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Environmental impact and damage categories caused by air pollution emissions from mining and quarrying sectors of European countries

Agata Fugiel, Dorota Burchart-Korol, Krystyna Czaplicka-Kolarz, Adam Smoliński

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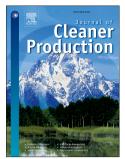
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1	Environmental impact and damage categories caused by air pollution emissions from
2	mining and quarrying sectors of European countries
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4	Agata Fugiel ^a *, Dorota Burchart-Korol ^a , Krystyna Czaplicka-Kolarz ^b , Adam Smoliński ^a
5	
6	^a Central Mining Institute, Department of Energy Saving and Air Protection, Pl. Gwarkow 1,
7	40-166 Katowice, Poland
8	^b Central Mining Institute, Pl. Gwarkow 1, 40-166 Katowice, Poland
9	*corresponding author e-mail: afugiel@gig.eu, tel. 48-32-2592779 fax +48-32-2592267
10	
11	Abstract
12	The aim of this article is to perform an environmental impact assessment of the air
13	pollution emissions from the mining and quarrying sectors of European countries by applying
14	the life cycle assessment technique. The mining and quarrying sectors of 12 European
15	countries were assessed. The sectors include hard coal and lignite mining, crude petroleum
16	and natural gas extraction, mining of metal ores, and other service activities in the mining
17	sector. Environmental analyses consider particulate and gas emissions, including emissions of
18	CO_2 , CO , NO_x , SO_x , $PM_{2.5}$, PM_{10} , CH_4 , $NMVOCs$ and NH_3 . Based on two life cycle impact
19	assessment methods, ReCiPe and IPCC, the mining and quarrying sectors were assessed in the
20	following impact and damage categories: greenhouse gases emission, terrestrial acidification,
21	photochemical smog and particulate matter formation, damage to human health and
22	ecosystem quality. The analyses were made with data for 2012. They showed that the highest
23	particulate and gas emission occurs in Great Britain's mining and quarrying sector, and the
24	lowest occurs in Bulgaria's. The environmental indices in all of the impact and damage
25	categories in the mining and quarrying sectors were the highest in Great Britain, Poland,
26	Norway and Germany. It was found that greenhouse gas emissions are quite different in this
27	sector in each country for the time horizons of 20, 100 and 500 years, which is justified by the
28	GWP factor for methane emission.
29	
30	
31	Keywords: mining and quarrying sector, air pollution emission, environmental impact and
32	damage categories, Europe
33	

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