AIR POLLUTION

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HEAL
Promoting environmental policy that contributes to good health

Health and Environment Alliance (HEAL)

BOOSTING HEALTH BY IMPROVING AIR QUALITY IN THE BALKANS

This briefing provides an assessment of the health benefits and saved costs that will be achieved when air pollution control following Energy Community rules are in place for coal and lignite power stations in Bosnia and Herzegovina, Kosovo, Macedonia, Montenegro and Serbia in the Western Balkans, and demonstrates that quick and comprehensive action to drive down emissions will boost the benefits.

Controlling air pollution from coal power plants is a huge opportunity to save 6,460 lives and 2,724 mil EUR in healthcare costs in the next decade.

Implementing more stringent environmental rules in the Western Balkans is an opportunity to reduce the number of premature deaths and improve the health of people not only in the Western Balkan region but across Europe.

Urgent need for action, to protect health in the region and elsewhere

HEAL welcomes Western Balkan governments' commitment to reducing air emissions of coal power plants as a big step towards saving lives. As a baseline, governments should enforce the rules they are legally obliged to in the ten-year timeframe. But going beyond legal obligations and implement emission reductions more rapidly would result in improved air quality in the Balkans and Europe as well as saving significantly more lives. The emission reductions that need to be achieved in the Western Balkans could result in 6,460 saved lives each year, as well as saved health costs of up to 2,724 million EUR. The next decade will be crucial for reducing emissions and health costs. Yearly, health costs could drop down from 8,586 million EUR to 767 million EUR. The implementation of new rules would mean reducing the number of deaths each year from 7,206 to 745. Policy-makers are presented with a huge opportunity to protect their people and national budgets.

As of 1st January 2018, the countries of the Western Balkan need to start reducing their emissions for large combustion plants[1] and align national laws and rules with EU ones. This process is stemming from the Energy Community rules, which require coal plants currently operating in the Western Balkans to cut their emissions gradually from 2018 until the end of 2027[2].

The Energy Community is an international organisation dealing with energy policy. One of its objectives is the improvement of the environmental situation in relation with energy supply in the South East European (SEE) region. The Energy Community Treaty that extends the EU's internal energy market to SEE countries and beyond on the basis of a legally binding framework.

[1] combustion installations with a rated thermal input exceeding 50 MW, for which the original construction licence or, in absence or such a procedure, the original operation licence was granted before 1 July 1992

[2] These rules are as a matter of fact not even in line with the latest EU rules for large combustion plants - the so-called LCP "BREF" that entered force in the EU in August 2017" but are instead more lax

Europe's most polluting plants – situated in the Western Balkans

The heavy toll coal power in the Western Balkans takes on health in Europe.

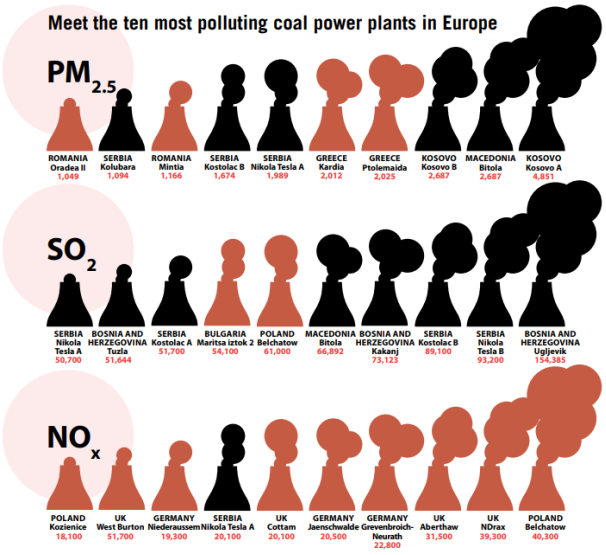
The Western Balkan countries are home to the most polluting plants in the whole of Europe. Annual emissions from the 16 coal power plants (16 GW) in the Western Balkans are almost as high as from the 296 existing coal plants (156 GW) in the EU-28.

Table 1. Total emissions of main pollutants by coal power plants in Western Balkans and in EU-28

Region	SO_2 (t/year)	NOx (t/year)	PM2.5 (t/year)
EU-28*	992,248	795,358	11,946
Western Balkan-5**	750,893	120,012	20,188

* In EU, 22 countries have coal power plants ** Western Balkan countries: Bosnia and Herzegovina, Kosovo, Macedonia, Montenegro, and Serbia
Emissions for Western Balkan are from year 2013.
Source: HEAL (2016): THE UNPAID HEALTH BILL - How coal power plants in the WESTERN BALKANS make us sick; and Europe Beyond Coal publicly available data

Coal power plants in the Western Balkans are also some of the most toxic ones in Europe and are present in the top 10 polluter lists for the air pollutants PM 2.5, SO_2 and NOx respectively.



Source: HEAL (2016):
THE UNPAID HEALTH BILL - How coal power plants in the WESTERN BALKANS make us sick

Calculations by the Health and Environment Alliance (HEAL) show that air pollution from coal plants in the Western Balkans are responsible for health costs up to 8.5 billion EUR a year in Europe.

Coal power plants in the Western Balkans cause damage to health beyond national borders due to long-distance travel of pollutants in the air. The health damage caused by combustion in coal plants is not limited to the proximity of the power plant. Some pollutants in exhaust clouds from the smokestack can be transported to neighbouring European countries and beyond. This means that plants in the Western Balkans can make a significant contribution to overall air pollution on the continent.

HEAL's Unpaid Health Bill - Western Balkans showed that around 60% of pollution emitted from Western Balkan coal power plants ends up in Europe while 40% stays in the Balkans. That means reducing pollution in neighbouring regions would benefit both Western Balkan and EU countries, with better health, lives saved and less health costs.

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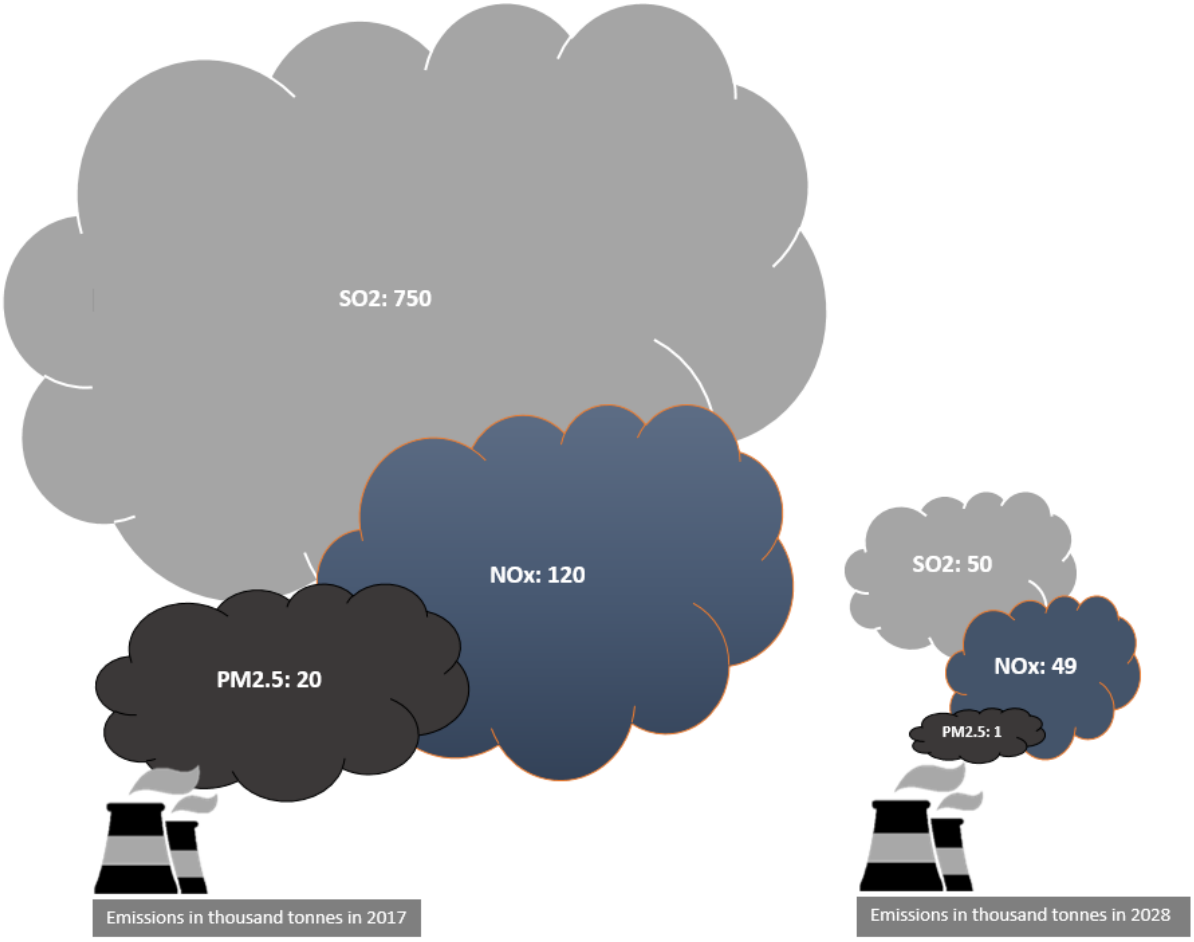
Cutting down emissions swiftly and significantly

Coal power plants in the Western Balkans emit 13 times more SO_2 and 30 times more PM2.5 per installed megawatt than the average European plant. Under the EU's Industrial Emissions Directive, emissions in the Western Balkans region would have to be reduced by 90% for SO_2 and by 67% of NOx and 94% of PM.

Figure 1. Emission cuts that need to be achieved by coal plants in the Western Balkans by the latest 2028



The list of emissions (year 2013) for SO_2, NOx and PM2.5 for each unit of the plant can be found in "Technical report: The Health Impacts of coal-fired power stations in the Western Balkans" (p. 20). In this paper's annex current emissions of the Western Balkan plants can be found and what would be allowed under new rules (under IED Annex V part 1 - to be achieved at the latest by 2028). In table 4 we list the number of premature deaths and health costs for 16 Western Balkan plants.

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Ugljevik power plant emits as much SO2 as all German coal power plants

This 300 MW plant in Bosnia and Herzegovina is the "Chernobyl" of lignite power production. It emits unimaginable amounts of dangerous pollutants such as SO_2 and PM. The Ugljevik power plant is a unique case in Europe: one single 300 MW plant emits as much SO_2 as all of Germany's plants together. With 154 385 tonnes (data 2013) of SO_2 a year being spewed into the air, this is unmatched in Europe. Ugljevik is located in the east of Bosnia and Herzegovina, near the Serbian border. The plant started to operate 32 years ago, making it one of the newer ones in Bosnia and Herzegovina, compared to the country's coal fleet average age of 37 years. As of 1 January 2018, SO_2 emissions from this plant should be cut down to 9,100 tonnes per year. Data shows in 2016 emissions were 127,524 tonnes. No flue-gas desulphurisation installation has been added yet to reduce the SO_2 emissions. Even though a contract for supplying this kind of retrofit was signed already in July 2016, the retrofit is not expected to be finalised before 2019. Thus, all evidence so far suggests that this plant will remain polluting at unimaginable pace for nearly two more years. If Ugljevik's operator plans to keep the plant running after January 2028, it would need to bring its SO_2 emissions even further down to around 2,100 tonnes per year. This is a 99% reduction from current values. Desulphurisation technologies that would support this kind of reduction have been implemented in most of EU's coal power plants, and in the case of Ugljevik it would save the lives of 1.165 people a year.

Are Balkan plants ready for the start of the implementation of rules as of 2018?

Starting from January 2018 coal power plants in the Western Balkans will need to significantly reduce their emissions. It is becoming increasingly clear[3] that operators will struggle to keep the limit values for emissions already in 2018. The focus in 2018 should be on SO_2 pollution control where most coal plants in the region should achieve cuts of more than 80%, except for the Kosova B and Nikola Tesla A plants. In 2018 reductions in NOx pollution should come from at least 7 plants (-25% on average). Dust or particulate matter (PM) emissions will need to be reduced on average by 32%, in 2018. The Western Balkan Governments should not wait and postpone action until 2028, when the emissions limit values foreseen by the IED Annex V, part 1, finally need to be achieved. There are also binding ceilings in place on how much plants can pollute for 2018 and 2023. Governments are responsible for reaching them. Needless to say, the countries which will become part of EU before 2028 will have to fulfil these strict emissions reductions even earlier

[3] A national emission reduction plan is publicly available only for Bosnia and Herzegovina. Montenegro's only plant is in the opt-out list which means it will remain emitting current emissions but will reduce its working hours in the next 10 years. National emission reduction plans for Macedonia, Kosovo and Serbia are not publicly available. Thus, HEAL assumes plants will follow legal obligations and will not apply any exemptions. The plants and units on the opt-out list were not included in the necessary reduction calculations. More detailed explanations are in the text box in the annex below.

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RECOMMENDATIONS

In order to seize the huge health savings, Western Balkan governments need to start setting up pollution control measures in 2018. They should go for an ambitious path to reduce emissions, beyond what is required under the new rules.

The adoption of the national emissions reduction plans into national legislation are a step in the right direction, and governments who haven't yet published such plans should do so as soon as possible.

The rapid phase out of coal should be advanced, by closing all old coal plants and not building new ones, and ending all public financing for coal.

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The Health and Environment Alliance (HEAL) is a leading European not-for-profit organization addressing how the environment affects health in the European Union. With the support of its over 70 member organizations, which represent health professionals, not-for-profit health insurers, patients, citizens, women, youth, and environmental experts, HEAL brings independent expertise and evidence from the health community to different decision-making processes. Members include international and Europe-wide organisations as well as national and local groups.

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ANNEX I

The Energy Community countries have to comply with certain measures set under the EU environmental acquis, which includes the Large Combustion Plants Directive 2001/80/EC adopted in the EU on 23 October 2001 (LCP-D)[4]. Western Balkan countries need to apply, from 2018 onwards, the combustion plant specific emission limit values (ELVs) set under the LCP-D.

In the Energy Community countries, the LCP-D limits will apply to existing power plants from January 2018 onwards if the operators of existing plants do not include them in the National Emission Reduction Plans (NERPs). The decision to allow NERPs was made by the Energy Community Permanent High Level Group on 23 October 2013 which introduces two derogation systems for existing plants[5]:

[4] Directive 2001/80/EC of 23 October 2001 on the limitation of certain pollutants from large combustion plants OJEU of 27.11.2001 L309/1

[5] Meaning plants for which the original construction licence or, in absence or such a procedure, the original operation licence was granted before 1 July 1992

a) to enable operators to opt out from the LCP-D requirements during the 2018-2023 period provided that the plant does not operate more than 20 000 hours (i.e. limited lifetime/ opt out derogation). If however the plant wishes to operate after that deadline it would have to meet the Industrial Emissions Directive's ELVs for "new "plants[6].

b) a NERP derogation system (adapted). Plant specific ELVs for existing plants may apply in the Energy Community countries in 2028 only. In general every plant should comply with these individually, however the NERP system allows instead for compliance towards an aggregated ceiling based on calculated historic emissions that allows emission trading provided that the ceilings are not exceeded for the participating plants. This is a mixed NERP (LCP-D) and TNP (IED) system, emerging from the fact that in the Energy Community countries the two directives co-exist in the period between 2018 and 2028.

Table 2. Reduction of emissions under IED Annex V part 1 - to be achieved at the latest by 2028[7] (applicable only to plants within NERPs plus Stanari)[8]

Country	Plant	% in reduction for SO2	% in reduction for NOx	% in reduction for PM2.5
Bosnia & Herzegovina	Tuzla	-94%	-70%	-90%
Bosnia & Herzegovina	Kakanj	-97%	-70%	-68%
Bosnia & Herzegovina	Ugljevik	-99%	-49%	-83%
Bosnia & Herzegovina	Gacko	-92%	-52%	-92%
Bosnia & Herzegovina	Stanari	0%	-25%	-67%
Kosovo	Kosovo A[9]	-100%	-100%	-100%
Kosovo	Kosovo B	-65%	-67%	-95%
Macedonia	Bitola	-93%	-72%	-95%
Macedonia	Oslomej	-94%	-58%	-95%
Montenegro	Pljevlja	-100%	-100%	-100%
Serbia	Nikola Tesla A	-77%	-41%	-82%
Serbia	Nikola Tesla B	-91%	-39%	-55%
Serbia	Kolubara	-97%	-78%	-99%
Serbia	Morava	-100%	-100%	-100%
Serbia	Kostolac A	-100%	-100%	-100%
Serbia	Kostolac B	-95%	-36%	-91%
WB-5 countries	**All 16 plants**	**-90.1%**	**-67.5%**	**-94.0%**

[6] Art 4 of D2013/05/MC_EnC of 24 October 2013

[7] Most likely earlier for countries acceding to the EU, depending on accession negotiations

[8] Energy Community: Decision 2015/06/MC-EnC on Implementation of Chapter III, Annex V and Article 72(3-4) of the Directive 2010/75(EC) on industrial emissions

[9] According to EnCom Decision D/2013/05/MC-EnC of 24 October 2013 plant should not be in either NERP or opt-out because there was already a separate commitment to the EC to close it in 2018

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Table 3. Emissions of the Western Balkan plants: current emissions, what would be allowed under new rules (under IED Annex V part 1 - to be achieved at the latest by 2028)

Country	Plant Unit	Current emissions			Allowed emissions under IED		
		SO2 (t/year)	NOx (t/year)	PM2.5 (t/year)	SO2 (t/year)	NOx (t/year)	PM2.5 (t/year)
Bosnia & Herzegovina	Gacko	27,880	4,405	748	2,100	2,100	63
Bosnia & Herzegovina	Kakanj Unit 5	17,875	1,943	55	0	0	0
Bosnia & Herzegovina	Kakanj Unit 6	17,875	1,943	55	770	770	23
Bosnia & Herzegovina	Kakanj Unit 7	37,374	4,062	115	1,610	1,610	48
Bosnia & Herzegovina	Tuzla G3	7,223	1,377	125	0	0	0
Bosnia & Herzegovina	Tuzla G4	14,446	2,753	250	0	0	0
Bosnia & Herzegovina	Tuzla G5	14,446	2,753	250	1,400	1,400	42
Bosnia & Herzegovina	Tuzla G6	15,529	2,960	269	1,505	1,505	45
Bosnia & Herzegovina	Ugljevik 1	154,385	4,078	373	2,100	2,100	63
Bosnia & Herzegovina	Stanari	1,628	1,628	73	1,628	1,221	24
Kosovo	Kosovo A Unit 3	2,177	2,013	1,565	0	0	0
Kosovo	Kosovo A Unit 5	4,573	4,227	3,286	0	0	0
Kosovo	Kosovo B Unit 1	6,735	7,260	1,343	2,373	2,373	71
Kosovo	Kosovo B Unit 2	6,735	7,260	1,343	2,373	2,373	71
Macedonia	Bitola Unit 1	22,297	5,548	926	1,575	1,575	47
Macedonia	Bitola Unit 2	22,297	5,548	926	1,575	1,575	47
Macedonia	Bitola Unit 3	22,297	5,548	926	1,575	1,575	47
Macedonia	Oslomej	15,741	2,089	564	875	875	26
Montenegro	Pljevlja I	25,681	3,818	196	0	0	0
Serbia	Kolubara 1	2,366	274	147	224	224	7
Serbia	Kolubara 2	2,366	274	147	224	224	7
Serbia	Kolubara 3	4,733	549	294	0	0	0
Serbia	Kolubara 5	8,134	943	505	0	0	0
Serbia	Kostolac A1	16,677	1,029	195	0	0	0
Serbia	Kostolac A2	35,023	2,161	408	0	0	0
Serbia	Kostolac B1	44,550	3,835	837	2,436	2,436	73
Serbia	Kostolac B2	44,550	3,835	837	2,436	2,436	73
Serbia	Morava	11,400	1,500	860	0	0	0
Serbia	Nikola Tesla A1	6,299	2,497	247	1,470	1,470	44
Serbia	Nikola Tesla A2	6,299	2,497	247	1,470	1,470	44
Serbia	Nikola Tesla A3	9,148	3,627	359	2,135	2,135	64
Serbia	Nikola Tesla A4	9,253	3,668	363	2,160	2,160	65
Serbia	Nikola Tesla A5	9,253	3,668	363	2,160	2,160	65
Serbia	Nikola Tesla A6	10,449	4,142	410	2,439	2,439	73
Serbia	Nikola Tesla B1	46,600	7,150	290	4,340	4,340	130
Serbia	Nikola Tesla B2	46,600	7,150	290	4,340	4,340	130

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Table 4. Deaths and health costs (lower and upper bound) of the Western Balkan plants with current emissions and what would be allowed under new rules (under IED Annex V part 1 - to be achieved at the latest by 2028)

Plant	Death from current emissions	Death if IED compliant	Health costs from current emissions in million EUR (lower)	Health costs from current emissions in million EUR (higher)	Health costs if IED compliant in million EUR (lower)	Health costs if IED compliant in million EUR (higher)
Gacko	254	32	105	305	12	33
Kakanj Unit 5	151	0	63	184	0	0
Kakanj Unit 6	151	12	63	184	4	12
Kakanj Unit 7	316	24	132	385	9	25
Stanari	25	22	9	26	8	23
Tuzla G3	67	0	27	79	0	0
Tuzla G4	133	0	55	158	0	0
Tuzla G5	133	21	55	158	8	22
Tuzla G6	143	23	59	170	8	23
Ugljevik 1	1,215	32	521	1,520	12	33
Kosovo A Unit 3	49	0	20	48	0	0
Kosovo A Unit 5	103	0	41	100	0	0
Kosovo B Unit 1	109	32	42	102	12	30
Kosovo B Unit 2	109	32	42	102	12	30
Bitola Unit 1	175	17	72	196	6	17
Bitola Unit 2	175	17	72	196	6	17
Bitola Unit 3	175	17	72	196	6	17
Oslomej	115	10	48	132	4	10
Pljevlja I	240	0	100	257	0	0
Kolubara 1	26	4	11	32	1	4
Kolubara 2	26	4	11	32	1	4
Kolubara 3	53	0	22	65	0	0
Kolubara 5	90	0	38	111	0	0
Kostolac A1	164	0	70	204	0	0
Kostolac A2	344	0	146	428	0	0
Kostolac B1	451	43	191	558	16	45
Kostolac B2	451	43	191	558	16	45
Morava	131	0	55	160	0	0
Nikola Tesla A1,	82	26	32	94	9	27
Nikola Tesla A2	82	26	32	94	9	27
Nikola Tesla A3	118	38	47	136	14	39
Nikola Tesla A4	120	38	47	138	14	40
Nikola Tesla A5	120	38	47	138	14	40
Nikola Tesla A6	135	43	54	156	16	45
Nikola Tesla B1	487	76	202	591	28	80
Nikola Tesla B2	487	76	202	591	28	80
Kakanj	619	36	259	753	13	37
Tuzla	477	44	196	566	16	45
Kosovo A	152	0	61	148	0	0
Kosovo B	219	64	83	204	24	59
Bitola	525	52	216	589	19	52
Kolubara	196	8	82	241	3	8
Kostolac A	507	0	216	632	0	0
Kostolac B	903	86	381	1,117	31	90
Nikola Tesla A	656	208	260	755	76	218
Nikola Tesla B	974	152	404	1,181	56	160

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