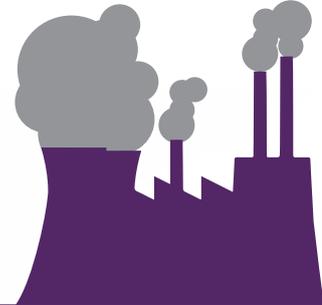


# THE UNPAID HEALTH BILL

## How coal power plants in MONTENEGRO make us sick



This factsheet which is part of a report by the Health and Environment Alliance (HEAL) entitled “The Unpaid Health Bill – How coal power plants in the Western Balkans make us sick” provides an assessment of the **health impacts and costs** associated with **air pollution** from **coal and lignite combustion at existing power stations in Montenegro**. It also estimates the costs for **planned** plants.

**The existing Pljevlja coal power plant creates up to 257 EUR million per year in health costs, of which 109 EUR million fall on the population within the region**

Coal power plants emit thousands of tonnes of hazardous air pollutants each year making a significant contribution to air pollution in the Balkans region and beyond. **The existing coal plant Pljevlja in Montenegro creates a total of between 43 and 109 EUR million per year** in health costs to people and governments in the region. **Due to long-distance travel of pollutants in the air**, this plant in Montenegro creates a total of between 100 and 257 EUR million health costs per year to Europe. The Pljevlja plant is operating on low environmental standards generating high levels of polluting emissions and high impacts on health.

### **Plans to increase capacity and continued reliance on coal**

**Currently home to one coal plant with an installed capacity of 210 MW, Montenegro could see the installation of three new projects with a 830 MW capacity.** With the change to new coal plants, the old polluting Pljevlja plant will be shut down. However, the building of new coal plants would mean that Montenegro would continue to rely on the most polluting form of energy for many decades to come.

### **New coal plants could add health costs of up to 53 EUR million per year**

New coal plants would operate under much stricter air emission standards than today. However, new plants could create additional health costs for the population in the Western Balkan region of between nine and 22 EUR million per year. They could create a total cost of between 21 and 53 EUR million per year to Europe.

**HEAL recommends that:** National energy plans should be revised to reduce the reliance on coal and ultimately to phase it out, and to increase investment in renewables. This presents an important opportunity in health prevention in Montenegro.



## What are the unpaid health costs?

This country factsheet provides a monetisation of the health impacts of air pollution from coal power plants in Montenegro. We call these “unpaid costs” on human health because the health damage has to be borne by individuals, their families and society, and not by those responsible for the pollution.

The health burden from coal in Montenegro is relatively small in comparison to the health burden that coal

power generation creates in other countries. This is due to the small capacity of the Pljevlja coal plant with a capacity of 210 MW. By November 2015, there were plans for potentially three new installations generating an additional 830 MW. While the old Pljevlja coal plant will be replaced with a new one, hence not adding new capacity, other planned plans are intended to increase capacity. While many countries in the EU are moving away from coal and towards healthier sources of energy, such as solar and wind power, coal power still has a firm place in the energy future of Montenegro.

## Calculation of the damage of coal power plants in Montenegro

Research commissioned for this factsheet shows that Pljevlja, the one coal plant in Montenegro, is producing costs of between 43 and 109 EUR million in damages to the health of citizens in the region.

Damages to health by the Pljevlja I plant cause between 100 and 257 EUR million per year to Europe. This is due to winds that carry coal fumes several hundred kilometres causing transboundary air pollution.

### The unpaid health bill for existing coal plants in Montenegro



The lower figure in the health costs presented here is an estimate based on one approach to the valuation of mortality: value of the loss of a year's life (VOLY), the higher figure is based on another approach: value of a

statistical life (VSL). These amounts are likely to be an underestimation because several health impacts as well as the full life cycle of coal are not factored in.

## What are the damages to health?

Figure 2 below shows the health damage in terms of premature deaths, respiratory and cardiovascular hospital admissions, new cases of chronic bronchitis and lower respiratory problems, medication use and days of restricted activity including lost working days.

The most severe impact is at the top (premature death) affecting a smaller number of the population and the least severe impact is at the bottom with a large number of people affected (cases of lower respiratory symptoms).

### Health impacts and costs from coal power generation in Montenegro

**240**

premature deaths per year due to air pollution from coal plants in Montenegro

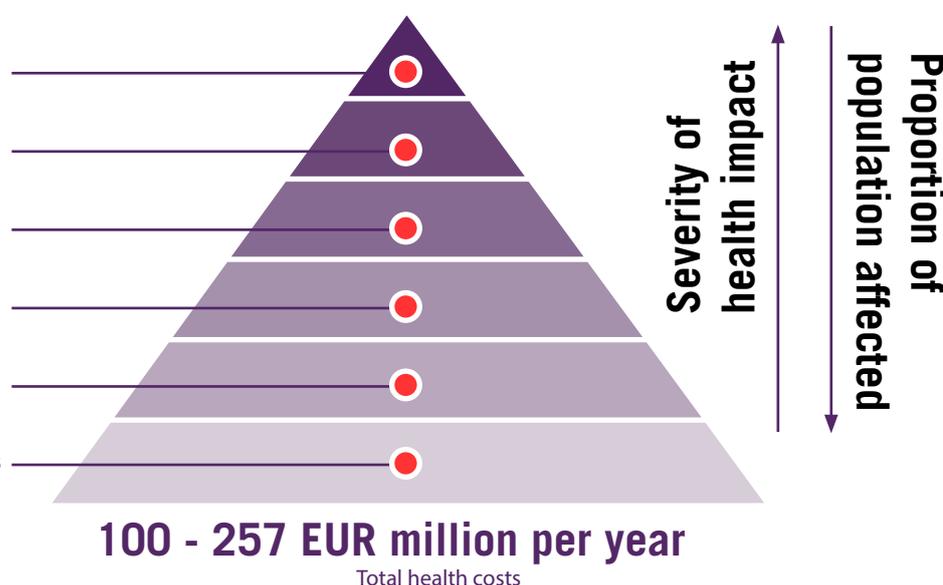
Bronchitis and Asthma

Hospital admissions

Respiratory medication use

Restricted activity days and working days lost

Lower respiratory symptoms



**Figure 2. Factors contributing to total damages caused by coal plants in Montenegro**

## Poor record on air quality

According to figures from the World Health Organization (WHO), the South East Europe (SEE) region is losing the equivalent of 19 percent of its GDP to costs associated with deaths from air pollution. In Montenegro, health costs associated with air pollution are equivalent to 14.5 percent of GDP. These percentages are higher than in Western Europe.<sup>1</sup>

The WHO has carried out extensive reviews of the science on the health effects of air pollution. It has put forward recommendations for air quality concentrations that should be kept in order to protect health. For example, for the larger parts of particulate matter (PM), known as PM10,

the WHO has set a guideline of 20  $\mu\text{g}/\text{m}^3$  annual average. The air quality standard in Montenegro is 40  $\mu\text{g}/\text{m}^3$ .<sup>2</sup>

In 2012, the annual mean level of PM10 was 52.2  $\mu\text{g}/\text{m}^3$  in Montenegro<sup>3</sup>. That is over the limit values set by national law and considerably higher than WHO recommendations. The WHO also points out that there is no safe threshold for PM. Even the lowest level has effects on health.

Montenegro allows for a maximum of 35 days a year in which the PM10 daily concentrations can exceed 50  $\mu\text{g}/\text{m}^3$ . In 2012, citizens in the country experienced more than two months (70 days) of high levels of PM10. This means citizens were breathing highly polluted air for almost two and a half months, instead of one month, the limit set by the EU to protect public health.

# Coal power dependency and its contribution to air pollution in Montenegro

Emissions from coal power plants make an important contribution to poor air quality. Each year, one large coal power plant emits thousands of tonnes of hazardous air pollutants including heavy metals. Pollutants such as sulphur dioxide (SO<sub>2</sub>) and nitrogen oxides (NO<sub>x</sub>) react in the atmosphere to form ozone and secondary PM, which are of greatest concern to health.

The Pljevlja coal plant was the only one responsible in 2012 for more than 90 percent of national SO<sub>2</sub> and half of the NO<sub>2</sub> emissions. Furthermore, the plant contributed significantly to the total national PM emissions, with 59 percent for PM10, and 42 percent of PM<sub>2.5</sub>.<sup>4</sup>

Montenegro uses the least coal in its energy mix in comparison to other Western Balkan countries, but it still accounts for almost half of the energy production. Montenegro is home to only one plant, Pljevlja, which is 34 years old, and has a total capacity of 210 MW, burning lignite

from open cast mines in the vicinity. The Pljevlja plant is located in a very specific geographical location, surrounded by mountains. This makes the air pollution stay longer in the vicinity of the plant causing long smog episodes - particularly during winter months due to inversions in the atmosphere.

Even though Montenegro has a great capacity to produce energy from renewables, it has no plans to move away from coal. So far, the government has announced three new coal projects: one in Pljevlja (220 MW capacity) that should replace the existing old and polluting plant, and two other plants Maoče and Berane with (610 MW capacity).

Building new plants would mean Montenegro has four times its current coal capacity, from 210 MW now to 830 MW once all plants are operating and the old Pljevlja plant is shut down. In the technical report, all to date announced projects in the Western Balkans have been taken into account and analysed. Predicting which coal plans are more or less likely to be built is beyond the scope of this report<sup>5</sup>.

## New plants would only add to the health burden

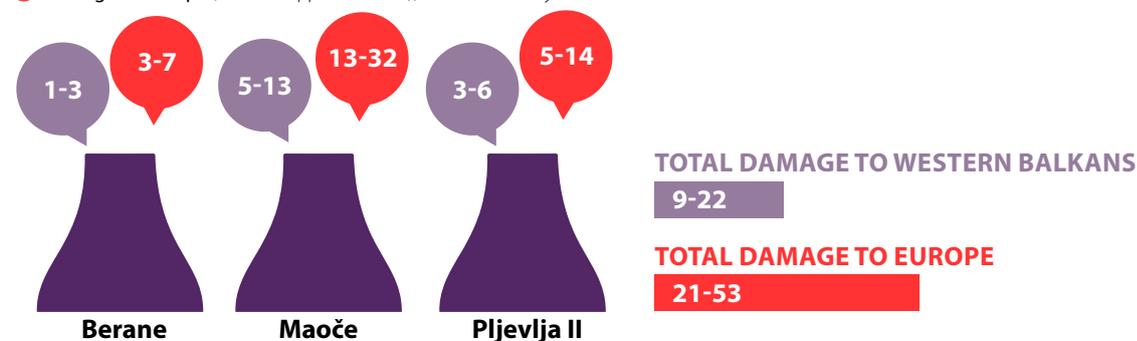
Montenegro has announced the building of three new installations with a capacity of 830 GW.

If plans for future coal plants go ahead in full, additional health costs could total up to 53 EUR million per year.

A part of the total damage of between 21 and 53 EUR million per year falls to the Western Balkans region (nine and 22 EUR million per year in health costs).

### The unpaid health bill for future coal plants in Montenegro

- Damage to Western Balkans (lower to upper estimate), in EUR million/year
- Damage to Europe (lower to upper estimate), in EUR million/year



Note: Health costs given for the Western Balkans are part of the total health costs for Europe, and thus the amounts cannot be added up. In this context, Europe includes EU28 member states plus Albania, Belarus, Moldova, Norway, the Western regions of Russia, Switzerland, Ukraine, Bosnia and Herzegovina, Kosovo, Macedonia, Montenegro and Serbia.

**Figure 3. Estimated health costs from planned new plants in Montenegro to the population in the Western Balkans and to Europe (upper and lower estimate), in EUR million/year**

Any expansion of current capacity will add to health damage. However, due to anticipated higher standards of pollution control, the costs to health will be relatively less.

New coal plants need to be compliant with EU legislation. That is good news for health. It means they must use “best available technologies” to filter the pollution from the air thus emitting less pollution into the environment. Montenegro’s obligations to comply with strict air emission standards is a result of its membership of the Energy Community, an international organisation dealing with energy policy.

Montenegro has binding national targets to achieve 33 percent of its energy through the use of renewables by 2020<sup>6</sup>. This should involve the phase out of coal and opting for renewables, which is the healthy and sustainable way ahead.



“This report provides the first-ever estimate of the health impacts of the Pljevlja coal power plant in Montenegro. It shows the enormous burden of air pollution from coal power on people's health and the economy. It provides vital information on why Montenegro should be phasing out coal and opting for renewables in its future energy policy.”

Anne Stauffer,  
Deputy Director, Health and Environment Alliance (HEAL)

## The way forward: healthy energy choices



### **POLICY RECOMMENDATIONS TO DECISION-MAKERS IN MONTENEGRO**

**THEY SHOULD >>>>>**

- **Rapid phase out of coal: Close all old coal-fired plants and do not build new ones;**  
HEAL considers that a phase out of coal power generation for the EU is possible by 2040. Montenegro should achieve the de-carbonisation of the power sector in about the same time frame.
- **Take into account health protection in all energy decisions and opt for renewables and energy savings;**
- **Align national laws with WHO recommendations and fully implement existing air laws to take responsibility for providing clean air for the national population to breathe, and;**
- **Fulfil the obligations and fully implement standards agreed in international treaties, such as the Energy Community, Kyoto protocol and Paris Treaty.**

### **HEALTH PROFESSIONALS SHOULD SPEAK ABOUT THE UNPAID COSTS OF COAL**

Health and medical professionals have a unique role to play in encouraging a transition from polluting to healthy forms of energy in Montenegro. They should continue debates on the healthy energy options with the ministry of health, ministry of energy and other governmental institutions, as well with the public. Making widely known the true costs of coal power generation will help benefit public health.

## References

- <sup>1</sup> WHO Regional Office for Europe, OECD (2015). Economic cost of the health impact of air pollution in Europe: Clean air, health and wealth. Copenhagen: WHO Regional Office for Europe.
- <sup>2</sup> Since 2012 new regulations on limit values and air quality standards are in place. For PM10, the target value of 40 µg/m<sup>3</sup> (EU standard) is to be reached by 2015. For PM2.5, the target value of 20 µg/m<sup>3</sup> (EU standard) is to be reached by 2020. Until then, the regulation allows higher limit values.
- <sup>3</sup> Data from EEA AirBase v8 for 2012
- <sup>4</sup> Data under the Convention on Long-range Transboundary Air Pollution (CLRTAP) for Montenegro for 2011 (the latest reported year).
- <sup>5</sup> More details of the health impacts and damage per coal unit is presented in technical report of this report and can provide an information for (re)evaluating the national and industry plans regarding coal-fired plants.
- <sup>6</sup> [https://www.energy-community.org/portal/page/portal/ENC\\_HOME/AREAS\\_OF\\_WORK/Obligations/Renewable\\_Energy](https://www.energy-community.org/portal/page/portal/ENC_HOME/AREAS_OF_WORK/Obligations/Renewable_Energy)

## About HEAL

The Health and Environment Alliance (HEAL) is a leading European not-for-profit organisation addressing how the environment affects health in the European Union (EU). With the support of more than 70 member organisations, HEAL brings independent expertise and evidence from the health community to different decision-making processes. Our broad alliance represents health professionals, not-for-profit health insurers, doctors, nurses, cancer and asthma groups, citizens, women's groups, youth groups, environmental NGOs, scientists and public health research institutes. Members include international and Europe-wide organisations as well as national and local groups.



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