2 414	2 660	399	214	185
50-54	5 926	2 844	3 082	5 458	2 582	2 876	468	262	206
55-59	5 646	2 762	2 884	5 190	2 526	2 664	456	236	220
60-64	4 832	2 373	2 459	4 309	2 102	2 207	523	271	252
65-69	3 230	1 460	1 770	2 763	1 237	1 526	467	223	244
70-74	2 625	1 174	1 451	2 128	941	1 187	497	233	264
75-79	2 252	923	1 329	1 794	726	1 068	458	197	261
80-84	1 243	471	772	997	384	613	246	87	159
85+	718	262	456	549	197	352	169	65	104



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Municipality of Simitli

Fig. 9. Population of Simitli municipality

Year	Population	Man	Women
2009	14887	7377	7510
2010	14712	7280	7432
2011	14283	7181	7102
2012	14120	7092	7092



Fig.10. Age distribution of the population of Simitli municipaliti in 2011

Group	Number	%
Under 18 years old	2824	19,77
Between 16 and 63 years	8832	61,8
Above 63 years	2627	18,43

Municipaliti of Kresna

The municipality has 6062 inhabitants, which are uneven distributed along the municipal territory. The population of the municipality was 5851 during 2009 and the dynamics of the population movements is not great. In 2012 the population is 5896 which is almost the same like in the 2009.

Fig. 11. Population of Kresna municipality

Year	Total	Man	Women
2009	5851	2922	2929
2010	5698	2847	2851
2011	5991	3029	2962
2012	5896	2968	2928

Fig. 12. Age structure of the population in Kresna municipality in 2012

Group	Number	%
Under 16 years old	798	13,5
Between 16 and 63 years	3489	59.1

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Above 63 years	1609	27,2
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Municipality of Strumiani

Fig. 13. Population of Strumiani municipality

Year	Total	Chain % of change
2009	5903	98,72
2010	5787	98,03
2011	5693	98,38
2012	5605	98,45
total		12,19

Fig. 14. Age structure of the population in Strumiani municipality in 2011

Year	Number
0-6	375
7-19	683
20-65	3031
Over 65	1604

Municipality of Sandanski

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Fig. 15. Population of Sandanski municipality

Year	Number
2001	43109
2011	40 470

Fig. 16. Age structure of the population in 2011

Year	Number
0-14	5371
14-65	27826
Over 65	7273

OUR VISION FOR THE CROSS-BORDER REGION

No-one knows what the future holds. But based on our knowledge today, in 2017, we can make some reasonable estimates about the difference we can make if we implement the big changes set out in our policy for a low carbon economy.

If we implement our policy for decarbonizing the economy now, we believe that by 2050:

- In this cross-border region lighting and electronics, and most of our machinery, equipment, appliances and cars can be powered by low carbon electricity provided through a new electricity internet;



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- We can be tapping new, abundant low carbon energy sources like solar power and biogas and using the renewable energy produced not just to deliver electricity but also to warm our homes and provide heat for our communities;
- Our homes, public institutions, and businesses can be dramatically more energy efficient and use less energy in future than now in 2017;
- We can be much less dependent on imported fossil fuels from volatile regions of the world, and as a result much more secure;
- We can turn our cross-border region into the leading place on the Balkan Peninsula for economy and development based on green innovation and technology, and we can enhance our competitiveness through a significant reduction in the amount of energy required to manufacture products, to provide services and to live and work in the carbon neutral communities;
- We are certain that we can build this secure, green prosperous future, but only if we start the work of transforming from our national energy infrastructure to build a new green local sustainable infrastructure.



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SECTOR: ENERGY

The sector of Energy is the major contributor to the GHG Emissions in the 9 municipalities from this cross border region between Bulgaria (Municipality of Blagoevgrad, Simitli, Kresna, Strumiani and Sandanski) and Macedonia (Municipality Berovo, Delcevo, Pehcevo and Vinica). According the GHG Inventory around **78%** from total GHG Emissions came from Sector Energy in both Municipalities from Bulgaria and Municipalities from Macedonia. The total GHG Emissions from Energy Sector for all municipalities in both countries is **493.756,70 t CO-eq/yr** (estimated for 2016). Contribution of Electricity for households, public institutions, business entities is **43,09%** of total emissions and **55,42%** from the emission from Energy Sector with **273.646,65 t CO-eq/yr** (estimated for 2016). Transport and Mobility is second with highest GHG emission source with **25,13%** from total emissions or **32,31%** from Energy Sector with **159.551,82 t CO-eq/yr** (estimated for 2016). Heating of public, business and household buildings contribution is **9,54%** of total GHG Emissions or **12,26%** from Energy sector emissions with **60.558,23t CO-eq/yr** (estimated for 2016).

The changes we want to make are genuinely revolutionary. They involve putting computing intelligence into electricity networks, through the introduction of a smart grid and the use of smart meters in people’s homes, so that demand and supply can be intelligently managed. That’s it call it the **SMART energy transition systems**.

Introducing and moving to an SMART energy transition systems will unlocks many opportunities. Large-scale use of renewables becomes feasible because a smart grid can manage domestic and commercial appliances to use more energy when it is abundant and less at peak times. Homes and businesses, schools and hospitals, will be able to contribute energy from their own small-scale low carbon energy production – or micro-generation – via their smart meters, earning money in the process.

Participation in the interactive, intelligent management of load via the smart grid will be voluntary; the customer will choose. But those that take up the opportunity will see their energy bills fall while their standard of living rises, as they take much greater control of their energy use.

And the SMART Local Energy Systems won’t just change the energy and power we don’t see, it will change the way we live our lives on a daily basis. Just a few years ago zero-emission cars were a pipe-dream, to be seen on science-fiction movies, but a these days new smart grid enables the installation of plug points in streets, heralding a new era of electric and plug-in hybrid cars which will clean up pollution and cut the cost of motoring.

We can greatly reduce our dependence on coal electricity and non-renewable fuel sources by introducing new local solar photovoltaic or biogas plants. Instead of rubbish and farm-waste going to landfill and slurry tanks, it will be turned into low-carbon, low emission biogas that can produce electricity and heating energy. This new biogas will be fed into the gas grid or used to supply heat to

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community heating schemes which, by cutting the amount of energy lost in power generation, will dramatically cut costs for residents who take part.

Local heating schemes could also be fuelled by second-generation Biofuels or biomass (pellets). Because they are derived from agricultural waste and non-food crops, they will bring an end to the current problem where increased use of Biofuels raises food prices, hitting consumers in the pocket.

1.1. ELECTRICITY CONSUMPTION

According existing relevant received data the electricity consumption in Macedonia Municipalities is 99.635,00 MWh/yr.(estimated for 2016). The electricity consumption of Bulgarian Municipalities is 213,320 MWh/yr. (estimated for 2016).

Most of the electricity consumption is by done households with 48,02%, the electricity is used for heating/cooling the buildings (mainly in Bulgarian Municipalities), for heating the water, lightening the buildings and household activities.

Second consumption of electricity is coming by business entities with 43,14%, using electricity for technical operation process, heating the buildings and lightening the buildings.

The lowest electricity consumption is by Public Building & Entities including, Municipal Buildings, Public Street Light, Schools, and Kindergarteners etc. Their participation in electricity consumption is 8,84% of total electricity consumption. The electricity is mainly used for lightening, operation of the Electrical appliances and in some cases for heating the buildings.

Goal: Decreasing the GHG emissions from electricity consumption by using energy efficiency appliances, technologies and savings

Measures:

- 1.1.1.Reconstruction or installment New Public Street Lightening Systems with usage of energy efficiency lights, renewable solar energy, with SMART technologies for controlling the public street lightening.
- 1.1.2.Increasing usage of renewable energy sources with mini-solar photovoltaic systems for production of electricity by households, public entities and business entities;
- 1.1.3.Build a Municipal Solar Photovoltaic Plants (where is possible) for covering the needs of electricity on Public Buildings/Institutions;
- 1.1.4. Purchase and usage of energy efficiency equipment/appliances by households, public entities & business entities.

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- 1.1.5. Usage of hybrid solar panels in public building for producing electricity and boiled water.
- 1.1.6. Substitution of electricity for heating with other energy sources like a Natural Gas, Bio-Gas, or Biomass;
- 1.1.7. Supporting investments in small-scale Hydro plants, Bio-gas plants, Solar photovoltaic plants.



1.2. HEATING/COOLING OF BUILDINGS

Regarding the installed heating and cooling systems in households and public, commercial and private premises the received data are very limited because the Municipalities doesn't have any additional register of installed heating and cooling systems in households and other type of premises, so there is a lack of now-days relevant data.

According the available data from Census 2002 in Macedonia, the total installed heating systems in four Municipalities is around 40.000, but this is very old data and outdated, so the relevant number of heating systems is expected to be much bigger. There is no existence of central heating system in Municipalities. Most of the all installed heating systems (97,7%) are with one or more individual stoves using mainly wood (99%) as a fuel. There is an evidence of 807 individual heating systems installed and also mainly they use a wood as fuel. Around 190 heating systems use a liquid fuel (oil) and around 80 use a coal as a fuel. Around 130 are using electricity for heating. There is very low usage of natural gas or bio-gas for heating the building, usage of high efficiency bio-mass fuel (pellets)

Regarding the Bulgarian Municipalities, around 53000 heating systems are registered. There is no Central Heating System in Municipalities, and most of them are using wood as a fuel (42,1%) and electricity (32,78%), but there is also significant number of usage of coal as e fuel (23,19%) or 12.145 number which is has a high carbon footprint of 60.558,23 t CO₂e/tj.

Becoming a low carbon economy is not just about developing the new energy generation technologies of the future. It is also about taking action now to reduce emissions from the principal non-energy sources of carbon, namely housing, industrial buildings, public buildings, and household goods.

Changes to heating/cooling installation systems and isolation of building can have such a dramatic effect on energy consumption that it's possible to fit out a home with energy saving equipment and for the household to still save money on their bills immediately. Making it happen also will create of new jobs.

Goal: Reduce emissions from the principal non-energy sources of carbon, namely housing, industrial buildings, public buildings, and household goods

Measures:

- 1.2.1. Establishment of Join Municipal and Regional System for collecting information and registering of heating systems and fuels used by public institutions, business sector and households;
- 1.2.2. Support all forms of low carbon heat generation and give local authorities powers to establish new Combined Heat and Power local heating networks;

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- 1.2.3. Improvement of thermal isolation (walls, roofs, outside windows & doors) on buildings with implementation standards for energy efficiency of the buildings;
- 1.2.4. Substitution of coal and oil fuels in heating systems, and switching on with Bio-mass, Natural Gas or Bio-gas.
- 1.2.5. Decreasing electricity consumption in heating systems;
- 1.2.6. Support usage of Solar Boiler Systems for Water heating in households, public and business entities.
- 1.2.7. Promote usage of heating pumps and geothermal energy;



1.3. TRANSPORT / MOBILITY

The transportation sector includes the greenhouse gas emissions of many types of transportation vehicles, such as cars, trucks, tractors, motorcycles etc and it is the second largest GHG emitter with total of 159.551,82 t CO₂ eq/yr or 25,13% contribution of total GHG Emission and 32,31% from contribution of Energy Sector. These transportation vehicles run on different types of fuels: gasoline, diesel and LPG, the use of which causes emission of greenhouse gases CO₂ (carbon dioxide), CH₄ (methane) and N₂O (nitrous oxide) as well as other gases (CO, NMVOCs, PM, NO_x) which cause air pollution in the municipality. The greenhouse gas emissions can be calculated according to the used fuel on the territory of the municipality (the fuel sold at the petrol stations) or according to the mileage traveled by the vehicles in the municipality.

A unique feature of the Bulgarian vehicle fleet is its age structure. In 2015 more than 86% from the vehicles are above 10 years old, while new vehicles (1 to 5 years) are 4% from the total and 11% are 5 to 10 years old. Road transport has the biggest share in total fuel consumption in Transport subsector in the investigated municipalities. In 2015 road transport consumed 94.4% from the total energy in the sector. The most significant contributor to GHG emissions are passenger cars, followed by heavy-duty vehicles, light-duty vehicles and motorcycles and mopeds. Passenger cars account for 65.1%, light-duty vehicles are responsible for 13.7%, and heavy duty vehicles (incl. buses) account for 20.9% of total GHG CO₂e emissions, with the share of passenger cars increasing over the time series.

Goal: Decreasing the GHG emission by Transport Sector

Measures:

- 1.3.1. Establishing Municipal and Regional Network of stations for renting bikes in Communities
- 1.3.2. Designing, projection and marking of long-distance biking trails in and between municipalities;
- 1.3.3. Support and promotion of usage of electric and hybrid vehicles;
- 1.3.4. Establishing and building a regional charging stations for electric vehicles;
- 1.3.5. Purchase of new electric vehicles for public institutions;
- 1.3.6. Promotion of usage of Methane, Bio-diesel, and Bio-gas



SECTOR: AGRICULTURE

Agriculture plays a key role in mitigating climate change. Mitigation measures at farm level have been shown to be effective, and the newCAP reform should help increase their potential. Nevertheless, a precise definition of and approach to these measures is needed in order to ensure that mitigation options at farm level are able to fulfil European mitigation commitments over the coming years.

In relation to climate change, forestry and agriculture are about removals, emissions and storage. Removals result from the capacity of plants and soils to absorb and retain greenhouses gases from the atmosphere through the process of photosynthesis. Removals take place when trees grow or organic material builds up in soils. Emissions take place for instance when plants die and decay or when soils are disturbed so that their capacity to store is decreased. This would be the case when trees or crops are harvested, if wetlands are drained or if grasslands are ploughed.

Goal: Improving practices in Agriculture sector for reduce GHG emissions

Measures:

- 2.1. Enable utilization of the livestock waste and production of biogas with the fermentation of slurry, residues and other plants generates biogas, which is used to produce electricity or heating the buildings;
- 2.2. Introduction of Good Agriculture Practices in farming and using renewable energy sources;
- 2.3. Usage of agriculture waste for heating every farm that requires heat for its activities, or simply to heat its buildings, can produce this heat from renewable energy such as wood or other biomass products;
- 2.4. Preparation of compost and production low-carbon fertilizers.
- 2.5. Introduction of leguminous plants on arable land
- 2.6. Implementation of cover crops planted to restore soil fertility and quality, contributing simultaneously to better management of water, weeds, pests, diseases, biodiversity and wildlife in agro-ecosystems (includes catch crops, cover crops, green manure, wild vegetation)
- 2.7. Fuel reduction by implementation of sustainable farming practices that lead to the reduction or optimization of work on the farm

SECTOR: NATURAL CAPITAL

Forests are natural dump of carbon dioxide, through the process of photosynthesis. The process of removal of carbon dioxide from the atmosphere is known as sequestration of carbon dioxide. In order to calculate the emissions, that is, the deposition of carbon dioxide in forests, it is necessary to The project is co-funded by EU through the Interreg-IPA CBC Bulgaria–the former Yugoslav Republic of Macedonia Programme



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perform measurements of many years of the annual changes in the forests (growth rate of the biomass, forest logging, diseases of the trees etc.). The cross border region between Macedonia and Bulgaria including 9 Municipalities is covered over 200.000ha with forest, and with large capacity of sequestration of carbon dioxide of over 600.000 t CO₂eq/yr.

Goal: Preserving and improving the sequestration capacity of the Forest.

Measures:

- 3.1. Re-forestation and increasing area of forest with specific local origin plants;
- 3.2. Establishing Join local & regionalearly warning systems and Fire protection;
- 3.3. Establishing effective system for combating Illegal Lodging;
- 3.4. Usage of good forestry management practices;

SECTOR: WASTE

In Republic of Macedonia it is very difficult to find historical data about the quantity of solid waste at local level. In the absence of such data, in order to calculate the emissions of waste generated in the municipality, it is necessary to use indicators (population, economic growth etc.) The average Annual quantity of generated communal waste (kilotons of municipal waste) is 16.716,74 kt/yr and around 872,32 tones/y CH₄, or that is 18.318,65 tons of CO₂-eq/y.

According the relevant data for Bulgarian Municipalities The average Annual quantity of generated communal waste 57.181,31 kt/yr.the total emissions from landfills in the five municipalities in Bulgaria are 2.267,05 CH₄ t/year or 47.608,15 t CO₂eq/year. The methane emission from the landfills in the project municipalities in Macedonia is

Goal: Sustainable Waste Management for decreasing the GHG Emission

Measures:

- 4.1. Promotion and putting in function waste selection and 4 RE (reduce, reuse, recycle and recovery)
- 4.2. Establish Effective Regional Network for Waste collection.
- 4.3. Establish policy for measuring and collecting information about the waste generated by local households, public entities and business sector.
- 4.4. Transforming of existing waste disposal into facilities of production of Biogas (methane)
- 4.5. Waste separation for production of compost and biogas;

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4.6. Straightening capacity of Public Enterprises dealing with waste management



SOCIAL ACCOUNTABILITY

The energy and climate challenges force us to think about our society in the long term. The European Commission’s Energy Roadmap 2050 provides scenarios that encourage us to carry out similar exercises at the local level and to engage in the energy transition. In an unpredictable world, cities and towns need more than ever to develop a shared vision of their future, a sustainable and desirable future that makes sense and brings hope.

Societal changes are increasingly taking place in cities and the responsibility for energy transition largely rests on local elected representatives and officers. Many towns and cities have already taken action and learned a lot in this field, whereas others have just started. Some have experience in town planning or in CHP and heat and/or cooling networks. Others are renowned for their transport systems, energy-efficient building retrofitting programmes or urban farming. This richness has not yet been fully tapped although these experiences are an unlimited source of wealth, and one that is free when shared between colleagues.

It is very important to joining interested private, public and associative players in local energy or energy transition alliances. Establishing such alliances is relevant at all levels: local, regional, national and European. They provide stakeholders with the opportunity to express their expectations, to enlarge their visions and to influence energy policies. It is a forum where to exchange points of view and make proposals. Experience shows that common interests immediately emerge, regardless of the stakeholders’ status.

Municipalities need energy for their buildings and various facilities, like street lighting, computers, water pumping and treatment as well as waste management systems. This represents 3-5% of their territories’ total energy requirements. It might be inferred from the above that this is negligible.

On the contrary! It is possible to have a direct effect on energy and budgetary expenditure, with quick results. The required investments can often be financed from the savings made, a totally different situation when compared to other types of public investment which only generate additional operating expenses, year after year.

Goal: Straightening capacity of the local stakeholders for transition on low-carbon economy

Measures:

- 5.1. Establishing Cross-border Network for Low Carbon Economy
- 5.2. Advocacy in policy making process for promotion of Low Carbon Economy
- 5.3. Raising awareness of local communities for Low Carbon Economy
- 5.4. Establishing join local and regional data system for data collection



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- 5.5. Establishing Local Municipal Energy Revolving Funds, which derives from the revolving aspect of its investments and repayments in green economy by income from its investments, creating the opportunity to continuously finance new investments from year to year. The funds are intended to remain available with no fiscal year limitation;
- 5.6. Building an in-house information system with key indicators of the energy use, and of the savings made and re-allocated in each public buildings;
- 5.7. Straightening administrative and technical capacities of Municipalities for implementing measures for Low-Carbon Economy;
- 5.8. Development of Innovative financing schemes of soft loans and third party investment;
- 5.9. Drawing up a multi-annual action plan so as to schedule investments and integrating an “energy savings” and “renewable energy” section in all future work planning.
- 5.10. Raising public awareness and communicating the low-carbon economy results with the local population;

MONITORING AND EVALUATION

Description:

As a part of the Monitoring and Evaluation, is the development of “Platform for Dialogue” at the regional and local level for a range of different stakeholders on the issue that is closely connected to low-carbon economy. This “Platform for Dialogue” will function as a Network and will aim to help municipalities, business entities and environmental NGOs to increase their capacity to undertake better coordinated and articulated actions, to exchange experience in the area of Low-Carbon Practices and Strategies and to undertake joint or coordinated actions. The Network will be Informal Body and will have a watchdog role to monitor the implementation of the activities developed in the Joint Policy Paper and will have representatives from Municipalities, Public Institutions, Business Entities, Producers of Renewable Energy Sources, Environmental NGOs, as well as experts in this field from the region.

Within the establishment of the Cross-Border Network for Joint Low-Carbon Economy, Cluster “Renewable Energy Sources” (as project partner 2) is responsible for coordination of the process of preparation of draft concept, functional structure and draft action plan for next 3 years. The project is co-funded by EU through the Interreg-IPA CBC Bulgaria–the former Yugoslav Republic of Macedonia Programme



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for the Network. The final documentation, necessary for the establishment of the Cross-Border Network for Joint Low-Carbon Economy must be accepted by Lead partner - Association “Center for medical herbs and berries Ambrozija” and the Project partner Cluster “Renewable Energy Sources”. Both partners are responsible for enhancing the participation in the Network by relevant stakeholders from East Region in Republic of Macedonia and from Blagoevgrad Region in Republic of Bulgaria, as well as for administrative support of the Network during project implementation and 2 years after the Project has been completed. Therefore within this activity the following steps must be taken:

Preparation of Draft Concept of the Cross-Border Network for Joint Low-Carbon Economy;
Functional Structure of the Cross-Border Network;
Draft Action Plan (Monitoring Plan) for 3 years of the Network (2 years after Project completion);

Goal:

The Network, as Informal Body and having will have a watchdog role to monitor the implementation of the activities developed in the Paper for the period of 2 years after Project’s completion.

Objectives and Measures:

The Network will watch over the indicators set in the Monitoring Plan to fulfill its mission, whether the objectives laid in the Policy Paper are achieved, overachieved or lagged behind. Therefore within the indicators there are:

- Number of Municipalities/Public Institutions with Low-Carbon Economy Transition Initiatives;
- Number of Enterprises, implementing Low-Carbon Economy Practices within the Cross-Border Region in the following sectors: Energy Sector, Transportation Sector, Industrial Sector, Agro Food and Forestry
- Number of Sustainable Tourism Practices;
- Number of Low-Carbon Economy Transition Public Campaigns;

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Establishing monitoring and evaluation body from members of the Network

The main bodies in the Cross-Border Network are the partner organizations, responsible for the establishment of the Network: Association “Center for Medical Herbs and Berries Ambrozija” and Cluster “Renewable Energy Sources”.

The other members of the Network have been selected from both sides (Blagoevgrad Region in Bulgaria and East Region in Macedonia).

Each partner was responsible for selecting of the appropriate Stakeholders for the relevant country.

The identification process of the main target groups of potential stakeholders from the Blagoevgrad Region was made, following the pattern from the AF, where the following stakeholders were initially identified:

Institutions, related to the EU2020 aims for transition to Low-Carbon Economy (Regional Inspectorate of Environment and Water-Blagoevgrad, District Administration of Blagoevgrad, Blagoevgrad Municipality, Other Governmental Bodies/Local Authorities with indirect contribution)

Business Entities (Chamber of Commerce and Industry – Blagoevgrad, Business Information and Consulting Centre (BICC) – Sandanski, Alliance of the Producers of Ecological Energy – BG, Business Incubator-Gotse Delchev Entrepreneurship Promotion Centre, Other Business Entities)

Non-governmental organizations (Association of South-West Municipalities, Centre for Natural and Social Research, Counsel of Tourism – Blagoevgrad, European Information and Consultancy Center – BG Regions)

Experts;



ACTION/MONITORING PLAN

INDICATOR	Description	Target Number until January 2019	Target Number until January 2020	Target Number until January 2021
Initiatives of Public Bodies for Transition to Low-Carbon Economy	Number of Initiatives of Public Bodies (Municipalities/Public Institutions) for transition to Low-Carbon Economy.	4	8	12
Enterprises (from all Sectors), implementing Low-Carbon Economy Practices within the Cross-Border Region	Implemented Low-Carbon Economy Practices in Private (or Public) Enterprises from the following Sectors: Energy, Transportation, Industry, Agro Food and Forestry	20 (10 for each side)	40 (20 for each side)	60 (30 for each side)
Energy Sector (only)	Implemented Low-Carbon Economy Practices in the Energy Sector	4	8	12
Transportation Sector (only)	Implemented Low-Carbon Economy Practices in the Transportation Sector	2	4	6
Industrial Sector (only)	Implemented Low-Carbon Economy Practices in the Industrial Sector	10	20	30
Agro Food and Forestry (only)	Implemented Low-Carbon Economy Practices in the Agro Food and Forestry	4	8	12
Implementation of Sustainable Tourism Practices	Transition of established Enterprises (or establishing new Enterprises) in the Tourism Industry implementing Low-Carbon practices	2	4	6
Raising public awareness Campaigns for Low-Carbon Economy Transition	Initiated Campaigns by NGO's, Public Institutions or other bodies to raise public awareness about the need and the benefits from the Transition of the Region towards Low-Carbon Economy.	4	8	12