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Place Loss and Re-Negotiating Local Water Heritage: The Case of Sztoła River, Bukowno, Poland

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The history of the Sztoła River in Poland provides important insight into how the industrial use of a river can ultimately lead to the disappearance of the water source, the river itself, affecting culture and everyday practices in local communities. It is an example of negative heritage, where the preservation of surface water is neglected as it does not match official narratives of the local mining traditions and social values. Because the river is not considered an important component of local culture, decision makers expected that the local community would accept the "liquidation of a river." However, the anthropogenic drying up of the Sztoła received much attention on social media as people lost the opportunity for nature-based leisure activities. The local community's vivid responses on social media and activist interventions are examples of engagement with heritage "in the making" – standing up for the values that have not so far been recognized.

KEY THEMES

CLIMATE

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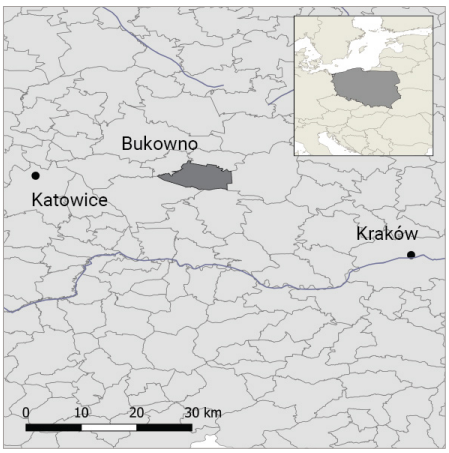


< *Fig.1 Sztoła, December (Source: Daniel Sztork, 2021).*

The valley of the Sztoła River is located in the Małopolska region of Poland. The river's name comes from the Germanic "Stolla" which stands for an adit – a tunnel or a canal for discharging water from a mining area (Pucek 2014). Until the end of 2021, the Sztoła used to meander in the forest, between the sandy slopes, for 13.4 km, passing residential areas of the small town of Bukowno. Mining traditions in the region date back to medieval times, that is, from the eleventh to thirteenth century (Ciszewski 2019; Rozmus 2019). The development of mining and metallurgical industries of zinc and steel ores, which began in the nineteenth century, propelled the growth of the settlement. Currently, the municipality has about 10,000 residents and approximately 65 square kilometers of land area with 75 per cent covered by forest (Dziechdziarz and Sypień 2017).

Local industrial activities and proximity to the large industrial region of Silesia resulted in high levels of pollutants in the air, soil and water (Kicińska et al. 2019) including rivers (Ciszewski 2019; Krodkiewska et al. 2022). However, this did not restrict the use of nature by the surrounding communities, where residents cherished fishing, berry and mushroom picking and bathing in nature. Wildlife also flourished in the local forests.

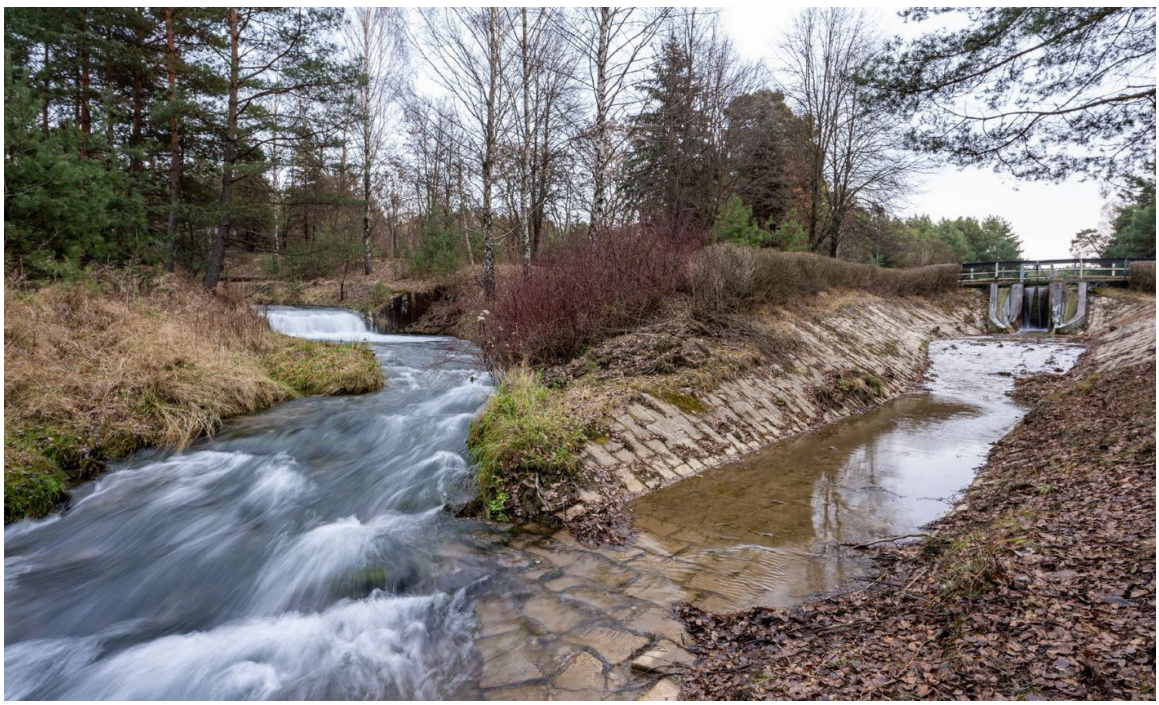
The fate of the Sztoła was long connected to rapid urbanization because of its leisure value. In the first half of the twentieth century, it was a popular recreation area for citizens of nearby industrial metropolises. Even though the Bukowno municipality lost its status as a health resort due to increasing air, soil and water pollution, residents' leisure was still strongly dependent on the river, and daily visits from towns and cities located nearby Bukowno continued. Sztoła was a spot for taking recreational hikes, bathing, trout fishing (introduced to the river by local fishing associations), and eventually kayaking. Its sandy slopes became an icon of local nature, and in 2020, the river was selected as the Małopolska region's best tourist attraction in a contest organized by a popular national radio station (fig. 1).

The boom of the mining industry in the 1970s severely impacted the local water system and accelerated groundwater decline. The extraction of zinc and lead ores in the "Olkusz" and "Pomorzany" mines near Bukowno struggled with an exceptionally high volume of groundwater. Pumping water out of mines was considered a significant challenge for the industry, which redefined the venture as "a fight against water" – both contemporarily as well as historically (Niewdana and Świć 2011).

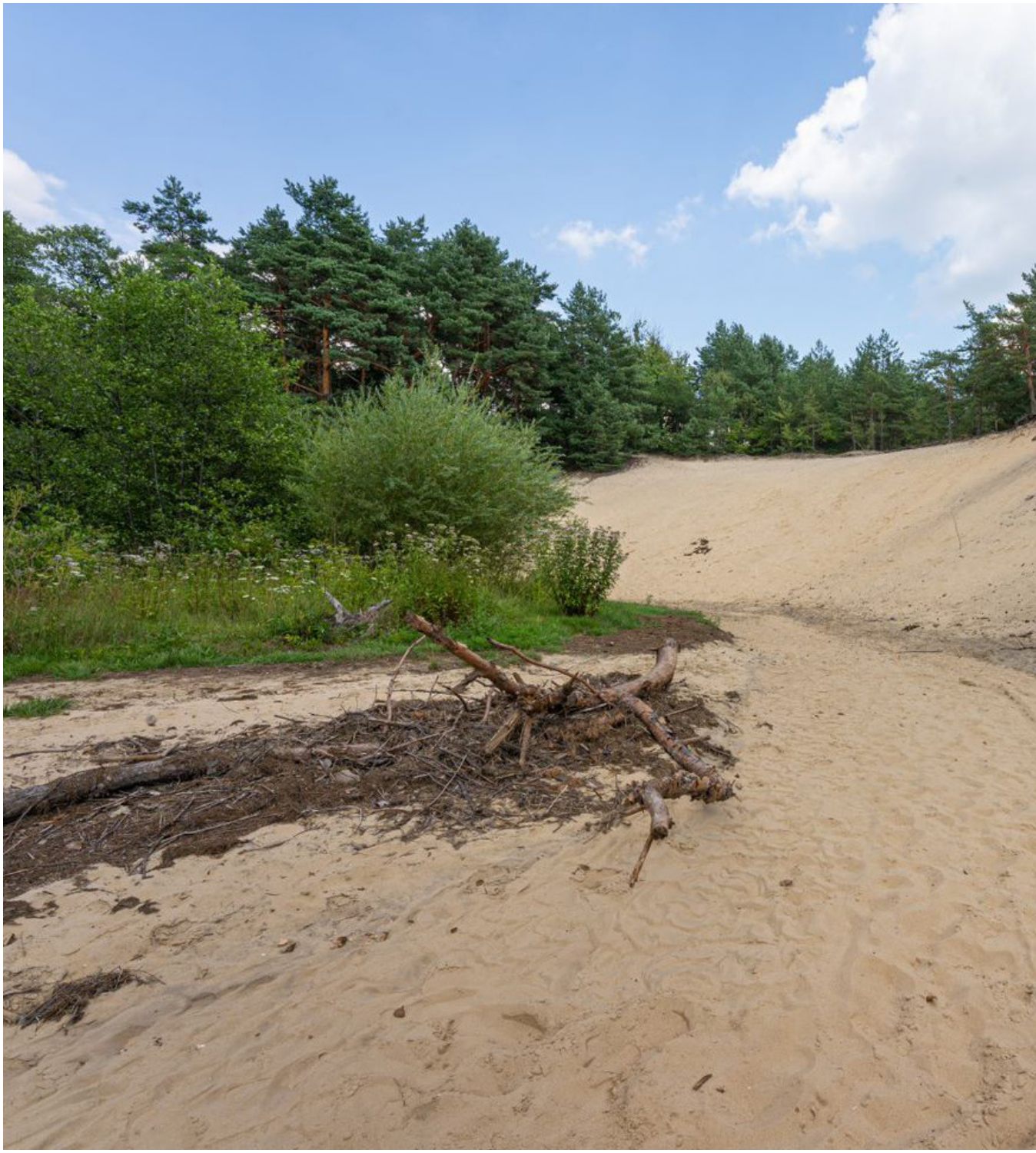
Bukowno is surrounded by many historical mining sites. One example is the Ponikowska Adit – the 10 km long infrastructure for water discharge dating back to the sixteenth century (Godzik 2015). Parts of the construction that can be found in the area are considered important sites of medieval mining. Miners and their struggles with the four elements: soil, air, fire and water, are well documented and displayed in the museum "Mind of Knowledge about Zinc," in Bukowno. However, as this museum was founded by the mining company, primarily exhibiting their findings (fig. 2), the narratives presented at the museum portray water as the "enemy" of the industry.

Mining activities severely altered the conditions of underground and surface water in the Sztoła valley in the second half of the twentieth century. The spring of the Sztoła almost dried up completely in the early 2000s; the local water table dropped to more than 10 meters below the river bed, but the river was supplied with water discharged from the mine to the old river-

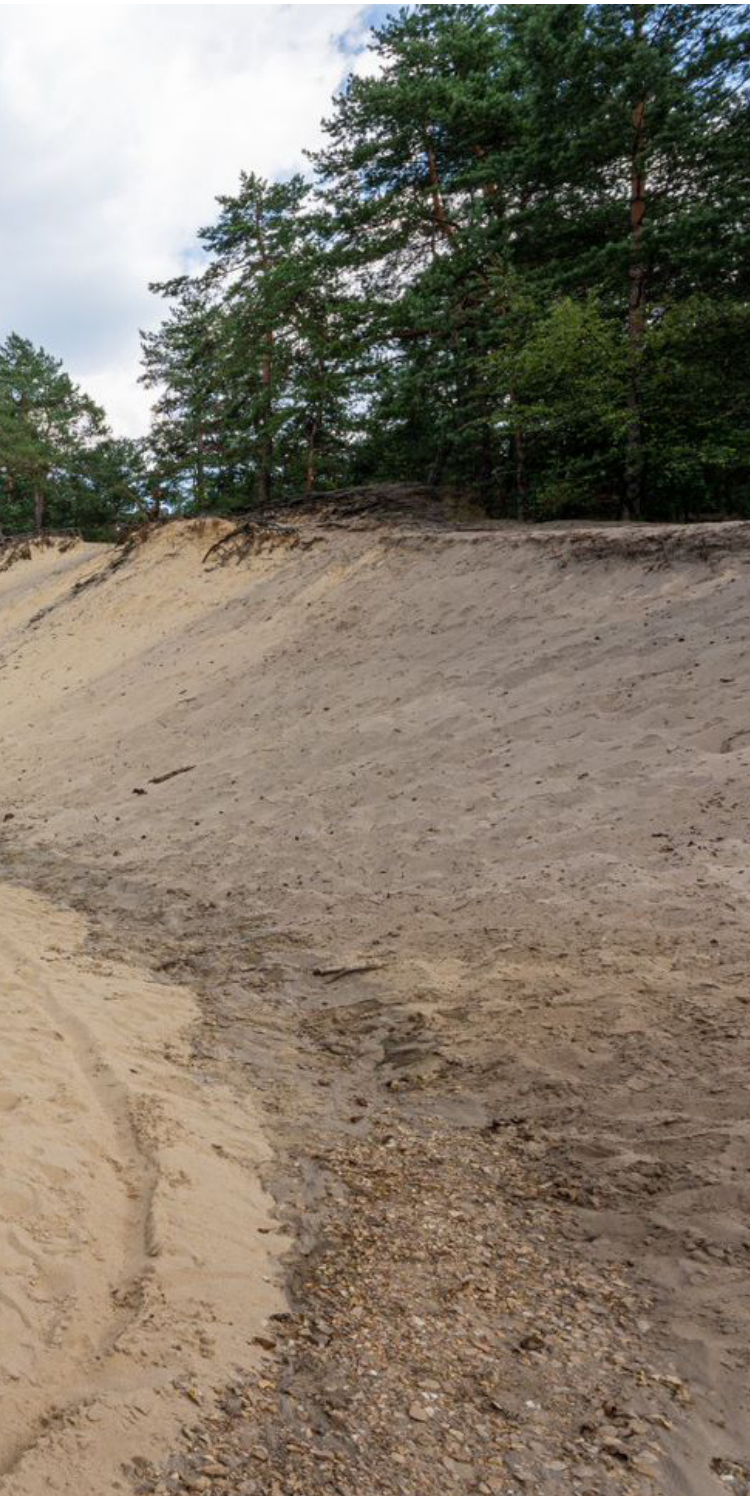
^ *Fig. 2 Zinc and lead ore, Museum of Zink, Bukowno (Source: Daniel Sztork, 2022).*



^ *Fig. 3 The mining waters (on the left) enter Sztoła's riverbed in December (Source: Daniel Sztork, 2021).*



^ *Fig.4 Sztoła, August (Source: Daniel Sztork, 2022).*



bed (fig. 3) (Ciszewski 2019; Morman and Czop 2012). The transition of the Sztoła from the natural river to an anthropogenic watercourse that carried water discharged from the mine was hardly noticeable according to residents. Yet, it defined the river's future. In early 2022, all mining operations in this location ceased, water discharge into the river stopped and the river disappeared (fig. 4).

Although the drying up of the river is a tremendous landscape change, in this case, it does not present any "practical" difficulties. The Sztoła River was the source of drinking water until the late 1990s when pollution levels rose. Industrial processes account for 90 per cent of Bukowno's water consumption, however this water does not come from the river. Currently, drinking water is sourced from outside the depression created by the zinc and lead mine, and this infrastructure was co-financed by the mining company (obliged by the court, as compensation for damaging the local water source). However, environmental activists claim that negative effects of the end of mining operations such as the disappearance of a river may occur in other regions. For instance, the pollution of underground and surface waters after the mine closes is expected to occur up to several decades after the depression is filled with underground waters. Water will rinse metal elements from the mining area. While it will not affect the water supply to the towns of Bukowno and nearby Olkusz, which now receive water from elsewhere, pollution may affect water sources for towns in the neighboring region, where nature protection bodies did not participate in the environmental assessments of the closure of the mine. The area of Bukowno and Sztoła valley is located on the border of two regions in Poland, therefore institutionally, water and nature are managed by public administration from Małopolska and Silesia, including Polish Waters, two forestry units,

Małopolska's landscape conservation body, and a Silesian mining regulation administration. Its location at the border of two regions makes it more difficult for public management to recognize relevant environmental threats if the impacts occur in another administrative region than the source of the pollution and are consequently managed by different management bodies. In that sense, it is somewhat of a peripheral area for public institutions, which may result in underestimation of environmental risks and threats. Climate change already affects freshwater resources in Poland, for both domestic and industrial purposes (Kubiak-Wojnicka and Machula 2022; OECD 2013), challenging long term achievement of the UN SDG 6: clean water and sanitation. Current contamination levels of soil and water already preclude use of land for agriculture purposes (Miśkowiec et al. 2015); their potential increase may further affect populations' health and well-being (SDG 3), which is already severely affected by air pollution.

Today, the Sztoła River is an empty riverbed filled with garbage, which is partially removed by local people in a few organized events. While the management body responsible for the area – Polish Waters – confirmed the cleaning up of the riverbed, no action was taken in the first nine months. The issue of refuse disposal into the riverbed is regularly brought up on social media and has stained the community's memory of the Sztoła as a lovely meandering river. An ecosystem change that is as drastic as it has been in the case of the Stoła River can affect existing ways of life, and lead to the loss of personal identity formed in relation to places of local heritage (Tschakert et al. 2019). Such loss, Lertzman (2015) argues, must be properly grieved. Grief is a long-term emotional consequence of place loss (Marshall et al. 2019; Bonanno 2001, 494–95) that can generate new activist practices.

Several months before the closing of the mine, local activists began their fight to keep the river flowing, demanding that the mining company ensure minimal water flow to sustain biological life in the river. These activists' social media activity attracted the attention of several local and regional newspapers. The "liquidation of a river" received much attention on social media, and Sztoła's altered landscape attracted many nature photographers. The memories of the living river are captured in the local painter's work. Several local tourism and leisure organizations held events dedicated to the Sztoła, which they named "farewell," "goodbye" to Sztoła, and even "funerals." Although attended mostly by people outside the community, the most spectacular event was organized by a Krakow artistic collective, River Sisters. They created a symbolic performance of pouring water into the dry riverbed with a dedicated song and music. In contrast, a few residents actively joined local authorities in supporting the mining company's decision to irreversibly stop water discharge to the Sztola River. These locals may have felt that they never really "owned" the river and that they lack the agency to fight for this cause.

Almost one year after the events, some activists argue that there is still a chance to restart pumps to revive the Sztoła riverbed. However, others note that the groundwater is already polluted and such an action would only further accelerate ecological degradation. According to predictions, it could take at least 40 years for Sztoła to come back naturally (Ciszewski 2019; Morman and Czop 2012) or it may never regain enough flow to refill its riverbed. In any case, it will not be suggestive of the peaceful, relaxing landscape it used to be for local people.

Overall, however, the ongoing discussions and decision making processes have overlooked any socio-cultural impacts of drying up the river.

They mainly focused on environmental and ecological consequences, neglecting the needs and values of local communities related to the river. No law asks for consideration of recreation or tourism in the relevant decision-making process or other influences on local values or practices. There is an absence of a narrative that acknowledges the loss of the local community spirit and the relevance of the river for wellbeing – in its intangible, cultural and psychological aspects.

Many residents of Bukowno considered this river a charming, meandering, emerald river. For them, the river connected the community's past, present and future, as the changes in the river water system and ecology reflected local social transformation. For others, the Sztoła was a waste stream carrying the water discharged from the mine during weekdays yet enabling communal recreation or fishing mainly over the weekend.

The case of the Sztola River provides insights into the interplay between the mining industry, miners' culture, local community and water. While groundwater is a part of the official narrative on local mining traditions, surface water remains a vital aspect of the private life of miners' families and weekend leisure. Although surface waters – the Sztoła river – were central to local leisure activities and became a symbol of the beauty of nature, they are overlooked in the official heritage narratives. We argue that including Sztoła in the heritage narratives of the region will enable local communities to reinvent themselves under the new circumstances through the extended story of the historical relationship between people and water in the region. This contributes to the questions of how to conserve the "dry river" and how nature can still contribute to sustainable futures.

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References

Ciszewski, Dariusz. 2019. "The Past and Prognosis of Mining Cessation Impact on River Sediment Pollution." *Journal of Soil and Sediment* 19: 393–402.

Dziechdziarz, Olgiert, and Jacek Sypień. 2017. *The History of Bukowno*. Bukowno: Monografia Miasta. (in Polish)

Godzik, Barbara. 2015. *Natural and Historical Values of the Olkusz Ore-bearing Region*. Kraków: Szafer Institute of Botany, Polish Academy of Sciences.

Kicińska, Alicja J., Bożena Smerczak, and Jan Jadczyszyn. 2019. "Soil Bioavailability of Cadmium, Lead, and Zinc in Areas of Zn-Pb Ore Mining and Processing (Bukowno, Olkusz)." *Journal of Ecological Engineering* 20, no.1: 84–92.

Krodkiewska, Mariola, Aneta Spyra, and Anna Cieplok. 2022. "Assessment of Pollution, and Ecological Status in Rivers Located in The Vistula and Oder River Basins Impacted by the Mining Industry in Central Europe (Poland)." *Ecological Indicators* 144: 109505.

Kubiak-Wojnicka, Katarzyna, and Sylwia Machula. 2022. "Influence of Climate Changes on the State of Water Resources in Poland and Their Usage." *Geoscience* 10, no. 8: 312.

Marshall, Nadine, William N. Adger, Claudia Benham, et al. 2019. "Reef Grief: Investigating the Relationship Between Place Meanings and Place Change on the Great Barrier Reef, Australia." *Sustainability Science* 14: 579–87.

Miśkowiec, Paweł, Anna Łaptaś, and Katarzyna Zięba. 2015. "Soil Pollution with Heavy Metals in Industrial and Agricultural Areas: A Case Study of Olkusz District." *Journal of Elementology* 20, no. 2: 353–62.

Mormam, Justyna, and Mariusz Czop. 2012. "Anthropogenic Transformations of the Hydrogeological Regime of the Sztoła River in the Southern Part of the Olkusz Region." *Natural hazards in mining* 1: 248–58 . (in Polish)

Niewdana Józef, and Elżbieta Świć. 2011. *Elements in the World of Underground Treasures of the Olkusz Ore Mines*. Krakow: Bukowno. (in Polish)

OECD. 2013. "Poland." *Water and Climate Change Adaptation: Policies to Navigate Uncharted Waters*. Paris: OECD Publishing.

Pucek, Krzysztof J. 2014. *Tourist Bukowno. A Guide to Commune Tourist Trails in Bukowno*. Krakow: Bukowno. (in Polish)

Rozmus, Darius. 2019. "Preliminary Results of the Survey at the Site in Stary Bukowno, Pow. Olkuski." *Yearbook of the Upper Silesian Museum in Bytom* 21: 19–35. (in Polish)

Tschakert, Petra, Neville R. Ellis, Christopher Anderson, Adam Kelly, and James Obeng. 2019. "One thousand Ways to Experience Loss: A Systematic Analysis of Climate-Related Intangible Harm from Around the World." *Global Environmental Change* 55: 58–72.

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