

REVISED CONSOLIDATED NATIONAL EMISSION REDUCTION PLAN (NERP) OF SULPHUR DIOXIDE (SO₂), NITROGEN OXIDES (NO_x) AND DUST FROM EXISTING LARGE COMBUSTION PLANTS OF REPUBLIC OF MACEDONIA

CONTENTS

1. Introduction	2
1.1 Compliance with the emission limit values (ELVs) (Article 4(3)(a))	3
1.2 Limited lifetime derogation (Article 4(4)) Opt-out option	3
1.3 Decision for preparation the NERP	3
2. Tables of emissions (individual and total ceilings).....	5
2.1 Determination of ceilings.....	5
2.2 Determination of individual contributions to total emission ceilings for combustion plants	6
2.3 Calculating the emission ceiling contributions for 2018, 2023 and 2026.....	6
2.4 Total emission ceilings	7
2.5 Subsequent changes to the NERP	7
2.6 Legislative context of NERP in Macedonian legal system.....	8
3. Measures and emission projections with timetables	9
4. Monitoring mechanisms and requirements (operators and ministry)	9
5. Reporting obligations.....	10

1. Introduction

Republic of Macedonia signed the Treaty on establishment the Energy Community in 2005. The Treaty was ratified by the Assembly and entered into force in 01.07.2006 and from then Republic of Macedonia became Contracting Party to Energy Community. The mission of the Energy Community is to extend the EU internal energy market to South East Europe on the basis of a legally binding framework. The principal instrument to achieve this aim is the adoption of the EU's legislation, the so-called "Acquis communautaire", in energy and related areas. According to the *Acqui on Environment*, Republic of Macedonia shall implement the Directive 2001/80/EC of the European Parliament and of the Council of 23 October 2001 on the limitation of emissions of certain pollutants into the air from large combustion plants by 31 December 2017 (Article 12 and Annex II of the Treaty).

The Ministerial Council of the Energy Community, on 24 October 2013, adopted two decisions containing rules for the design and operation of large combustion plants. In its Decision D/2013/05/MC-EnC, the Ministerial Council adapted Directive 2001/80 EC relating to the limitation of emission into the air from existing large combustion plants, for the specific needs of the Energy Community while Decision D/2013/06/MC-EnC incorporated Chapter III and Annex V of Directive 2010/75/EC on industrial emissions in the Energy Community *acquis communautaire* and set an implementation deadline of 1 January 2018 for new combustion plants.

In its Decision D/2013/05/MC-EnC, the Ministerial Council provided the possibility for Contracting Parties to use, from 01.01.2018 until 31 December 2027, a national emission reduction plan (NERP) as an alternative to setting the emission limit values of Directive 2001/80/EC for each combustion plant individually.

When choosing this option, Contracting Parties shall draw up and implement a NERP as referred to in Article 4(3)(b) and Article 4(6) of Directive 2001/80/EC and as adapted by Article 5 of Decision D/2013/05/MC-EnC This adaptation implies a gradual reduction of the emissions of the combustion plants covered by the NERP towards an emission ceiling based on the emission limit values set out in Directive 2010/75/EU on industrial emissions for existing combustion plants. Contracting Parties shall communicate their national emission reduction plan to the Energy Community no later than 31 December 2015.

A NERP shall ensure that the total annual emissions of nitrogen oxides (NO_x), sulphur dioxide (SO₂) and dust from the combustion plants covered by plan shall not exceed the levels that would have been achieved by applying the emission limit values referred to in Directive 2001/80/EC or Directive 2010/75/EU to existing combustion plants in operation in the year 2012 (including those existing combustion plants undergoing a rehabilitation plan in 2012, approved by the competent authority, to meet emission reductions required by national legislation) on the basis of each combustion plant's actual annual operating time, fuel used and thermal input, averaged over the last five years of operation up to and including 2012.

There are two more approaches to achieve compliance with Directive 2001/80/EC as adapted by Decision D/2013/05/MC-EnC:

1.1 Compliance with the emission limit values (ELVs) (Article 4(3)(a))

Under this approach, emissions of all existing combustion plants have to be within the emission limit values (ELVs) stated in Part A of Annexes III to VII in respect of SO₂, NO_x and dust, and, where appropriate, applying Articles 5(1) (derogations), 7 (malfunction or breakdown of abatement equipment) and 8 (multi-fuel firing combustion plants) of Directive 2001/80/EC.

1.2 Limited lifetime derogation (Article 4(4)) Opt-out option

The operator of an existing combustion plant undertakes, in a written declaration submitted by 31 December 2015 at the latest to the competent authority, not to operate the combustion plant for more than 20,000 operational hours starting from 1 January 2018 and ending no later than 31 December 2023

1.3 Decision for preparation the NERP

The air emissions of SO₂, NO_x and dust in the territory of Republic of Macedonia come mainly from the energy and industrial sectors.

The energy sector (electricity), is the largest source of emissions of pollutants in the air. This sector including combustion thermal power plants, is the main contributors of the emissions of sulfur dioxide (92% in 2013 of the total emissions)

For the same period, the emissions of NO_x from the energy sector (electricity), where about 44% and emissions of dust where about 20% in the territory of Republic of Macedonia.

Emissions of NO_x derived from the energy sector is almost 60% of total emissions in the territory of Republic of Macedonia for the same period.

The question of solving the pollution from large combustion plants is not only the question of horizontal legislation (environmental protection), is already one of the most important sectoral issues that are linked to a country's economic development.

Thermo power plants (TPP) in Republic of Macedonia include two lignite fired TPPs: TPP Bitola, with a capacity of 3x233 MW and TPP Oslomej, with capacity of 125 MW. TPP Negotino, with capacity 201 MW, is designed to be an oil-fired thermal power plant. However, due to high oil price, TPP Negotino has been in reserve operations for most of time. Furthermore, there are two combine and heating power plants: TE-TO (227 MW) and Kogel (30 MW). There are in operation since 2012 and are fully compliant to the Directive 2001/80/EC and Directive 2010/75/EU.

Environmental protection measures have been analyzed in the study prepared by the Energy Community in 2013. According to the scenarios for TPP Bitola and Oslomej, the financial costs for emission reduction measures for reaching compliance with Directive 2001/80/EC are about 229,7 million

Euros and for Directive 2010/75/EC are about 371,6 million Euros. The study analyzed the “external costs” of electricity production in Macedonia, related to the legislation on pollution regulated by the Energy Community. So-called "external costs" are the costs related to health and the negative effects on the environment with numerous impacts on different economic and natural values, are 662 million euro or 10.2 € c / kWh of electricity generated, which means that the external costs exceed the costs for emission reduction measures.

The implementation of this Directive requires physical changes to the plants, technical processes or quality of the fuel and others, mainly to the thermo power plants.

The Macedonian thermo power plants, reviewed the transposition and implementation of the provisions of the Directive 2001/80/EC and established that not all of them will meet the deadlines and fulfill the requirements to comply with the emission limit values in time, because they have to make big investment projects to retrofit their installations with Best Available Techniques (BATs). Since the long-term operation of these installations is of prime importance to the Macedonian economy and in order to meet the environmental goals with some gradual process, the Macedonian Government accepted the possibility of preparing Plan on Emission reduction as an alternative to individual setting emission limit values which would still enforce plants compliance – at some longer time-frame – enabling the investments to be made and compliance reached.

The Plan is a Government resolution, as an executive authority branch, and it predominantly represents the decisions of the Republic of Macedonia on the main environmental, economical and social goals, activities and measures towards mitigating the present environmental impacts and resolving the issues on ambient air protection in the future. With this document, the Republic of Macedonia defines the fundamental directions in air protection for the coming nine year period (2018-2027), on the basis of recognition of serious impacts to the living and natural environment caused by air pollution present and in the past, and it determines the fundamental directions of the gradual reduction of the total annual emissions of sulfur dioxide, nitrogen oxides and dust from stationary combustion plants with a total rated thermal input exceeding 50 MW, operating before 1 July 1992 listed Annex no. 1 to this plan.

The plan will be part of the revised National Program for gradual reduction of emissions of certain pollutants containing defined measures, which is in accordance with Article 27-6 of the Law on Ambient Air Quality. The adoption and the implementation of the National Program will provide for the implementation of parts of the Directives 2001/80/EC and 2001/81/EC and will provide for a higher level of ambient air protection and quality, which is important

for all citizens of Republic of Macedonia.

The NERP is draw up and will be implemented as referred to in Article 4(6) of the Directive 2001/80 / EC and as adapted by Article 5 of the Decision D/2013/05/MC-EnC and POLICY GUIDELINES by the Energy Community Secretariat on the Preparation of the National Emission Reduction Plans PG 03/2014 / 19 December 2014.

How Macedonia will implement the Directive, is question not only for the Government of Macedonia and competent Ministry, but also the interested public.

2. Tables of emissions (individual and total ceilings)

Considering that the NERP is a complex and comprehensive document, and based on the conclusions 2 and 3 of the extract from the draft minutes of the 170 session of the Government of Republic Macedonia held on 30.11.2013, the Ministry of Environment and Physical Planning required support from the Technical Assistance and Information Exchange instrument of the European Commission. by the TAIEX of the European Union to prepare the plan under the expert missionse

In Republic of Macedonia are identified 9 existing large combustion plants with capacity more than 50 MW rated thermal input that need to take measures for protection of ambient air from pollution, by reducing emissions of SO₂, NO_x and dust. The biggest part of the large combustion plants are part of the energy sector used for obtaining electricity and thermal energy (thermo power plants), which causes significant pollution, and only several of them are part of the industrial sector. Table A, Annex I gives the following data of the large combustion plants:

- date on which the first permit for the combustion plant was requested/issued and/or date on which the combustion plant has been put into operation for the first time;
- capacity (total rated thermal input) of the combustion plant on 31 December 2012;
- annual amount of fuel used (TJ/year) averaged over the period 2008-2012, split over 6 types of fuel: hard coal, lignite, biomass, other solid fuels, liquid fuels, gaseous fuels;
- annual average waste gas flow rate from 2008 to 2012;
- latest available annual emissions of SO₂, NO_x and dust (2014 or, if data is not yet available by the time of preparation of the plan, 2013 data).

2.1 Determination of ceilings

The NERP define the total emission ceilings for SO₂, NO_x and dust for each of the years from 2018 until 2027. The emissions from all combustion plants as a whole that are included within the plan in those years will have to be below these ceilings.

The NERP emission ceilings are calculated at national level, based on the contributions from each individual combustion plant as explained below.

2.2 Determination of individual contributions to total emission ceilings for combustion plants

General case

In accordance with the requirements of Article 4(6) of Directive 2001/80/CE, each combustion plant's contribution to the SO₂, NO_x and dust emission ceilings are calculated using the following equation:

$$\text{Contribution to ceiling (tpa)} = \text{Waste gas flow rate (Nm}^3\text{pa)} \times \text{ELV (mg/Nm}^3\text{)} \times 10^{-9}$$

Where:

- “waste gas flow rate” is the volumetric flow rate of waste gases in cubic metres per year, averaged over the last five years of operation up to and including 2012.¹ It is expressed at standard temperature (273 K) and pressure (101,3 kPa), at the relevant reference oxygen content (i.e. same oxygen content as the one applied for the corresponding ELV) and after correction for the water vapour content;
- “ELV” is the relevant emission limit value expressed in mg/Nm³, assuming an oxygen content by volume in the waste gas of 3 % in the case of liquid and gaseous fuels and 6 % in the case of solid fuels;
- “tpa” is tonnes per year.

2.3 Calculating the emission ceiling contributions for 2018, 2023 and 2026

General principles

The individual contributions are calculated individually for each combustion plant under the scope of the NERP.

Calculation the 2018 emission ceilings

According to subparagraph 2 of Article 5(4) of the Decision, the ceilings for the year 2018 are calculated on the basis of the applicable emission limit values at the time of submission of the plan (i.e. 31 December 2015) as set out in Part A to Annexes III to VII to the Directive or, where applicable, on the basis of the rates of desulphurisation set out in Annex III to the Directive.

The 2018 emission ceilings are presented in Table B.1 of Appendix B and the reference emission limit values and desulphurisation rates in Tables C.1 and C.2 of Appendix C.

¹ If the plant was temporarily out of operation in any of the years during the five-year period up to and including 2012 to an extent that could distort the calculation of the emission ceiling contributions, the last five years of operation should be taken into account, extending the reference period beyond 2008 corresponding to the number of years spent out of operation. Maintenance periods shall not be considered as the plant being temporarily out of operation.

Calculation the 2023 emission ceilings

According to subparagraph 3 of Article 5(4) of the Decision, the ceilings for the year 2023 are calculated on the basis of the applicable emission limit values in that year set out in Part A to Annexes III to VII to Directive 2001/80/EC or, where applicable, on the basis of the rates of desulphurisation set out in Annex III to the Directive. As is explained in the Guidance of the Energy Community, in practice the ELVs used for calculating the 2023 ceilings would be the same as those used for the 2018 ceilings, except for the NO_x emission limit values for solid fuel fired combustion plants with a rated thermal input exceeding 500 MW, where a limit value of 200 mg/Nm³ will have to be used for 2023 instead of 500 mg/Nm³.

The 2023 emission ceilings are presented in Table B.2 of Appendix B and the reference emission limit values in Tables D.1 and D.2 of Appendix D.

Calculating the 2026 and 2027 emission ceilings

According to subparagraph 4 of Article 5(4) of the Decision, the ceilings for the year 2026 and 2027 are calculated on the basis of the relevant emission limit values set out in Part 1 of Annex V to Directive 2010/75/EU or, where applicable, the relevant rates of desulphurisation set out in Part 5 of Annex V to Directive 2010/75/EU.

The template for calculating the 2026 and 2027 emission ceilings are presented in Table B.3 of Appendix B and the reference emission limit values in Tables E.1 and E.2 of Appendix E.

2.4 Total emission ceilings

The total emission targets for SO₂, NO_x and dust are determined per year by adding up the individual contributions to the respective emission targets:

$$\text{emission ceiling (tpa)} = \Sigma (\text{individual contribution of combustion plants to ceiling})$$

2.5 Subsequent changes to the NERP

Republic of Macedonia shall inform the Secretariat at least on the following:

- combustion plants which make use of the limited lifetime derogation (opt-out) possibility;

Note: Until 31 December 2015, operators have to notify the competent authority and the Secretariat if they seek to be exempt from inclusion within the plan by opting for the limited operating lifetime derogation (Article 4(4)). Since this deadline is identical to the one referring to the submission of the national emission reduction plan, and the use of the limited lifetime derogation is subject to the approval of the Ministerial Council, Contracting Parties should

consider the inclusion of such combustion plants in their NERPs which could be later removed if the limited lifetime derogation is granted.

- the closure of the combustion plant (i.e. combustion plants that have definitively stopped operating) or the reduction of its total rated thermal input below 50 MW;
- combustion plants starting to co-incinerate waste (see below).

In such cases, the combustion plant should be removed from the NERP, the contributions to the applicable emissions ceiling(s) should be deducted from the total emission ceiling(s) and the Contracting Party should submit the necessary amendment of the plan to the Secretariat.

Republic of Macedonia do not have the obligation to communicate to the Secretariat the following information since the subsequent changes they refer to should not affect the applicable emission ceiling(s):

- a reduction or an increase of the total rated thermal input after 1 January 2016 (other than a reduction to less than 50 MW);
- a reduction or an increase of the number of annual operating hours after 2016 (other than an increase to more than 1,500 hours for combustion plants making use of the low number of operating hours derogation in Article 5(1) – if such a combustion plant will be operated more than 1,500 hours, it should be notified and the ceilings adjusted);
- a change in fuel use (type, quantity) occurring after 2016 (other than a switch to burning waste, which would qualify the combustion plant as a waste co-incineration plant causing its exclusion from the NERP).

Changes affecting the name of the combustion plant (e.g. due to a change of operator) shall be reported via the emission inventories to be provided by the Contracting Parties in accordance with Section 12 of the present Guidelines.

2.6 Legislative context of NERP in Macedonian legal system

Legal basis for measures that the installations should take in order to reduce the emission of sulphur dioxide (SO₂), nitrogen oxides (NO_x) and dust from large combustion plants In Republic of Macedonia, is the Decree for determining combusting facilities which should take measures to protect the ambient air from pollution (Official Gazette of Republic of Macedonia No 112/2011), based on Article 47 (4) of the Law on ambient air quality (Official Gazette of Republic of Macedonia no. 67/2004, 92/2007, 83/2009, 35/10, 47/11, 59/2012, 100/12, 163/2013, 10/2015).

The preparation of the NERP is in accordance with the Ministerial decision of Energy Community D/2013/05/MC-End. The adopted NERP will be taken into consideration in the elaboration of the

revised National programme for gradual reduction of emissions of certain polluting substances at the level of the Republic of Macedonia.

Other related Laws and by laws transposing the provisions of the LCP Directive are:

- Rulebook on the limit values for the permissible levels of emissions and types of pollutants in the exhaust gases and vapors emitted in the air from stationary sources (Official Gazette of Republic of Macedonia no. 141/2010);
- Decree on the limit values of the levels and types of polluting substances in the ambient air and alert thresholds, deadlines for limit values achievement, margins of tolerance for the limit values, target values and long-term targets, (Official Gazette of RM no. 50/05);
- Rulebook on the methodology for inventory and establishment of the levels of polluting substances emission into the atmosphere in tons per year concerning all types of activities, as well as other data to be submitted to the European Monitoring and Evaluation Programme (EMEP), (Official Gazette of RM no. 142/07);
- Rulebook on the quantities of pollutant emission ceilings in order to determine projections for a given time period concerning reduction of the quantities of pollutant emissions on annual level (Official Gazette of RM no. 2/10);
- Rulebook on the emission limit values during waste burning and combustion and the conditions and manner of operation of installations for burning and combustion (Official Gazette of RM no. 123/2009);
- Law on Environment (Official Gazette of RM no. 53/05, 81/05, 24/07, 159/08 and 83/09, 48/10, 128/10, 51/11).

3. Measures and emission projections with timetables

The operator gives the measures to comply with the objectives of NERP and deliver the necessary emission reductions, as presented in the Tables B1 and B2 of Appendix B.

4. Monitoring mechanisms and requirements (operators and ministry)

The monitoring mechanism is already in place. Namely in accordance with Article 45 of the Law on ambient air quality, (1) Legal entities and individuals possessing or using certain installations that are sources of ambient air pollution are obliged to provide regular monitoring, measurement and processing

of data on emissions from the source of pollution and keep records there on (2). Data referred to the paragraph are submitted to the responsible body for managing the affairs of the environment (MEPP), by entities with installed power above 50 MW at least once per month, as well as summarized annual reports at latest March each year for the previous year.

The content and the form of the application for submitting the data of the emissions in the ambient air from stationary sources are prescribed in the Rulebook on the form and the content of the forms for submitting data for emissions in the ambient air from stationary sources, the manner and time period of data delivering, according to the capacity of the installation, the content and manner of keeping diary for emissions in the ambient air (Official gazette of RM no. 79/2011). The rulebook contains four Annexes in which technological data like operating hours, type and quantity of fuel used (Annex II), monthly emission measurements (Annex III) yearly emission quantities (Annex IV) are reported.

The Annex VIII of the LCP directive is transposed in the Rulebook the methodology, the manners, the procedures, the methods and means for measuring the emissions from stationary sources (Official Gazette of RM no. 11/2012). The methods for emission measurement CEN and ISO standards are adopted with the use of method of endorsement by the Technical committee for air quality and water TK 17 in the frame of the Institute for standardization:

http://www.isrm.gov.mk/en/tc/?national_committee_id=30) and transposed in national legislation, more precisely in the above mentioned rulebook. Currently there are several national laboratories for emission measurements of dust, NOx and SOx accredited by the national institute for accreditation (http://www.iarm.gov.mk/index.php?option=com_content&view=category&layout=blog&id=69&Itemid=76&lang=en&limitstart=40). The automatic monitoring requirement set down in Annex VIII of the LCP directive for the installations with thermal input above 50 MW are requested after they are issued with A-IPPC permit.

According to Article 45 paragraph 1 item 2 of the ambient air quality state inspectors should check whether the procedure for the manner and frequency of emission measurement or calculation of quantity of emission and the manner of records keeping is complied.

Emission data and technological data sent by the operators are verified, processed, analysed and presented by the Macedonian environmental information centre in the frame of MEPP (in accordance with article 40 of the Law on environment). In accordance with the article 14 paragraph 4 the operators should notify MEPP in case of essential changes of used fuel type and operation manner of the installation (like start-ups and shut-downs and any other abnormal operating conditions).

5. Reporting obligations

Ministry of the Environment will report to the Secretariat of EnComm in line with the obligations for reporting as are set out in Section B of Annex VIII of the LCP Directive, as adapted by the Decision (D/2013/05/MC-EnC).

The system is in place. The total annual emissions of NO_x, SO_x and dust emissions from discontinuous measurements and total annual amount of energy input, related to the net calorific value, broken down in terms of five categories of fuel required in Section B of Annex VIII of the LCP Directive are already reported to MEIC/MEPP in accordance with the Rulebook on the form and the content of the forms for submitting data for emissions in the ambient air from stationary sources, the manner and time period of data delivering, according to the capacity of the installation, the content and manner of keeping diary for emissions in the ambient air (Official gazette of RM no. 79/2011). Currently the yearly plant by plant data are reported to EEA/UNECE each year until 15 February. Data on and total annual amount of energy input, related to the net calorific value, broken down in terms of five categories of fuel are not reported plant by plant due the fact that as non EU country we are not obliged to report under LCP directive but kept in National emission database.

MEIC/MEPP will report required data to the National focal point of Energy community which shall further report data to the secretariat.

From 1 January 2019 onwards, ministry of environment shall report to the Secretariat every year within 12 months the plant-by-plant data for all combustion plants included in the plan.

With the aim of demonstrating progress in implementation, this report shall also include emission projections for scenarios taking into account ongoing investments for which financing is secured and a well-defined implementation timeline is drawn up.

Appendix A

**Table
A.1**

List of combustion plants included in the national emission reduction plan

A	B	C	D			E	F
			OR				
Number	Plant name (operator)	Plant location (address)	Date on which the application for the first permit for the plant has been submitted	Date on which the first permit for the plant has been granted	Date on which the plant has been put into operation for the first time	Total rated thermal input on 31 December 2012 (MW)	Annual number of operating hours (only if Article 5(1) is applied)
1	REK BITOLA (B1+B2)	Novacki pat b.b., Bitola	-	-	1982+1984	1350	-
2	REK BITOLA (B3)	Novacki pat b.b., Bitola	-	-	1988	675	-
3	REK OSLOMEJ	s. Oslomej, Kicevo	-	-	1980	375	-
4	TEC NEGOTINO	s. Dubrovo, Negotino	-	-	1978	630	-
5	Balkan Energy, Toplana ISTOK	515 No. 8, Gazi Baba, Skopje	-	-	1972	293	-
6	Balkan Energy, Toplana ZAPAD	Londonska bb, Skopje	-	-	1968	182	-
7	OKTA-Processing plants	s. Miladinovci, Skopje	-	-	1982	102	-
8	OKTA- Energy production	s. Miladinovci, Skopje	-	-	1982	188	-

Appendix A

Table A.1

List of combustion plants included in the national emission reduction plan

A	G						H	I	J		
Number	Annual amount of fuel used (average 2008-2012) (TJ/year)						Average annual waste gas flow rate (average 2008-2012) (Nm ³ /year)	Annual quantity of sulphur input (average 2008-2012) (tonnes of S per year, expressed as S) (only if desulphurisation rate is applied)	Latest available emissions data (2014 or, if data is not yet available by the time of preparation of the plan, 2013 data)		
	hard coal	lignite	biomass	other solid fuels	liquid fuels	gaseous fuels			SO ₂	NO _x	dust
1	-	30,909	-	-	334	-	16461580957	-	18,139	2,829	1,928
2	-	15,214	-	-	155	-	7147993064	-	10,895	1,433	972
3	-	6,898	-	-	192	-	4698600000	-	3,649	350	265
4	-	-	-	-	2019 (1)	-	565376522.5	-	11486 (2)	1967 (2)	317 (2)
5	-	-	-	-	870	957	361200444	-	0	42	1.79
6	-	-	-	-	648	14.4	178606957	-	0	29.71	1.3
7	-	-	-	-	1644 (3)	723 (3)	540183959	-	49 (3)	14 (3)	
8	-	-	-	-	940	4.69	245962733	-	49 (3)	14 (3)	

Note (1): Negotino operated in period 2008-2012 only in 2008 and 2009, in 2010, 2011 and 2012 the plant was temporarily out of operation due to economic factors, therefore for 5-year average operational data from 2004 (2005 also out of operation), 2006 and 2007 were taken into account instead of the years when plant was out of operation

Note (2): Annual average emissions from 2006 to 2010 from Programme for gradual reduction of emissions of certain polluting substances at the level of the Republic of Macedonia (Table 34) (measurements from 2008 were taken as average).

Note (3): OKTA Refinery is not in operation since January 2013. The data of 2006-2010 were taken into account for calculations

Appendix B

Table B.1

Emission ceilings for 2018

A	B	C	D	E	F	G	H	I	J	K
Number	Name	Reference oxygen content (%)	Relevant ELV for SO ₂ (mg/Nm ³)	Relevant desulphurisation rate (where applicable)	Plant's contribution to the 2018 SO ₂ ceiling (tpa)	Relevant ELV for NO _x (mg/Nm ³)	Plant's contribution to the 2018 NO _x ceiling (tpa)	Relevant ELV for dust (mg/Nm ³)	Plant's contribution to the 2018 dust ceiling (tpa)	Measures to comply with objectives / Comments
1	REK BITOLA (B1+B2)	6	400	-	6585	500	8231	50	823	Preparation of the comparative analysis/Feasibility study (wet and dry desulphurization) and installation the plant for desulphurization by the end of 2017
2	REK BITOLA (B3)	6	400	-	2859	500	3574	50	357	Preparation of the comparative analysis/Feasibility study (wet and dry desulphurization) and installation the plant for desulphurization by the end of 2017
3	REK OSLOMEJ	6	900	-	4229	600	2819	100	470	Feasibility Study Analysis of options (imported coal / gas) and beginning of the project Modernization of TPP Oslomej
4	TEC NEGOTINO	3	400	-	226	400	226	50	28	Application of natural gas as fuel. This is considered as a possibility within the gasification in the country, where TEC Negotino is one of the larger planned consumers natural gas.
5	Balkan Energy, Toplana ISTOK	3	1700	-	431	300	192	10	14	Measures in accordance with best available techniques

Table B.1, continuing

Appendix B

Emission ceilings for 2018

Emission ceilings for 2018

6	Balkan Energy, Toplana ZAPAD	3	1700	-	304	450	80	50	9	Measures in accordance with best available techniques
7	OKTA-Processing plants	3	1700	-	804	450	272	50	24	Measures in accordance with best available techniques
8	OKTA- Energy production	3	1700	-	418	450	111	50	12	Measures in accordance with best available techniques
					15855		15505		1738	
SUM					TOTAL SO ₂ CEILING		TOTAL NO _x CEILING		TOTAL dust CEILING	

16461580957
7147993064
4698600000
565376522.5
361200444
178606957
540183959
245962733

Emission ceilings for 2023

A	B	C	D	E	F	G	H	I	J	K
Number	Name	Reference oxygen content (%)	Relevant ELV for SO ₂ (mg/Nm ³)	Relevant desulphurisation rate (where applicable)	Plant's contribution to the 2023 SO ₂ ceiling (tpa)	Relevant ELV for NO _x (mg/Nm ³)	Plant's contribution to the 2023 NO _x ceiling (tpa)	Relevant ELV for dust (mg/Nm ³)	Plant's contribution to the 2023 dust ceiling (tpa)	Measures to comply with objectives / Comments
1	REK BITOLA (B1+B2)	6	400	-	6585	200	3292	50	823	
2	REK BITOLA (B3)	6	400	-	2859	200	1430	50	357	
3	REK OSLOMEJ	6	900	-	4229	600	2819	100	470	
4	TEC NEGOTINO	3	400	-	226	400	226	50	28	
5	Balkan Energy, Toplana ISTOK	3	1700	-	431	300	192	10	14	
6	Balkan Energy, Toplana ZAPAD	3	1700	-	304	450	80	50	9	
7	OKTA-Processing plants	3	1700	-	804	450	272	50	24	
8	OKTA- Energy production	3	1700	-	418	450	111	50	12	
					15855		8422		1738	
SUM					TOTAL SO ₂ CEILING		TOTAL NO _x CEILING		TOTAL dust CEILING	

16461580957
7147993064
4698600000
565376522.5
361200444
178606957
540183959
245962733

Table B.3

Appendix B

Emission ceilings for 2026 and 2027

A	B	C	D	E	F	G	H	I	J	K
Number	Name	Reference oxygen content (%)	Relevant ELV for SO ₂ (mg/Nm ³)	Relevant desulphurisation rate (where applicable)	Plant's contribution to the 2026 SO ₂ ceiling (tpa)	Relevant ELV for Nox (mg/Nm ³)	Plant's contribution to the 2026 NOx ceiling (tpa)	Relevant ELV for dust (mg/Nm ³)	Plant's contribution to the 2026 dust ceiling (tpa)	Measures to comply with objectives / Comments
1	REK BITOLA (B1+B2)	6	200	-	3292	200	3292	20	329	
2	REK BITOLA (B3)	6	200	-	1430	200	1430	20	143	
3	REK OSLOMEJ	6	200	-	940	200	940	20	94	
4	TEC NEGOTINO	3	200	-	113	150	85	20	11	
5	Balkan Energy, Toplana ISTOK	3	35	-	96	100	76	5	8	
6	Balkan Energy, Toplana ZAPAD	3	350	-	63	200	36	25	4.4	
7	OKTA-Processing plants	3	350	-	171	200	272	25	13	
8	OKTA- Energy production	3	350	-	86	200	49	25	6	
					6124		5975		602.2	
SUM					TOTAL SO ₂ CEILING		TOTAL NO _x CEILING		TOTAL dust CEILING	

Appendix B

Table B.4
Emission ceilings overview

(tonnes per year)

Pollutant	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
SO ₂	15 855	15 855	15 855	15 855	15 855	15 855	12 634	9 412	6 191	6 191
NO _x	15 505	14 088	12 672	11 255	9 838	8 422	7 674	6 927	6 179	6 179
Dust	1 738	1 738	1 738	1 738	1 738	1 738	1 361	985	608	608

