

Coal mining wastewater treatment in Poland in view of circular economy

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Introduction

The European Union is the world's fourth largest coal consuming region, after China, India and North America. We mine around 100 million tons of hard coal each year and import a further 200 million tons, making us the world's largest importer by value. Poland hosts the largest number of coal mines, followed by Spain, Germany and Bulgaria.

In 2015, 72.2 out of the 100 million tons were produced in Poland. Hard coal mines in Poland are located in the Upper Silesian Coal Basin (USCB) as well as the Lublin region. Not surprisingly the Upper Silesian urban-industrial agglomeration is one of the most impacted and transformed areas in Europe. In this work we present the results from a review on the treatment of coal mine wastewater effluents generated by Polish coal mines, in view of circular economy opportunities [1].

Methods

This work presents and assesses the case study of Debiensko in Poland. The methodology applied to select the case study involved the following steps:

1) Screening of operating coal mines in Poland.

Within the last years, a lot of mines in Poland are being shut down as they are no longer competitive. In order to identify the operating coal mines currently in Poland, first a literature review was made, while further validation was made using the central Geological Database (Centralna Baza Danych Geologicznych or CBDG in short) (Layer: Obszary górnicze) [2] and finally through personal communication with Polish Central Mining Institute (GIG) experts.

2) Identification of success story/ies.

The coal mines that are still operating in Poland, identified in Step 1, are being assessed with reference to the treatment of the wastewater generated in view of circular economy and in particular, in view of resource recovery from the brine effluent generated.