

Modernization by the State and its Ecological Consequences in East-Central Europe

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During the nineteenth-, and twentieth centuries urbanization and industrialization altered the environment in a dramatic fashion throughout Europe. Much of this change in East-Central Europe (ECE) was instigated, facilitated and coordinated by the state. The economic-, and technological intervention by the state and its interconnectedness with capitalism, and science have had tremendous ecological consequences. Although there have been substantial studies related to the complex interconnectedness of state-intervention, capitalism, and anthropogenic environmental change, the scientific community still knows little about the environmental aspects of specific modernization attempts in many parts of the world, including East-Central Europe. To cover this gap, this special issue investigates some of the key historical problems of modernization and subsequent ecological decline in modern ECE via a handful of relevant case studies. This introductory essay summarizes the main theoretical-, and methodological challenges related to the modern environmental history of East-Central Europe and the role of the state, as well as provides an overview of the case studies included in this special issue.

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During the nineteenth-, and twentieth centuries urbanization and industrialization altered the environment in a dramatic fashion throughout Europe. These environmental changes have often been attributed to new technologies that spread in manufacturing and transportation, as well as accompanied with the extensive use of fossil energy sources. For example, in England easily accessible coal-, and iron ore deposits created the background for new business opportunities and enhanced industrial-, and commercial activities with a growing toll on the environment. Coal, iron, steel, and railways also meant new markets, and the emergence of new industries to supply these markets. New steel making technologies, for example the Bessemer converter, and a wide array of inventions in the chemical industry, as well as the birth of new industries such as electro-engineering, increased the stress on the environment and created a widening stream of waste.¹

Industrial changes did not only transform the way things were produced, they also radically reshaped how people lived. For example, Manchester grew from a small-scale

¹ PÁL, Viktor: *Technology and the Environment in State-socialist Hungary: An Economic History*. London – New York 2017, pp. 15–31.

town to a bustling metropolis in seventy years. More cities meant more resources consumed. In Britain, coal use boomed from ten million tons in 1800 to 189 million tons by 1914. Although industry was an important source of smoke pollution, it was domestic coal-fuelled heating and cooking that polluted the air in large cities. Air pollution problems worsened in winter months and environmental problems accompanied with health issues.²

The economic-, technological-, and environmental changes that unfolded in Britain in the nineteenth century soon spread around Europe. In Germany, for example, industrialists adopted already existing production technologies in the coal-, iron-, and steel producing sectors and gradually took over Belgian-, and British firms in the volume of production. New industries were born, for example by the late nineteenth century Hoechst, Bayer, and BASF took world leading positions in chemical production.³

Transportation infrastructure, such as railways also grew exponentially in the European continent. For example, in Germany, the construction of the first railway line in 1833 was followed by a rapid expansion, and the rail network boomed from 6,500 km in 1852 to 61,000 kilometers by 1910. German urbanization quickly followed. Between 1850 and 1910, Berlin grew from a city of 412,000 to a metropolis of over two million inhabitants.⁴

Perhaps the key aspect that set the nineteenth century British-, and continental European patterns of industrialization apart was the role of the state. For example, in Britain the deregulated market and the leading role of the private initiative dominated, whereas in Germany industrialization included strong state intervention. Nevertheless, the environmental impacts of German industrialization were similar to the British, regardless of different organization methods. Nineteenth century Germans couldn't help noticing the rapidly growing pollution caused by booming industries. For example, industrial-, and urban air-, and water pollution grew from being perceived as a nuisance into sources of a systematic public debate in coal mining, iron-, and steel manufacturing areas.⁵

For example in the Ruhr, one of the largest mining-, and manufacturing areas in the world, industries-, and urban population produced water pollution to such an extent that it endangered water supply for industry and cities by the second half of the nineteenth century. To find solutions to ecological problems German industrialists and the German state established eight water associations in the Ruhr area between 1904 and 1958. For example, the Emscher Association, established in 1899, was responsible for the management of the Emscher River that flows through the heart of the Ruhr. Eventually, the Emscher Association commissioned planning-, and construction projects which re-engineered the Emscher River into a steep-, and cemented wastewater canal. Some of the grandest state-induced environmental interventions were commissioned when water shortages became extremely pressing in the Ruhr. In 1899 the Ruhr Reservoirs Association was set up to commission the construction of mighty dams and water reservoirs.

² MOSLEY, Stephen: *The Chimney of the World : A history of Smoke Pollution in Victorian and Edwardian Manchester*. London – New York 2008, pp. 2, 72.

³ BLACKBOURN, David: *Fontana History of Germany, 1780–1918 : the Long Nineteenth Century*. London 1997, p. 185.

⁴ Ibidem, pp. 178–180, 362–370.

⁵ Idem: *The Conquest of Nature, Water, Landscape, and the Making of Modern Germany*. New York – London 2007, p. 180.

Between 1899 and 1965 six mega-dams were constructed in Rhineland-Westphalia with a total capacity of 469 million cubic meters.⁶

One of the most influential books criticizing state intervention and its environmental impact is James C. Scott's *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed*.⁶ Scott contends that bureaucratic regimes aim to organize their societies according to the technocratic principles of "high modernism", failing to take local knowledge into account. Scott maintains that both capitalism and state-dominated societies fail to produce their desired results via uniformity, grids, homogeneity, and megaprojects.⁷

Scott's thesis has a particular relevance to the history of East-Central European states especially during the past two centuries, since the birth of large state reclamation-, and landscape engineering projects. One of the main themes Scott focused on was communism. Eastern European socialist regimes produced troubled environmental legacies that attracted particular scientific attention. Most works in this vein connected environmental degradation with the promethean ideologies of state-socialist regimes.⁷

That status quo has been contested recently by a handful of works, which attributed environmental mitigation and a flourishing scientific-, as well as social discussion to negotiate between the accelerated state-sponsored modernization of socialism and rising environmental concerns.⁸

Although there have been some studies published related to the East-Central European specificities of anthropogenic environmental change, the scientific community still knows little about the complex interconnectedness of state intervention, capitalism, and anthropogenic environmental change in ECE. Papers in this special issue aim to fill this gap in the scientific knowledge, at least in part, by analyzing the role of the state with modernization attempts. Authors pay special attention to the environmental impact of state intervention and the case studies included often overarch historical periods, thus providing opportunities to compare the environmental legacy of subsequent modernization attempts.

The first research paper in this special issue by Piotr Boroń and Jakub Grudniewski investigates the influence of state policy on the development of industry in Upper Silesia via the case study of the zinc smelter in Katowice-Szopienice (*Wilhelminehütte*) by focusing on the ecological consequences of the production of non-ferrous metals in the

⁶ CIOC, Mark: *The Rhine: an eco-biography, 1815–2000*. Seattle 2002, p. 89.

⁷ LAAKKONEN, Simo – PÁL, Viktor – TUCKER, Richard: *The Cold War and environmental history: complementary fields* 16, 2016. no. 4, pp. 1–18; PÁL, Viktor: Orbán's View on Nature: The State and the Environment in Modern Hungary. In: MÖRNER, Nina (ed.): *Ecological Concerns in Transition: A Comparative Study on Responses to Waste and Environmental Destruction in the Region*. Stockholm 2023, pp. 144–151; Idem: Illiberal Environmentalism?: The Case of Contemporary Hungary. *Environmental History* 27, 2022, no 4, pp. 649–656; PAVLINEK, Petr – PICKLES, John: *Environmental Transitions, Transformation and Ecological Defense in Central and Eastern Europe*. New York 2000; WEINER, Douglas R.: *Models of Nature: Ecology, Conservation, and Cultural Revolution in Soviet Russia*. Bloomington 1988; Idem: *A Little Corner of Freedom: Russian Nature Protection from Stalin to Gorbachev*. Berkeley – London 1999.

⁸ BRAIN, Stephen: *Song of the Forest. Russian Forestry and Stalinist Environmentalism, 1905–1953*. Pittsburgh 2011; BRAIN, Stephen – PÁL, Viktor (eds.): *Environmentalism under Authoritarian Regimes: Myth, Propaganda, Reality*. New York 2019; PÁL, Viktor: Like Industrious Bees: Paper Waste and Recycling in Communist Hungary, 1950–1990. *Environmental History* 28, 2023, no. 2, pp. 335–360; PÁL, Viktor – PEREZ, Leonardo Valenzuela: Environmental Protection under Authoritarian Regimes in Cold War Chile and Hungary. *Global Environment* 14, 2021, no. 2, pp. 310–334; PÁL, Viktor: Toward Socialist Environmentalism? Scientists and Environmental Change in Modern Hungary. *Environment and History* 29, 2023, no. 2, pp. 239–259.

region. Boroń and Grudniewski argue that the deeper involvement of the state accelerated industrial growth and subsequent public health, as well as environmental issues in the Prussian part of Silesia. The Prussian example of industrial development was followed by the successive governments within the German-, and the Polish states with devastating public health-, and environmental consequences. Boroń and Grudniewski point out that the state also aimed to mitigate health-, and environmental problems related to industrialization, however they note that most of these attempts failed at least partially. Nevertheless, this study concludes that the critical role of state intervention triggered long-lasting pollution, that caused severe environmental-, and health concerns, which in return gave birth to rather complex environmental mitigation policies-, and technologies in and around Szopienice in the past two centuries.

The following paper by Róbert Balogh and Péter Homor investigates the role of the state, via forest laws and forestry education in Hungary. Similarly to Prussia, and other European states, the forest economy was viewed by the political elite of nineteenth century Hungary as a key resource to support nationalist modernization, a vision which gained prominence in the first half of the nineteenth century. After the Compromise of 1867 the Hungarian speaking political elite had the opportunity to realize the earlier envisioned nationalist modernization-, as well as forest conservation goals simultaneously. Authors argue that this process, on the one hand, led to opportunities for a more effective and systematic exploitation of forests. On the other it fostered developing Hungarian-language higher education for scientific forestry as well as creating more effective forest regulations to promote the nationalist modernist goals of the Hungarian elite. In that regard, Balogh and Homor proposes that the Hungarian example is an important case representing the role of the state as well as forestry professionals in the context of nationalist modernizations and their ecological consequences with particular focus on the ECE region.

In the third research paper Marta Rendla and Janja Sedlaček investigate the environmental impact of industrialization and urbanization in Slovenia after the Second World War. Authors argue that following the Yugoslav–Soviet split in 1948, Yugoslavia began to build its own type of socio-economic system that included features both from the capitalist-, as well as centrally planned systems. However, the lack of a robust heavy industry did not spare Slovenia from severe pollution problems. One of the specificities of the Slovenian economic policies was the widespread use of low-quality-, and highly polluting lignite for domestic heating, and industrial power generation. The use of lignite combined with regional geographical-, and ecological features led to a very high concentration of pollutants in the air, especially SO_2 , that affected the quality of human-, and non-human health, and the environment particularly in and around urban-, and industrial centers. Authors argue that in response to the worsening pollution problem a rich and multifaceted expert discourse evolved, followed by complex, and attentive Slovenian environmental policies. However, Rendla and Sedlaček make a compelling argument that the effective use of legal tools to protect the environment were put into practice only in the 1980s when an environmental movement began to challenge the key role of the state to discuss and disseminate environmental issues.

In the following paper by Ferenc Jankó and Priscilla Hafenscher analyze the long term political ecology of environmental conflicts in Hungary overarching historical periods in the past two centuries, by focusing on the work and legacy of two of the leading environmental scientists in the ECE region: Antal Réthly and Emil Mosonyi. In their study

Jankó and Hafenscher argue that adopting a biographical approach and focusing on the impact-, and controversies around Réthly and Mosonyi contributes to a more nuanced analysis of key environmental issues in and around Hungary during the past two centuries. Authors trace nationalist modernization-, and conservation approaches of the nineteenth-, and early twentieth century, as well as state-socialist technocratic modernization attempts, and compare key issues, tendencies, power relations and arguments, many of which overarched historical periods. Following a long-duration approach enables Jankó and Hafenscher to ask important questions about who has the right to use and transform nature, and to protect the quality of the environment? To answer these important questions, authors of this study examine the agency of individuals within environmental institutions, as well as the interaction between science, state institutions, and society.

In the last paper Andrija Filipović analyzes the modernization processes of the Sava River with a focus on the section in and around Belgrade, the Serbian capital. Filipović argues that Belgrade went through a double modernization process in which individual beings, habitats, and entire environments have been turned into non-being. To illustrate these dramatic environmental changes, the author compares state-socialist and postsocialist developments on both sides of the Sava River, via focusing on the state-socialist development of Novi Beograd (New Belgrade) and the controversial contemporary construction project of the Belgrade Waterfront. Filipović argues that the role of the state facilitating and enabling *meontopolitics*, that is the introduction of non-being into the existing relationality through territorial fragmentation, the production of conflict zones and the intensification of space use, is pivotal. As a result of *meontopolitics* local non-human environments have been created, with distinct similarities and differences between state-socialist-, and socialist *necroecologies*, that is an environmental condition inimical to some human and non-human actors as the defining feature of the environmental condition of both socialist-, and contemporary Belgrade.

Albeit, essays in this special issue follow different methodological approaches and focus on different historical periods during the past two centuries, they combined uncover new-, and important aspects of the environmental history of ECE, especially with regard to the role of the state. Hopefully, that new scientific knowledge will inspire further research in the growing field of East-Central European environmental history in the near future.

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Summary

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During the nineteenth and twentieth centuries urbanization and industrialization altered the environment in a dramatic fashion throughout Europe. Much of this change in East-Central Europe (ECE) was instigated, facilitated and coordinated by the state. The economic and technological intervention by the state and its interconnectedness with capitalism and science have had tremendous ecological consequences since the eighteenth century. According to James Scott, one of the most well-known critics of the modern state and its ecological impact, bureaucratic regimes' aim to organize their societies according to the technocratic principles of "high modernism" that has been devastating to the environment. Scott maintains that the centralized modernization attempts often failed to take local knowledge into account and amplified the forces of homogenization, uniformity, grids, and heroic simplification. Although there have been substantial studies related to the complex interconnectedness of state-intervention, capitalism, and anthropogenic environmental change, the scientific community still knows little about the complexities and environmental aspects of specific modernization attempts in many parts of the world, including East-Central Europe. To cover this gap this special issue will investigate some of the key issues of modernization and subsequent ecological decline in the ECE.