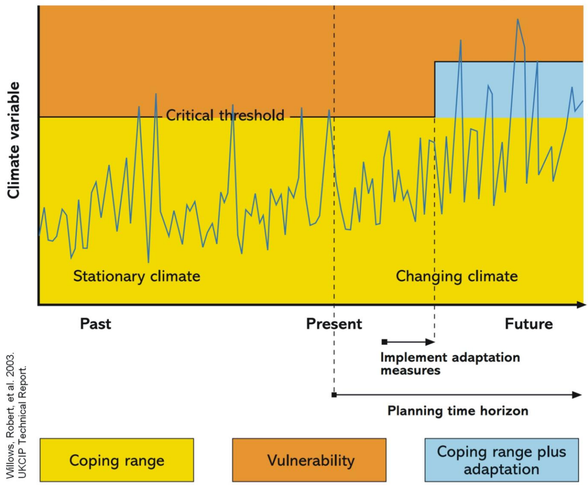
The impact of EXtreme weather events on MINing operations

TEXMIN

Project objectives

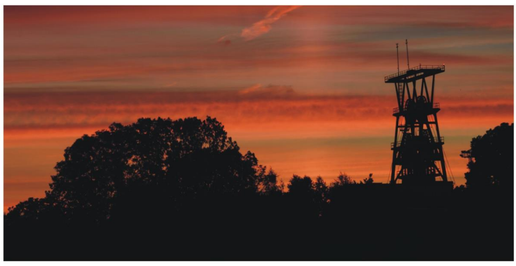
Focused on assessing and minimizing the environmental impact of extreme weather events on mining operations, TEXMIN project aims to provide guidance to all stakeholders on gradual and sudden impacts on operating, closed and abandoned coal mines brought about by climate change and extreme weather events, as this issue is currently affecting sites in Europe and the rest of the world.

The overall objective of the TEXMIN project is to develop an integrated management tool and monitoring strategy for reducing the vulnerability of the mining sector to extreme weather events and climate change.



Research conducted by C. Klinger's team (2012) also reveals the problem of the accumulation of secondary water in old and inaccessible shallow boreholes, where a greater risk of water contamination is present as a result of the flushing of the products of oxidation and hydrolysis. The changes in gas emissions from old mine shafts are also significant with regard to the drops in barometric pressure that occur during extreme weather phenomena (Wrana et al. 2016).

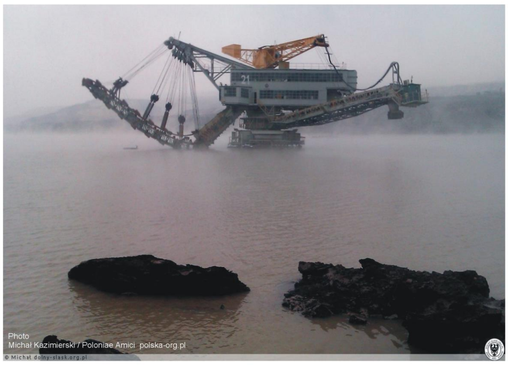
Project coordination: Malgorzata Markowska (GIG, PL)
Duration of the project: 01.06.2019 – 31.05.2022
http://www.texmin.gig.eu



Justification of the project

Whilst climate change has been a well-researched subject for many years, it is only recently that the subject has appeared on the radar of the international mining industry and much of this has been related to the impacts of the mining industry on climate change (e.g. through emissions). Where such research relating to the impact on mining exists, it has been mainly undertaken in the Canadian and Australian mining industries due to the unique challenges that those countries face due to their geographical location. These studies tend to focus predominantly on operating mines, but some closed mine issues are considered. Both Canada and Australia have already faced issues relating to changes in climate and increased severe weather events. So has Europe, but the issue of climate change and mining still needs to be addressed by Europe.

Due to the significant number of both operational and closed mines in Poland and the rest of Europe, it is essential to react to the risks that occur as a result of climate change. Local research conducted thus far reveals that climate change has an influence on the stability of underground cavities (Gombert & Charmoille 2010). The influence of greater precipitation results in a decrease of the stability of the subsoil and the rock mass in an area affected by mining activity. This process has a direct influence on the surface, and the safety of inhabitants in both areas with active mining operations as well as in post-mining areas.



Project realized by consortium composed of the following members from 6 countries:

- Central Mining Institute (GIG – Project leader, PL)
- University of Exeter (UNEXE, UK)
- Silesian University of Technology (SUT, PL)
- Centre for Research and Technology Hellas (CERTH, GR)
- Subterra Ingenieria, S.L. (SUB, ES)
- DMT GmbH & Co. KG (DMT, DE)
- Výzkumný ústav pro Hnědé Uhlí (VUHU, CZ)
- Spółka Restrukturyzacji Kopalń S.A (SRK, PL)
- TAURON Wydobycie S.A. (TWD, PL)

This project has received funding from the Research Fund for Coal and Steel under grant agreement No 847250. RFCS provides funding for high-quality research projects that support the European Coal and Steel industries.