

Industrial regions and climate change policies

**Reference document for
the region of Stara Zagora (Bulgaria)**

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Methodology

The present study has been drawn up on the basis of the analysis, compilation and comparison of data which are essentially in the public domain. It is supplemented by material from interviews conducted with the local and regional social and economic players.

We would like to thank the representatives of the companies and trade unions who assisted us in the preparation of this report with their valuable input:

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1. General characteristics of the region of Stara Zagora and presentation of the Maritsa Iztok complex

1.1. Geography

In the context of the current study the region of Stara Zagora is equivalent to the Stara Zagora province, situated in the south central part of Bulgaria.



The province covers an area of 5,151 km² and has a population of around 350,000.

The capital of the region is the town of Stara Zagora, with a population of around 140,000.

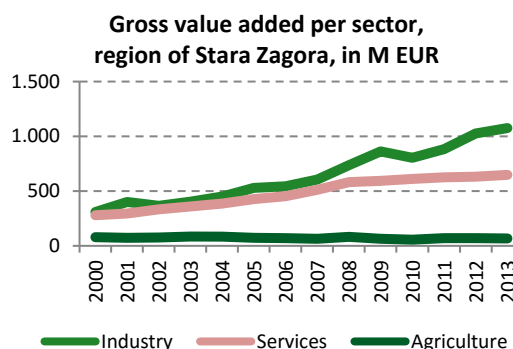
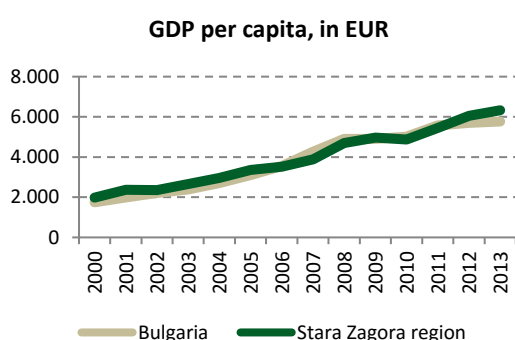
The region is covered by the Balkan mountain range (Stara Planina) in the northern part, and the Upper Thracian Plain covers its central and southern parts.

1.2. Economy

The region of Stara Zagora is located inland, with transportation routes providing connections to Sofia at 230 km, the Black Sea port of Bourgas at 180 km, the border with Romania and the Danube port of Rousse at 235 km and the port of Alexandroupolis in Greece at 300 km. The region is also well served by the national railway network.

The economic development of the region followed the general trend of the Bulgarian economy. Between 2000 and 2013 the region's GDP rose 4.2 times, in line with the growth of the national economy. The main drivers of the regional growth were the sectors of industry (x4.5) and services (x3.3). As a result, the share of the industry in the region's gross value added grew from 46% in 2000 to 60% in 2013.

At 6.7%, unemployment in Stara Zagora region is lower than the Bulgarian average of 10.2%.



The region is one of the main industrial centres of Bulgaria due to the power production facilities based on coal mining. The Maritza-East Basin, situated in the region, supplies lignite coal for electrical power plants that provide 30% of the electrical power in Bulgaria.

The power production industry based on coal mining is emblematical for the region but caused significant ecological problems. Its solution is joining the efforts of the governmental institutions at all levels, of the businesses, the University, and the civil society structures. Steps to improving the environmental features of the region are many ecological projects – private, public, and public-private partnerships and related to purification systems, utilization of renewable energy sources, cultivation of ecological knowledge and behaviour of the population and especially of the young people.

1.3. Energy context in Bulgaria

The Energy Strategy of Bulgaria is based on two main foundations: nuclear energy and local lignite coal that will be given priority in the development of a competitive energy market in the future.

Low grade lignite is Bulgaria's only significant indigenous proved resource of primary energy. Coal-fired plants produce around 55% of the country's electricity. The largest coal supplier is the 100% state-owned Maritsa Iztok Coal Mines Co. (MECM, part of BEH), which sells almost all of its output to the power plants located at the mines.

Most lignite reserves are found in the central (Maritsa East) and western part of the country (Sofia and Bobov dol). The Maritsa Iztok mines cover an area of some 240 square kilometres. There are three opencast mines operated in the Maritsa East coalfield – Troyanovo-1 mine, Troyanovo North mine and Troyanovo-3 mine. These three opencast mines have the potential to produce more than 30 million tonnes of lignite per year.

The Bulgarian electricity market falls under EU liberalization rules. At market currency exchange rates, electricity prices in Bulgaria are still among the lowest in Europe, which has often been pointed out as a reason for the inefficient use of electricity by households, particularly for heating.

Thermal power generation features prominently in Bulgaria's energy mix because the only significant domestic primary energy source is low-grade lignite. Natural gas based thermal power generation is marginal. The backbone of thermal power generation is the Maritsa Iztok coal basin, where three major power plants are located. TPP Maritsa Iztok 2 is owned and operated by Bulgaria's NEC, is the largest TPP on the Balkans (1,460 MW) and produces about 30% of Bulgaria's electricity.

Nuclear power has a major contribution in satisfying the needs for electricity of the economy. Kozloduy NPP provides more than one third of the total annual electricity output of Bulgaria. It has six reactors in total but the first four units were shut down in 2002 and 2006 as one of the conditions for Bulgaria's accession to the European Union. Currently, Kozloduy NPP operates two Soviet-built units of 1,000 MW each, Unit Five and Unit 6, which were commissioned in 1987 and 1991, respectively. Their original operational life is set to expire in 2017 and 2019, respectively.

In February 2016, Kozloduy nuclear power plant has signed a deal with a consortium of Russia's Rusatom Service and Bulgaria's Risk Engineering to evaluate the technical status of one of its two operating 1,000-MW nuclear reactors and map out the necessary works for extending the life of Unit 6 up to 60 years.

According to reports from January 2016, the siting of a new nuclear power unit in Bulgaria is expected to be approved by the country's regulatory authorities this summer. Bulgaria sought possibilities to increase the country's nuclear power capacity through the construction of a seventh reactor of Kozloduy NPP. The reactor would cost about 5.77 billion U.S. dollars, and to avoid taking risks the government has sent invitations to any possible investors that are willing to invest in the construction of this unit.

Electricity produced from renewable sources in 2013 accounted for 18.9% of total production in the Southeastern region of Bulgaria. At the national level, the share of the renewable energy in final gross energy consumption is of 19%.

1.4. Maritsa Iztok industrial complex

The Maritsa Iztok industrial complex, situated in the Stara Zagora province, is the largest energy complex in South Eastern Europe. The complex consists of three lignite-fired thermal power stations, fired using lignite from the Maritsa Iztok mines. The complex is based on a large lignite coal basin, which includes several mines, enrichment plants, a briquette plant and its own railway system.

The Maritsa Iztok mines and power plants are interdependent as the coal from the mines is almost exclusively used by the power plants, which at their turn are almost entirely supplied by the mines. The coal produced by the mining complex has high sulphur content and cannot be directly sold to population.

Coal Mining Complex Mini Maritsa Iztok

The Coal Mining Complex Mini Maritsa Iztok is a 100% state-owned sole-proprietor joint-stock company.

According to Mini Maritsa Iztok CEO Andon Andonov, in 2015 the company produced over 32 million tonnes of coal which it supplied to the thermal power plants. According to Andonov, if the company maintains these output levels, it risks triggering a landslide in some of the pits, which would lead to a halt in production, which in turn would cause a disruption of power supplies. In December 2015, Bulgarian media reports showed that the coal mining complex should cut its output to 27 million tonnes of coal annually in the next three years to avoid landslides.

Among the most important issues signalled by the interviewed persons during the visit at Mini Maritsa Iztok, the problem of coal pricing was central. The price of the coal supplied by the mines to power plants has been recently a very sensible issue and a "political tool", according to company representatives. Since 2009, the price formula that was previously applied was no longer used and the price of coal was fixed by the government "at the lowest possible level".

In addition to low coal prices, the financial situation of the mining company was aggravated by delayed payments from power plants, especially from the two American TPPs, but also from the state-owned National Electricity Company. As of April 2015, the Bulgarian units of US companies AES and ContourGlobal owed Mini Maritsa Iztok a total of 206 million BGN, and local power producer Brikel owed it a further 47 million BGN.

According to trade unions, working conditions at the mines have not improved in the last years and that was linked to the lack of funds by the company's management. The fact that the National Electricity Company has to buy 100% of the electricity produced by renewable energy plants at very expensive levels - "ten times more expensive than thermal power" - is viewed as a negative factor by the state-owned thermal power plants, which consider that their prices are kept low in order to counterbalance expensive renewable energy.

The mining company also has to pay concessions to municipalities for the use of land, which aggravates its financial situation.

The state-owned nature of the company and its obligation to respect lengthy public procurement procedures, which can take up to 6 months or even 1 year, adds to difficulties in terms of supplies of protective equipment.

Due to the lack of liquidity, the mining complex has a deficit of spare parts and currently employs 300 less persons than budgeted. Overall, the fact that the company has to make compromises has a negative impact on the health of the employees and their security.

However, in spite of the difficulties, both management and trade unions acknowledged that the social dialogue is at a good level.

The Maritsa Iztok mining complex has not directly benefitted from European funds for investments related to environment or climate change. Instead, the company has benefited from external funds for the renewal of its equipment under the Kozloduy Fund¹. An investment of 30 million EUR for the procurement and installation of two rotor excavators was at 50% financed by this Fund. Five additional excavators are planned. Other investments in a water treatment facility and the rehabilitation of the road to Stara Zagora were also partially financed by external funds.

In April 2015, the coal mining complex Mini Maritsa Iztok has signed a 50 million BGN (25.6 million EUR) loan agreement with two banks in order to partly cover its debts to suppliers.

¹ An assistance programme offered by the European Commission and other western European donors to the Bulgarian government in order to cope with the early closure of the Kozloduy nuclear plant and with the view of developing a competitive energy sector. More than €170 million has been committed in contributions from the European Community, Austria, Belgium, Denmark, France, Greece, Ireland, the Netherlands, Spain, Switzerland and the United Kingdom.

In January 2016, reports showed that Mini Maritsa Iztok has invested 9.2 million levs (\$5.14 million/4.7 million euro) in a new rotary excavator that will reduce maintenance and operation costs. The funding was provided by the Kozloduy International Decommissioning Support Fund (KIDSF). Recently, the company also opened a 7.5 million lev (\$4.3 million/3.8 million euro) contract for upgrade of three excavators.

Under the agreement, the loan will be repaid by the state-owned Maritsa Iztok 2 thermal power plant (TPP) which in turn owed the coal mining company 59.2 million BGN.

Maritsa Iztok-1 power plant (TPS AES Galabovo)²

The 600 MW TPP AES Galabovo, located in close proximity to town of Galabovo, is a thermal power plant producing electricity entirely from local lignite originating from the Maritza Iztok Basin.

Created with an estimated investment of nearly €1.3 billion, TPP AES Galabovo represents the newest and most modern power plant in South East Europe. It is also the largest foreign direct investment in Bulgaria since 1989. The power plant does not only help for the development of the Stara Zagora region, but also has a crucial importance for the whole country's economy.

According to its own communication, *“being the latest and most modern TPP in its class in South East Europe, TPP AES Galabovo uses in its production process the world's best technologies to ensure optimal air quality, water management and safe waste storage, soil and groundwater preservation, in full compliance with the Directives of the European Union, the World Bank and the national legislation”*. The TPP provides one of the lowest European production costs due to cheap local coal, newest technology and highest efficiency.

The Power Plant ensures about 5% of the installed power capacity of the country and creates more than 300 jobs.

Annually, TPP AES Galabovo uses on average over 5 million tons lignite, which is between 23% and 27% of the annual production of Mini Maritza Iztok. This share also represents the percentage of the jobs supported by the TPP from the overall headcount of the mines and other raw material suppliers in contractual relations with the plant. These are about 1 900 jobs secured, or 3% of people employed in the Bulgarian mining sector as a whole.

The power plant is operated by the American company AES.

Maritsa Iztok-2

Maritsa Iztok-2, a subsidiary of the wholly state-owned Bulgarian Energy Holding, is the largest thermal power plant in the Balkans and is located 60 km from Stara Zagora in the vicinity of the village of Radetski and the dam lake Ovcharitsa. The thermal power plant generates about 30% of Bulgaria's electricity.

Early 2015, Maritsa Iztok 2 finalised the reconstruction of Units 5 and 7. As a result of the upgrades, the two TPP units' lifespan has been extended by 20 years per unit and their capacity has been increased to 232 MWh each from 210 MWh, raising the TPP's total capacity to 1,620 MWh.

² <http://aes.bg/our-business/tpp/?lang=en>

The rehabilitation of the units was part of a project to introduce uniform steam turbines in the plant's units 5, 6, 7 and 8 with the aim of cutting production costs for maintenance, repairs and spare parts. The value of the project was not disclosed.

In February 2016, Maritsa Iztok 2 has awarded contracts for furnace construction and isolation works worth a combined 45.5 million BGN (23 million EUR) to two local companies.

Maritsa Iztok-3 (ContourGlobal Maritsa East 3)

Maritsa Iztok-3 is Bulgaria's third-largest power plant. It is located 40 km from Stara Zagora. The power plant has an installed capacity of 908 MW, which is produced by four units of 227MW each.

In February 2009 Enel Maritza East 3 power plant completed a major investment program for rehabilitation and modernization. It was carried out by a Consortium between Enel Produzione and E&Z under an Engineering Procurement and Construction Contract. The main goal of the project was to increase the efficiency and the capacity of the power plant, to extend its operational life and most importantly to bring in line with European environmental standards.

On December 21, 2009 Enel Maritza East 3 received the ISO 14001:2004 certificate from SGS Bulgaria attesting that the power plant operates in line with the world's best environmental management practices.

Enel Maritza East 3 TPP was the first power plant in the Balkans in full compliance with the European Environmental Standards.

Until 2011, Maritsa Iztok-3 was owned and operated by Energiina Kompaniya Maritsa Iztok 3 AD, a joint venture of Enel (73%) and NEK (27%). In 2011, Enel sold its majority share to Contour Global, a U.S. investment fund.

2. Decarbonisation policies at national and regional level

The Republic of Bulgaria has ratified the United Nations Framework Convention on Climate Change. During the negotiation process with the EU on Chapter 22 "Environment" Bulgaria committed itself to fulfilling the requirements of EU Directive 2001/80/EC with regard to reducing the emissions of nitrogen oxides, sulphur dioxide and dust from large combustion facilities. The investment necessary to meet the environmental goals was estimated at more than 3 billion leva (1.5 billion euros)³.

2.1. Responsible authorities for climate change policies in Bulgaria

The main bodies responsible for the implementation of the national policy on climate in Bulgaria are:

- *The Ministry of Environment and Water (MEW)*, empowered to implement, coordinate, monitor and evaluate the policies and the measures to mitigate the consequences of climate change at national level;
- *The Climate Change Policy Directorate* holds the functional competence in activities related to the development and the implementation of national policies in the field of climate change prevention;
- *Ministry of Economy, Energy and Tourism*, through development of policies and measures for the industry, tourism and services sectors, including promotion of energy efficiency measures;
- *Ministry of Agriculture and Food*, which implements policies for the improvement of the methods used in crop and animal production and manages forests in the light of adaptation to climate change;
- *Ministry of Regional Development and Public Works*, through the elaboration of regional infrastructure development plans and regional programmes for development of transport infrastructure.
- *Ministry of Transport, Information Technologies and Communications* implements policies and measures for restructuring and improving transport cargo management;
- *Ministry of Finance*, through development and implementation of fiscal and financial instruments to encourage the implementation of the measures.

Many other state institutions have specific roles and responsibilities in implementing measures related to climate change, such as the Executive Environment Agency, the Sustainable Energy Development Agency. Other institutions are indirectly involved in climate change policies and in many cases lack relevant expertise.

According to the Third NAPCC, “the coordination of various aspects of these activities through working groups and committees that include representatives of different institutions involved in climate policy, as well as representatives of NGOs and professional organizations/associations

³ <http://competitionpolicy.ac.uk/documents/8158338/8256111/CCP+Working+Paper+08-8.pdf/3do4f8e9-7b21-4f8f-a9e1-f39b1e00777c>

was established as a good practice [...].” However, trade unions are not mentioned as partners in the coordination of climate change policies.

2.2. Carbon footprint of the power production in Bulgaria

The emissions of greenhouse gases in Bulgaria decreased by approximately 52% in 2009 compared to their levels in base year 1988 due to several reasons such as transition to a market economy, restructuring of industry, policy towards liberalization of energy markets, including factors such as decreasing population and decreasing GDP.

In the course of its development, the energy sector in Bulgaria has implemented various measures that lead to stabilization and reduction of GHG emissions. Following the earlier decommissioning of Units 3 and 4 of NPP Kozloduy, the emissions from the energy sector have been growing. This is due to the development plans introduced by the energy plants using local and imported coal with high GHG emission potential.

The energy sector has the largest share in the total emissions of greenhouse gases in Bulgaria. The production of electricity and thermal energy from coal contributes for over 90% of the GHG emitted in the sector where the major potential for reduction of emissions is concentrated. About 70% of the total emissions from electricity generation (excluding factory plants) come from the three large power plants burning local lignite coal - TPP “AES Galabovo”, TPP “Maritza East 2”, TPP “Maritza East - 3” owned by Contour Global. According to the NAP on Climate Change, *“the potential of these plants to reduce emissions by 2020 predetermines to a large extent the emissions trend for the sector as a whole”*.

According to the NAP on Climate Change, *“the European Emissions Trading Scheme and the competition on the electricity generation market provide incentives for transition to low-carbon technologies and fuels such as natural gas. Every 100 MW coal-based generating capacity substituted with capacity based on natural gas will lead to a reduction of 450000 t of CO₂ per year.”* However, given the high dependence of the Bulgarian energy system on its internal coal reserves, it is probable that the development of power production based on natural gas in the near future will be very limited.

2.3. Scenarios and measures for the reduction of GHG emissions under the National Action Plan on Climate Change

The 3rd National Action Plan on Climate Change was adopted in 2012 and covers the period 2013-2020⁴. The process of developing the Third NAPCC passed through an active exchange of information, positions and views between experts from the Ministry of Environment and Water and specialists from the Bulgarian Academy of Sciences, universities, NGOs, consulting companies and others. Trade unions are not mentioned in the document’s preamble. The document was prepared with support from Norway and sets out measures for achieving the

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http://www3.moew.government.bg/files/file/Climate/Climate_Change_Policy_Directorate/THIRD_NATIONAL_ACTION_PLAN.pdf

EU climate targets by taking active measures worth more than €5 billion between 2013 and 2020.

Some researchers criticized that the National Action Plan was not based on a comprehensive feasibility study, and that measures proposed were not derived from a prior evaluation (Stefanov, Arndt), which could hinder the implementation of the planned measures.

The main strategic objective of the Third National Action Plan on Climate Change (NAPCC) is to outline the framework for action to combat climate change for the period 2013-2020 and it provides specific measures for reduction of greenhouse gas emissions across all sectors. The overall effect of the measures will ensure the implementation of the commitments taken and the achievement of the legally binding European objectives.

The authority responsible for the implementation of climate change policies in Bulgaria is the Ministry of Environment and Water. The position of the authority is strictly in line with the EU policy, in spite of its coal intensive energy system.

“In all likelihood, Bulgaria will side with the coal-intensive member states in eastern Europe when it comes to debates within the European Union and the United Nations. There is little chance of Bulgaria developing its own initiatives. The Bulgarian authorities will probably pursue a wait-and-see strategy”⁵ (Stefanov, Arndt).

The NAPCC is based on the strategy Europe 2020, which defines the objectives that the EU is to achieve by 2020:

- 20% increase in energy efficiency;

There are no binding measures to improve energy efficiency, and Member States take voluntary commitments that are rather political than legally binding. In this respect, Bulgaria aims to reduce the energy intensity of GDP by 50% by 2020⁶.

- 20% reduction of greenhouse gas emissions compared to their 1990 levels;

The reduction of greenhouse gas emissions from the sources within the scope of the emission trading scheme (ETS) by 21% compared to their 2005 levels is set for all EU Member States through a mechanism of redistribution of emission allowances, which is expected to generate substantial financial resources for investment in the improvement of energy efficiency, promotion of renewable energy and reduction of greenhouse gas emissions.

- 20% share of renewable energy in the total EU energy consumption by 2020 including a 10% share of biofuels in transport.

Bulgaria’s goal in terms of share of renewables in the final energy consumption by 2010 is set at 16%, including 10% share of biofuels in the final consumption of transport fuels.

⁵ Stefanov, Ruslan, Arndt, Marco - Climate change is rarely discussed among the Bulgarian public, http://www.kas.de/upload/dokumente/2014/12/Climate_Report/Bulgaria.pdf

⁶ PRIMES Baseline, 2007, Eurostat.

The measures related to the reduction of GHG emissions from the energy sector under the National Action Plan on Climate Change are grouped into five priority axes as follows:

- Cleaner production of electricity from existing coal-fired plants;
- Transition to a low-carbon electricity mix;
- The district heating system - an instrument for low-carbon energy;
- Increased penetration of decentralized energy production;
- Development of low-carbon networks for transmission and distribution of electricity and natural gas.

The Third National Action Plan on Climate Change provides for two scenarios:

- The basic scenario reflects all approved and implemented policies and measures to reduce GHG emissions in the country by the end of 2009 and is called a Scenario With Measures - WM. According to its projections the amount of GHG emissions in 2020 will be approximately 61,800 kt CO₂ eq.
- The second scenario is the Scenario With Additional Measures - WAM. It reflects all adopted policies and measures since 2009 including the impact of policies and measures presented in the Third NAPCC. Under this scenario the total emissions of the country in 2020 will be about 54,500 kt CO₂ eq.

Table 1. Aggregate emissions in Kt CO₂ eq. under the two scenarios of the NAPCC

Aggregate emissions in CO ₂ eq.	1988	2005	2009	2010	2015	2020	2030	2020-2005, %	2020-1988, %
Scenario with measures	124,510	67,115	59,496	59,030	58,882	61,864	60,943	-8	-50
Scenario with additional measures	124,510	67,115	59,496	58,730	54,032	54,578	52,642	-19	-56

The main contributors to the reduction of GHG emissions by 2020 should be the Energy (-6.4 Mt CO₂), Industry (-4. Mt CO₂) and Waste sector (-2.5 Mt CO₂), while emissions from Transport (+3.6 Mt CO₂) are expected to increase during the period.

By 2030, the GHG emissions from the Energy sector should decrease by 18.5 Mt or 68% compared to the base year 2005. This should be by far the most important contribution to the overall reduction, which is even lower at 14.5 Mt due to the increase of GHG emissions from the transport sector (+9.8 Mt). Industry and Waste sectors are expected to contribute with 2.7 Mt each to the overall reduction of GHG emissions by 2030.

The scenarios for reducing GHG emissions **in the Energy sector** by 2020 served as a basis of the country's Energy Strategy adopted in 2011. The Strategy outlines two main priority axes for the development of the energy mix in Bulgaria:

- cleaner production of electricity from coal-fired plants
- reduction of carbon intensity in the energy mix.

Table 2. Aggregate emissions in Kt CO₂ eq. by sectors

Scenarios with additional measures	2005	2020	2020-2005	2020-2005, %	2030	2030-2005	2030-2005, %
Energy industries	27,134	20,704	-6,430	-24%	8,584	-18,550	-68%
Industry	9,512	4,870	-4,642	-49%	6,742	-2,770	-29%
Transport	7,681	11,307	3,626	47%	17,530	9,849	128%
Households and services	2,380	1,851	-529	-22%	2,341	-39	-2%
Waste sector	5,294	2,755	-2,539	-48%	2,587	-2,707	-51%
Agriculture sector	6,538	6,672	134	2%	7,246	708	11%
Land Use, Land Use Change and Forestry	-11,336	-11,817	-481	4%	-11,839	-503	4%

The reduction of GHG emissions in the energy sector is expected to be achieved from:

- **Measures to improve the production efficiency**, which could decrease the average emission intensity of electricity generation from coal-fired power plants by about 5-7% from the current 1.2 t CO₂ eq. per MWh. This could represent a reduction of 1.3 mln. tonnes CO₂ per year from existing coal-fired power plants by 2020 or cumulatively 4.68 mln. tonnes of CO₂ eq. for the entire period 2013-2020.

“Institutional support and monitoring of projects is envisaged for building new capacities and/or substituting capacities based on local coal with mandatory use of highly efficient and low-emission modern technologies involving capture and storage of CO₂.” (NAP on Climate Change)

- The **transition to low-carbon technologies** and fuels such as natural gas due to the European Emissions Trading Scheme should provide for additional reductions. It was estimated that every 100 MW coal-based generating capacity substituted with capacity based on natural gas will lead to a reduction of 450000 t of CO₂ per year.
- The **support to nuclear energy** is a key priority in the Energy Strategy. According to the projected electricity generation balance the share of nuclear energy in the electricity generation mix will grow from 42% in 2005 to 45% in 2020 and will contribute to reducing the carbon intensity in the production of electricity. However, the impact of this measure on carbon footprint is expected to be limited.
- The **production of electricity from renewable sources** is expected to contribute significantly to reducing the carbon intensity of the energy sector. The National Action Plan for Renewable Energy by 2020 and the Renewable Energy Act set a target for the production of electricity from renewable at 7.5 TWh by 2020, or 15% in the electricity generation mix of the country.
- According to the Energy Strategy, **co-generation** of heat and electric energy should account for 15% in the electric energy mix by 2020, contributing to the overall reduction of GHG emissions.
- The **capture and storage of carbon** in geological formations should provide for an additional reduction of 9.2 million t CO₂ by 2030. However, the first project for capture and storage of carbon dioxide will not be implemented earlier than in the

period 2020-2025 and the feasibility of such projects is still under review, depending on the quality of the related geological surveys and environmental impact assessments. During the interviews conducted, energy company representatives expressed doubts on the feasibility of this target, as the technologies are extremely expensive for the Bulgarian economy.

Investments for the reduction of GHG emissions in the energy sector

The total cost of the planned measures under the NAPCC for all sectors is 10,575 mln. BGN (5,423 mln. EUR) or 4.9% of the total investments in the economy for that period.

The planned investments in direct and indirect measures in the energy sector are more than 6,189 mln. BGN (3,173 mln. EUR), or 58.5% of the total cost of planned measures under NAPCC (for all sectors) or nearly 2.9% of the total investment in the economy over the entire period. The investments planned for direct measures are 1,753 mln. BGN (899 mln. EUR) and will lead to saving 18 mln. tonnes of emissions at an average cost of 97.4 BGN per tonne (49.9 EUR per tonne) of saved emissions.

A number of the measures with indirect effect, included in the Third NAPCC, will contribute significantly to the reduction of GHG emissions over the next decade (2020-2030). For instance, the implementation of technologies for capture and storage of carbon dioxide and the construction of new nuclear capacity could increase the cumulative GHG reductions in 2030 to 18.5 mln.t CO₂ eq. or 68% fewer emissions compared to 2005.

Table 3. Measures with impact on the reduction of GHG emissions, NAPCC 2013-2020

Measure	Required financial resources	Targets
Axis 1: LOW-CARBON PRODUCTION OF ELECTRIC ENERGY FROM COAL-FIRED POWER PLANTS		
Measures with direct impact		
Improvement of production efficiency in existing coal-fired power plants	240 mln. BGN (123 mln. EUR) – depending on technological solutions Sources: Private financing, International projects, National investment plan according to Art. 10c of Directive 2003/87/EC	1.3 Mt reduced CO ₂ by the end of 2016. 2.8 Mt reduced CO ₂ by the end of 2018. 4.68 Mt reduced CO ₂ by the end of 2020. Expected effect: total reduction of 4.68Mt CO₂ eq. by 2020
Fuel substitution – from coal to natural gas	720 mln. BGN (368.5 mln. EUR) – depending on technological solutions Sources: Private investments/income under Art. 10c of Directive 2003/87/EC	1.4 TWh/year with substituted fuel by 2016. 2.8 TWh/year with substituted fuel by 2018. 4.2 TWh/year with substituted fuel by 2020. Expected effect: total reduction of 11.7 Mt CO₂ eq. by 2020
Measures with indirect impact		
Pilot projects with clean coal technologies	Sources of funding: International projects/Income from emission trading/Private financing, etc. The needed financial resources cannot be estimated given the lack of clarity regarding the potential for implementation of such projects.	The first project with installation for capturing and storing carbon dioxide is expected to be commissioned in the period 2020-2025. The preparation phase, subject to the proposed measure, will not lead to reduction of the GHG emissions in the period by 2020.
Geologic studies for CO ₂ storage sites	Sources of funding: International programmes/ Private financing	2 geologic studies to be completed by 2018. 20 information campaigns by 2020.

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	The state does not intend to use budget funds to finance the studies.	The measure contributes to reducing greenhouse gas emissions after 2020.
Introduction of mandatory requirements to the efficiency of new coal-fired power stations		Approved regulatory act by 2015
Axis 2: REDUCTION OF THE CARBON INTENSITY OF THE ELECTRICITY GENERATION MIX		
Measures with direct impact		
Increase of highly efficient co-generation Target group: investors/energy companies	790 mln. BGN (404 mln. EUR) Sources: Private financing/ Public support through preferential prices/ Other international and national projects and programmes	3 839 GWh generated by the end of 2014 13 563 GWh generated by the end of 2016 27 053 GWh generated by the end of 2018 42 173 GWh generated by the end of 2020 Expected effect: total reduction of 1.6Mt CO₂ eq. by 2020
Measures with indirect impact		
Institutional support for investments in decarbonised electricity generation capacities – nuclear energy		Expected result: 45% share of nuclear energy in the electricity generation mix, up from 42% in 2005
Increasing the share of electric energy from renewable energy sources in the electricity generation mix	Required financial resources: 4 183 mln. BGN (2 141 mln. EUR) Sources: Private financing/Public support through a system of purchase at preferential prices	Expected result: 15% share of electricity from renewable sources in the electricity generation mix (7.5 TWh from RS by 2020) and achievement of the national target for the share of electricity from RS in the gross energy end-use consumption
Increasing the capacity for generation of pumped-storage hydroelectricity	Required financial resources: 246 mln. BGN (125.9 mln. EUR) Sources: Private financing/ National investment plan according to Directive 2003/87/EC/ International	Technical opportunity for achievement of the national target of renewable energy share
Axis 3: MODERNIZED DEVELOPMENT OF THE DISTRICT HEATING SYSTEM		
Measures with direct impact		
Increasing the share of heating and cooling based on renewable energy sources	Required financial resources: Depending on the investors' interest and the selection of technologies Sources: Private financing/ Income from the European Emission Trading Scheme/ Operational programmes/ Internationals	70 000 MWh energy generated by 2014. 256 000 MWh energy generated by 2016. 556 000 MWh energy generated by 2018. 976 000 MWh energy generated by 2020. Expected effect: total reduction of 0.488 Mt CO₂ eq. by 2020
Measures with indirect impact		
Rehabilitation of existing and building of new low-carbon district heating networks		A national program should be developed in accordance with the Energy Strategy of the Republic Bulgaria by 2020.
Axis 4: ACCELERATED INTRODUCTION OF DECENTRALIZED ENERGY PRODUCTION		
Measures with indirect impact		
Provision of public information regarding resources, state and plans for development of the electricity generation networks	Required financial resources: 3 mln. BGN (1.5 mln EUR)	Public information system
Axis 5: DEVELOPMENT OF LOW-CARBON NETWORKS FOR TRANSMISSION AND DISTRIBUTION OF ELECTRIC ENERGY AND NATURAL GAS		
Measures with indirect impact		
Energy efficiency in the transportation of energy and	Instruments: Regulatory incentives for energy network operators	Expected outcome: 30% fewer losses in energy transportation

introduction of “smart” energy storage networks and facilities		
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2.4. Climate change policies for Southeastern region of Bulgaria

The province of Stara Zagora is a part of a broader Southeastern region of Bulgaria, which also includes the provinces of Burgas, Sliven and Yambol, covers 17.8% of the country’s territory and provides around 12% of the country’s GDP.

Regional Development Plan for Southeastern Region

The Southeastern region is subject to a Regional Development Plan, which was approved by the Decision of the Government No. 458/01.08.2013 for the period 2014-2020 and is based on the strategy “Europe 2020” and on the National Strategy for Regional Development of the Republic of Bulgaria for the period 2012-2022. The progress under the Regional Development Plan is annually reviewed.

The Regional Development Plan for the Southeastern region recognizes that *“the region has a high risk related to climate change. It emits most of the greenhouse gases and SO₂ in the country. There are three polluted air pools – Burgas, Stara Zagora and Maritsa Iztok, where the biggest areas damaged by coal mining are situated.”*

The RDP states that *“an integrated approach of the European Union towards climate and energy consists of three pillars – security of supplies, available energy for competitive economies and sustainable environment”*. In the current period 2014-2020 this approach will receive a greater support in the framework of the Cohesion Policy of the European Union. The implementation of operational programs in Bulgaria, financed by the Structural funds and the Cohesion funds will be tightly linked to the implementations of the objectives of the Strategy “Europe 2020”.

The RDP is also based on the Energy Strategy of Bulgaria until 2020, which includes a package of integrated measures for the implementation of the national energy policy, the diversification of energy resources, reorientation of the economy and the energy sector towards an efficient use of energy, production of low carbon energy resources with the view of reducing the negative influence on environment and climate change. The priority of the Energy Strategy of the Republic of Bulgaria until 2020 is to stimulate investments in the optimal usage of renewable energy sources in the national and regional energy balance.

The strategy states that the development of the renewable energy sources and the electricity network should be planned in an integrated manner, with the aim to avoid future problems and the increase of project prices. The creation of a National information system including data on potential, production and consumption of renewable energy in Bulgaria should ensure transparency on the activity of involved parties and improve the business climate in the sector.

The RDP states that a large part of the Southeastern region has natural conditions for the utilization of the solar energy for the production of electricity. The consumption of energy

for households and services can also be decreased by the usage of solar heating. On the other hand, potential for wind energy in the region is limited.

Energy efficiency and the introduction of new technologies are recognized as an important factor for a competitive economy and the protection of the environment. The reduction of the energy intensity is required by the obligations taken by Bulgaria under the UN Framework Convention on Climate Change. Bulgaria is currently the most energy intensive economy in the European Union.

Within the framework of the operational program „Regional development” funded by European Union on the territory of the Southeastern region, by the end of 2012 there were 14 projects registered with the objective to increase energy efficiency through the modernisation and the renewal of infrastructure in the communities Burgas, Sozopol, Aitos, Bratya Daskalovi, Bolyarovo, Kotel, Nesebr, Sungurlare, Sredec, Opan, Kazanlyk, Sliven, Kameno and Radnevo for a total cost of 17.8 million BGN.

According to the annual review of the Regional Development Plan, in 2014:

- 7 projects were conducted in the Southeastern region under the procedure „Investments in green industry”. The total value of the projects was 17 million BGN.
- Under the operational program „Environment” 3 projects with a total value of 197.3 million BGN were under implementation.

Climate change in the Regional Development Policy

According to the Regional Development Policy for Southeastern region, Bulgaria is responsible for 1.5% of the total quantity of greenhouse gases emitted by the European Union. Bulgaria is also among the countries which are expected to be most affected by climate change.

Since 1970s, there is a tendency of climate warming in Bulgaria. According to forecasts, the number of nights in which temperatures are going to be higher than 20°C (tropical nights) will increase in Bulgaria, which means that the country will be part of the riskiest regions of Europe. The influence of climate change on average annual and daily temperatures in the Southeastern region of Bulgaria places it in the fourth group with „average vulnerability”. Other regions in Bulgaria are included in fifth (South central and North central regions) and sixth group (Northwestern region), with the “highest vulnerability”. A change in the number of days with snow cover is also expected to decrease in these regions.

Climate change is also expected to influence tourism activity, Bulgaria being among the countries with the highest negative change anticipated in the European Union. By regions, the situation is as follows: the most important negative change is expected in the Northeastern and North central regions (group 6), while the Northwestern, South central and Southeastern region are included in the group 5, with a considerable negative change. Only the Southwestern region is included in the group 4. According to the expected negative change, the situation of Bulgaria is similar to Spain, Italy and Greece.

Climate change represents an important threat to rural economies, the production of energy and the development of tourism, as they presents risks of draught, fires, coastal erosion and

flooding. The most sensible sectors to climate changes are agriculture, tourism, water resources and forests. At national level, the National Strategy of the Development of the Forest Sector and the Program of measures for the adaptation of forests of the Republic of Bulgaria provides for specific measures for the mitigation of the negative influence of climate change.

Bulgaria is complying with the obligations set by the Framework UN Convention on Climate Change to prepare and periodically update the inventory on greenhouse gas emissions of the country. The inventories prepared by Bulgaria cover the main greenhouse gases: CO₂, CH₄, N₂O, HFCs, PFCs, SF₆, as well as precursors of greenhouse gases: NO_x, CO, NMVOCs and SO₂. The carbon dioxide represents almost 40% of all greenhouse gases, and the volumes of other gases are calculated in CO₂ equivalents.

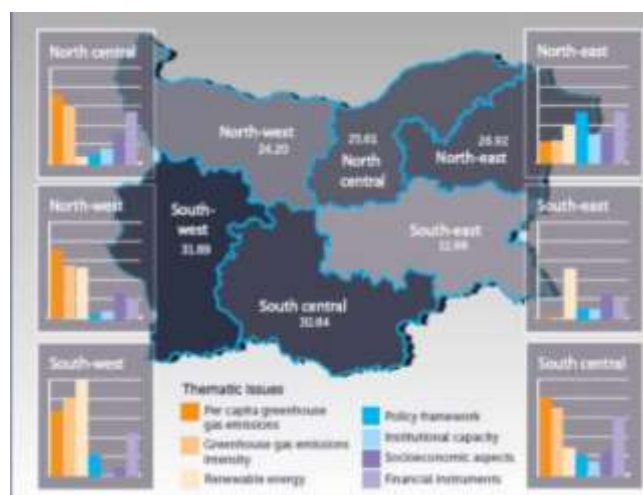
According to statistics presented by the RDP, the average emissions of the Southeastern region of Bulgaria are at 21 612 tonnes of CO₂ eq. per inhabitant, compared to a national average of 6 162 t of CO₂ eq. Thus, the region has a three-times higher GHG intensity compared to the country and a ten-times higher intensity compared to the South central region. Within the Southeastern region, the highest levels of GHG emissions are registered in the region of Stara Zagora (58 957 t of CO₂ eq. in 2011), and the lowest in the region of Burgas (1 413 t of CO₂ eq.). In 2011, emissions of the region were 45.75% lower than in 1988. The GHG emissions by inhabitant in the region fell from 13.6 t of CO₂ eq. in 1988 to 9 t of CO₂ eq. in 2011.

The development strategy of the Southeastern Region concludes that the region has a high risk related to climate change.

Some have criticized that indicators used in the regional plan are “too many, too confusing, very artificial, difficult to measure, not stable, without adequate data fundament”⁷.

Regional Climate Confidence Index

The Regional Development Plan for the Southeastern region introduces the notion of the Regional Climate Confidence Index (RCCI), developed under the project Regions for Sustainable Change (RSC)⁸ co-funded by the EU programme INTERREG IVC. The Regional Climate Confidence Index measures a European region’s capacity to effectively manage climate change impacts and future risks, and through that management



⁷ http://www.rscproject.org/docs/RSC_pilot_project___BMRDPW_1.pdf

⁸ <http://rscproject.org/>

to make an advantageous shift to low carbon economy.

The RCCI is based on seven indicators which have to give relatively clear answers on the question how the regions are dealing with the challenges of the climate change:

- GHG emissions (comparisons to average EU27): includes GHG emissions per capita for the specific region and Intensity of GHG emissions as relation between GHG emissions and produced GDP within the region (GHG emissions/GDP).
- Energy Consumption (comparisons to average EU27): Includes Final Energy Consumption(FEC) per capita and Energy intensity (FEC/GDP)
- Renewable energy: percent share of renewable energy in final energy consumption
- Political framework
- Institutional capacity
- Social and political aspects
- Financial instruments

The Bulgarian Ministry of Regional Development and Public Works adapted and integrated the RCCI into the monitoring of regional development plans in Bulgaria. The indicators were modified in order to reach compatibility with the data available in the country. Six regions in Bulgaria were given scores for the seven issues using the adapted methodology, and the results for each region were analysed. Having obtained a clear awareness of the challenges, the RCCI were then integrated into the monitoring procedure, helping to assess the progress that Bulgaria makes on the issues identified.

The overall indexes for Bulgarian regions were calculated as follows:

- | | |
|------------------------|--------------|
| • Northwestern region | 24.2 points |
| • North central region | 25.61 points |
| • Northeastern region | 26.92 points |
| • Southeastern region | 11.98 points |
| • Southwestern region | 31.89 points |
| • South central region | 30.84 points |

Therefore, the most unfavourable situation was registered in the Southeastern region, where the share of greenhouse gas emissions is high in the regional economy.

Bulgarian counterparts in the projects stated have underlined that they have faced several challenges⁹:

- Lack of statistical data on regional level
- Bad communication between the institutions providing data
- Indicators used for the Regional Climate Change Index in some cases were only relevant for comparing regions within Bulgaria without comparisons with other EU regions.

According to Bulgarian counterparts in the project, "RCCI gives only an "image" of the current situation, which is limiting its possible application as a tool for assessment the effectiveness and the

⁹ <http://www.rscproject.org/docs/MAtanasovaBMRDPW.pdf>

results from given policies and some of the key indicators (as GHG emissions) are based on historical data. Another weak point of the RCCI is the equal importance of the thematic areas within the composite index-could be very different from the reality in the different regions. [...] In that case even the authors are very sceptical about how appropriate is that index for measuring Regional Climate Confidence”¹⁰.

The program concluded that in order to move towards low-carbon economy, European regions need¹¹:

- Adequate and regularly updated information/data
- Regular monitoring and use of the information
- Decoupling emissions and energy from growth
- Increasing the use of renewables
- Comprehensive climate change strategy or action plan
- Integration of climate change issues into policies
- Adequate institutions with delineated responsibility
- Political will and popular awareness
- “Horizontal” integration of climate change across funds
- Specialised national and regional subsidy programmes

Regional policies for Stara Zagora

The regional strategy for Stara Zagora province was adopted on 03.06.2013. It does not contain specific measures related to climate change policies.

The Program for Decreasing of Pollutants in Atmosphere and Reaching Established Norms for Harmful Substances adopted for the period 2011-2015 although mentions a range of climatic factors that influence the dispersion of harmful substances in the region, does not directly address the issue of climate change and greenhouse gas emissions¹².

¹⁰ http://www.rscproject.org/docs/RSC_pilot_project__BMRDPW_1.pdf

¹¹ http://ec.europa.eu/environment/archives/greenweek2011/sites/default/files/4-8_Varbova.pdf

¹² http://www.starazagora.bg/worktemp/Aktualizacij_na_Programa_KAV_STARA_ZAGORA_2011-2015_ciala.pdf

3. Social impact of climate change policies and local stakeholders' view

The evaluation of the implementation of the Second National Action Plan on Climate Change has concluded that climate change was not among the top priorities of the Government. The public awareness of the problems related to climate change was rather low and government authorities encountered difficulties in performing their tasks and responsibilities with this regard.

According to the Third National Action Plan on Climate Change, *“the lack of sufficient organizational, human and financial resources has prevented the development, application and implementation of actions on climate change and necessitated outsourcing of a substantial proportion of the activities to external consultancies”*.

There are no particular consultation and governance bodies with the participation of trade unions strictly dedicated to low carbon policy issues in the region of Stara Zagora.

3.1. Awareness of climate change policies

As shown by existing analyses, the awareness of climate change and its consequences are very limited in Bulgaria (Stefanov, Arndt)¹³. Media reporting on this issue is minimal and there are no serious public debates on Bulgaria's position related to climate change policies and their effect on the country. The issues related to climate change that were addressed by the government were:

- The impact of European carbon prices on coal and electricity prices. This was used as an argument to justify the construction of a second nuclear power plant.
- The possibility of Bulgaria to sell a part of its emissions rights to cover the deficits in the energy sector.

At regional level, the impact of climate change policies does not usually represent a matter of dialogue between management and trade unions.

A small number of environmental NGOs have been involved in international projects on climate change, while trade unions' involvement was limited.

¹³ Stefanov, Ruslan, Arndt, Marco - Climate change is rarely discussed among the Bulgarian public, In this respect, Bulgaria insisted that every country should assume concrete commitments to reduce greenhouse gas emissions, which should be made legally binding by a future agreement. Bulgaria called for universal rules for assessing the efforts and contribution of each nation towards reducing emissions.

http://www.kas.de/upload/dokumente/2014/12/Climate_Report/Bulgaria.pdf

3.2. Economic impact of climate change policies

During the interviews conducted in the framework of the present project social partners expressed confidence that mining activity and power production in the region of Stara Zagora is not threatened by environmental policies in the short and medium term.

Thermal power production remains strategic in Bulgaria and has proven an efficient resource to ensure energy security and independence for the country. According to Maritsa Iztok mining complex representatives, Bulgaria is not able to survive without coal production, as it accounts for 35% to 40% of the national energy complex.

However, energy and climate change policies have not remained unnoticed. A high pressure is exerted on thermal power producers, who see their costs increasing due to required additional investments and the cost of carbon allowances under the ETS. Competition from renewable energy especially in terms of prices has also contributed to difficulties faced by thermal power producers. Delayed payments from power plants directly affected the mining company.

As stated by the representatives of both mines and power plant Maritsa Iztok-2, all activities related to environment are covered by the companies and no state aid is received for this purpose. Also, both at the mines and at the power plant there are no specific calculations as per how much investments imposed by environmental and climate requirements have costed. However, the representatives of the thermal power plant stated that *“their company would have invested less if the requirements were not so tight”*. TPP representatives have also expressed the fact that norms are getting stricter and that it is difficult to follow renewed requirements.

“When we had to install the first Flue-gas desulfurization units, the requirements for desulphurisation were at 90%. Next FGDs were designed for new requirements at 94%, but before the end of the construction the EU Commission has raised it to 96%. We are doing best to respect the limits... but we are now expecting the EC to say that next level is 98%” (Maritsa Iztok-2 TPP).

Regarding the feasibility of carbon capture and storage technologies, representatives of the thermal power plant are sceptical for the near future. According to an assessment, such an investment would require 560 million BNG, which represent a 10-year budget for investments.

“60% of the greenhouse gas emissions come from population and agriculture. The solution to climate change is not to increase burden with investments at power plants, but to plant trees”. (Maritsa Iztok-2 TPP).

There are no other alternative solutions in the short and medium term: nuclear projects are more and more contested at European level and renewable energy has approached a peak capacity where new projects are less sustainable. Moreover, thermal power ensures a stability of supply that renewable energy cannot guarantee.

On the other hand, the separation of the mining complex from the power plants, which was according to the mining complex representatives imposed by European partners in early 1990s, is viewed as very negative and destabilizing factor. *“Everywhere lignite coal mines and*

thermal power plants constitute one integrated entity and only in Bulgaria we were separated". In spite of the strategic nature of the coal production, the mining complex has not received public subsidies, as it has been the case in Spain, according to Maritsa Iztok mining complex representatives.

Recently, Bulgaria's National Expert Council on Climate Change has reviewed a European Commission proposal to revise the European Union Emissions Trading Scheme in order to achieve climate and energy related goals until 2030. The position of NECCC is that the interests of the national industries should be taken into account, and the sectors exposed to a risk of "carbon leakage" should be protected.

Environment and Water Minister Ivelina Vassileva said that a report by the European Environment Agency put Bulgaria among the best performing EU member states in attaining the EU goals of emissions reduction, use of renewable energy sources and improvement of energy efficiency.

"Fighting global warming requires of us all to change how we live and work. All countries must make a contribution to reducing the greenhouse emissions and they can gain from the opportunities created by the low-carbon economy. Bulgaria has managed to meet the EU targets for renewable sources seven years ahead of schedule and now their share in the energy mix is 20 per cent. We have lowered greenhouse emissions by 20 per cent and increased energy efficiency by as much," Bulgarian President Rosen Plevneliev said at the Paris Climate Change Conference.

An important number of companies in Bulgaria have implemented the ISO 14001¹⁴ norm, especially from the construction and manufacturing sectors. The Maritsa Iztok mining complex has also implemented the norm.

3.3. Employment impact

The impact of climate change policies in Bulgaria and in the Stara Zagora region is still insufficiently studied.

An analysis from 2011 carried by ITUC¹⁵ has assessed the potential for job creation in the sectors of transport, energy, construction and manufacturing and concluded that the average number of jobs created by green investments are at around 68-93 jobs per million of USD invested.

According to the study "Perspectives of development of green jobs in Bulgaria"¹⁶, *"the transformation to green sectors of the economy in Bulgaria leads after it the need of new type of professions, which would be capable to cope with the new conditions and requirements which different businesses are facing"*. However, the study shows that the creation of new jobs due to climate change policies in Bulgaria is very limited. It is estimated that the possible

¹⁴ The ISO 14001 Environment Management System (EMS) standard is an internationally recognised environmental management standard which was first published in 1996. It is a systematic framework to manage the immediate and long term environmental impacts of an organisation's products, services and processes.

¹⁵ http://www.ituc-csi.org/IMG/pdf/bulgaria_country_report_-_growing_green_and_decent_jobs_annex.pdf

¹⁶ <http://www.ea.bg.ac.rs/images/Arhiva/2015/Broj%202/6%20EP%202%202015.pdf>

green jobs compared with total employment in Bulgaria is limited at around 0.2%, while in Germany this percent is over 7% and is probably going to increase.

There are no particular worries among trade unions at the mining complex over job security related to environmental requirements. Trade union leaders have called the current situation “stability at a low level”. Workers are mostly worried that equipment is not sufficiently modernized.

At the Mini Maritsa Iztok mining complex the impact of climate change policies on employment is indirect. The restructuring of the complex has reduced the headcount from 13 500 in 1991 to 9 000 in 1999 and to 6 900 in 2011. Since 2011 there is an increase in the number of employees, reaching 7 300 in 2016. Additionally, around 7 000 persons are currently employed by the thermal power plants that use the coal from Mini Maritsa Iztok. Overall, around 160 000 persons are indirectly employed by the mines and thermal power plants (every fifth person from the administrative regions of Stara Zagora, Haskovo, Sliven, Yambol and Kardjali is economically dependent on coal production).

The burden of investing in environmental protection and paying for carbon emission permits under the ETS has created financial difficulties for power plants, which are delaying payments for coal to the mining complex. As explained above, this has an adverse effect on working conditions and potentially could have an impact on health and safety.

In the same time, the new technologies require new skills and knowledge, which is directly related to vocational education and training.

3.4. Trade unions position and involvement

In the framework of the project we have met with representatives of the two major trade union confederations in Bulgaria:

- CITUB, represented by Dipl. eng. Valentin Valchev, Federation of the Independent Syndicates of Miners – KNSB
- Podkrepa, represented by Eng. Aleksandar Zagorov, Confederal secretary

Bulgaria has witnessed a massive decline in trade union density in the last two decades. Between 1990 and 2010, the trade union density at national level fell from over 80% to around 20%. However, the trade union membership at the Maritsa Iztok mining complex remains high at 90%. Both major confederations in Bulgaria, Podkrepa and CITUB are represented.

Trade unions were involved in the discussion of issues related to climate change in Bulgaria, but rather at confederal and international than at local level.

The leaders of CITUB met with the Ministry of Environment and Waters at the beginning of March 2016 in order “to discuss common actions related to the signature of the Global Agreement on Climate Change on April 22, 2016. According to CITUB website, “CITUB and the Ministry of Environment and Waters have discussed possibilities to unite efforts and make commitments in order to achieve a common goal - decent jobs and a just transition to a low carbon economy”. The two parties have also previously met in 2015, ahead of the COP 21 meeting in Paris. A national conference on climate change, with the participation of the

European Commissioner for Climate and Energy, Miguel Arias Cañete, and representatives of trade unions, is planned for May 2016.

The website of the Podkrepa confederation published the “*ETUC declaration on industrial policy, energy and the fight against climate change*” (2014) translated into Bulgarian.

There were a range of European initiatives and projects related to climate change in which Bulgarian trade unions actively participated:

- **“Trade unions in the green economy. Sustainable development, decent work and green jobs”** (2015) seminar Slovakia with the participation of Podkrepa. According to Aleksandar Zagorov and Katrin Stancheva: *“The industrial relations will be developed in close relation with the so-called “green jobs”, “green public contracts” and other decisions regarding sustainable development. On these issues we are committed to prepare clear and timely statements, which we will assert and defend with our inherent resilience, persistence, justice and realism.”* The seminar concluded with the following recommendations to trade unions:
 - to take part in political debates on green topics in a bilateral or tripartite manner;
 - to produce publications that specifically address green issues or potential for green jobs creation;
 - to arrange training courses for skills for green jobs;
 - to organise ways in which individual employees can design environmentally friendly workplaces, thereby improving workers’ involvement in and commitment to green topics.

- **“Trade unions’ Green Delegates for the Europe 2020 Objectives”** (2011-2012), with the participation 9 trade unions from 7 countries, including Podkrepa, and with the support of ETUC. The overall objective of the project was to improve engagement of trade unions’ representatives in the development and implementation of environmental policy. According to the project description, trade Unions are uniquely placed to
 - sensitize workers about the impact of climate change on employment patterns,
 - improve working conditions integrating environmental and social dimensions of sustainable development with rights-based approach,
 - promote and demand that both public and private sectors develop programmes on climate change adaptation,
 - contribute and verify that these measures are adequately implemented,
 - integrate the sustainability and green economy issues in negotiations activities as efficiency factor in labour organization and in the managing of the resources.

The “*Guide for trade union representatives for sustainable development*” created in the framework of this project is a very useful tool for trade unions.

- A project entitled **FSE « Competence Assessment System »** implemented by the Bulgarian Industrial Association (BIA), with funding from the European Social Fund and in partnership with the trade union confederations CITUB and Podkrepa, has concerned the evaluation of workforce skills. Almost 2,000 companies were questioned under this project. One of the objectives was to evaluate green jobs at sectoral and regional levels. The trade unions participate actively to the project “Competence Map” and are represented in the consultative Council¹⁷.

3.5. Issues for discussion at the workshop

- Is the decarbonisation policy in line with trade unions’ expectations both at national and regional level?
- Who bears the cost of the industrial decarbonisation? Taxpayers or companies? Employees or government?
- Is decarbonisation “imposed” to Bulgaria or is it a national choice?
- Are current energy policies ensuring security for the national energy complex?
- Is industrial technology innovation well supported and are required skills available?
- Are improvements in efficiency generating improvements elsewhere (health and safety, climate etc.)?
- What is the role that trade unions should play at local and national levels in the dialogue over climate change?
- How to ensure that there is a relevant social dialogue at the company level on issues related to industrial policy, resource efficiency and climate change?
- Are jobs in the region sustainable after 2020? Could there be a future threat to jobs from competing energy sources – renewable, gas and nuclear?
- What tools would local trade unions need in order to be able to address issues related to climate change and anticipate future impact on employment (training, information etc.)?

¹⁷ Competencemap.bg