The Unpaid Health Bill – How coal power plants in Western Balkans make us sick

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HEAL’s member network

>70 health professionals
organizations

in 28 countries

Promoting environmental policy
that contributes to good health
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–
environmental consultant working from the UK with 30 years of experience on the health and environmental impacts of air pollution
Study objectives

1. How big are emissions from Western Balkan coal power plants?

2. How big are health impacts and their monetary equivalent?
Coal power plants in five Western Balkan countries are producing costs of between 2.9 and up to 8.5 billion EUR per year in damages to the health of the citizens in Europe. Existing coal power plants create up to 8.5 EUR billion per year in health costs.

Figure 1. Estimated health costs from existing coal power plants to the European population (upper and lower estimate), in EUR million/year
What are the unpaid health costs?

‘Unpaid health bill’ represents: a combination of lost productivity, added burden on healthcare systems and lost utility for individuals suffering ill health or dying early.

Health impacts and costs from coal power generation

- 7,181 premature deaths per year in Europe
- Bronchitis and Asthma
- Hospital admissions
- Respiratory medication use
- Restricted activity days and working days lost
- Lower respiratory symptoms

2.9 - 8.5 EUR billion per year
Total health costs

Figure 2. Factors contributing to total damages caused by coal power plants in Western Balkans
**Methodology at a glance**

**Calculation and monetisation of health costs**

1. **Activity** (e.g. demand for electricity)

2. **Emission** (e.g. tonnes of SO₂)

3. **Dispersion and Atmospheric Chemistry** (e.g. including formation of secondary aerosols such as ammonium sulphate, µg.m⁻³)

4. **Exposure of the General Population** (people, µg.m⁻³)

5. **Exposure of Population at Risk from a Specific Effect** (people, µg.m⁻³)

6. **Incidence of the Health Effect under Analysis Linked to the Pollutant under Investigation** (e.g. hospital admissions)

7. **Monetisation of Health Impacts** (EUR)

The analysis is based on the consideration of long-range dispersion of air pollutants, using results from the Unified EMEP model, which is the dispersion and atmospheric chemistry model that underpins most European air quality analysis. For the current operation of an existing plant, emissions are typically measured and reported by the plant operator. For new plants, annual emissions are calculated on the assumption that these plants would comply with the EU's Industrial Emissions Directive (IED).

**Figure 3. The impact pathway approach (ExternE)**
## Data source for emissions from coal-fired plants

<table>
<thead>
<tr>
<th>Data</th>
<th>Country</th>
<th>Source</th>
</tr>
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<tbody>
<tr>
<td>Emissions</td>
<td>Bosnia &amp; Herzegovina</td>
<td>Study by Center for Ecology and Energy: “Health impacts of coal fired power generation in Tuzla”, p.11</td>
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<td></td>
<td>Kosovo</td>
<td>Study World Bank “Kosovo Country Environmental analysis”, p.55</td>
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<td>Macedonia</td>
<td>Ministry of environment and physical planning (data submitted by ELEM)</td>
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<td></td>
<td>Montenegro</td>
<td>National strategy for air quality by Ministry of sustainable development and tourism, p.128</td>
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<tr>
<td></td>
<td>Serbia</td>
<td>E-PRTR database year 2013</td>
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<tr>
<td>Pollutant dispersion</td>
<td>All</td>
<td>EMEP / Norwegian Meteorological Institute</td>
</tr>
<tr>
<td>Response functions</td>
<td>All</td>
<td>WHO-Europe HRAPIE study</td>
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<tr>
<td>Valuation</td>
<td>All</td>
<td>European Commission and OECD</td>
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Are the Western Balkan coal plants major contributors of pollution in Europe?

Meet the ten most polluting coal power plants in Europe

- **PM$_{2.5}$**
  - ROMANIA Oradea II: 1,049
  - SERBIA Kolubara: 1,094
  - ROMANIA Mintia: 1,166
  - SERBIA Kostolac B: 1,674
  - SERBIA Nikola Tesla A: 1,989
  - GREECE Kardia: 2,012
  - GREECE Ptolemaida: 2,025
  - KOSOVO Kosovo B: 2,687
  - MACEDONIA Bitola: 2,687
  - KOSOVO Kosovo A: 4,851

- **SO$_2$**
  - SERBIA Nikola Tesla A: 50,700
  - BOSNIA AND HERZEGOVINA Tuzla: 51,644
  - SERBIA Kostolac A: 51,700
  - BULGARIA Maritsa iztok 2: 54,100
  - POLAND Belchatow: 61,000
  - MACEDONIA Bitola: 66,892
  - BOSNIA AND HERZEGOVINA Kakanj: 73,123
  - SERBIA Kostolac B: 89,100
  - SERBIA Nikola Tesla B: 93,200
  - BOSNIA AND HERZEGOVINA Ugljevik: 154,385

- **NOx**
  - POLAND Kozielice: 18,100
  - UK West Burton: 19,300
  - GERMANY Niederaussem: 20,100
  - SERBIA Nikola Tesla A: 20,100
  - UK Cottam: 20,100
  - GERMANY Jaenschwalde: 20,500
  - GERMANY Grevenbroich - Neurath: 23,800
  - UK Aberthaw: 31,500
  - UK NDrax: 39,300
  - POLAND Belchatow: 40,300
Trans-boundary problem

- How Europe is damaged by coal power plants in the Western Balkans: **60% of costs to other European countries** — a trans-boundary problem

<table>
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<tr>
<th>Damage to Europe (in EUR million/year)</th>
<th>Damage to Western Balkans (in EUR million/year)</th>
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<td>2,988 – 8,561</td>
<td>1,211 – 3,464</td>
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*in EUR million/year, lower to upper bound*
The way forward: healthy energy choices

POLICY RECOMMENDATIONS

TO DECISION-MAKERS IN THE WESTERN BALKANS

• Support the rapid phase out of coal: Close all old coal-fired plants and do not build new ones

• Take into account health protection and opt for renewables and energy savings

• Fulfil the obligations and fully implement standards agreed in international treaties, such as the Energy Community, Kyoto protocol and Paris Treaty 2015
Thank you for your attention!

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