



# **A review on urban heat island in Eastern Europe ...work in progress**

Ioana HERBEL, Adina-Eliza CROITORU, Csaba HORVATH, Zsolt MAGYARI-SASKA,  
Titus-Cristian MAN

**Babes-Bolyai University**

International Scientific Seminar „DIMITRIE CANTEMIR”, Edition XLII  
„Alexandru Ioan Cuza” Iași University  
Faculty of Geography and Geology, Department of Geography  
Iași, 14 - 16 October 2022

# General context

- In the second half of the 20th century, the implementation of the Soviet model in Eastern Europe induced **substantial changes in the thermal environment of socialist cities**.
- **Forced industrialization determined the urban expansion** at a rate never seen before, with consequences on the quality of the environment, including the urban climate.
- A **sudden increase in heat load** was experienced by Eastern European cities, with the construction of numerous high-density blocks of flats meant to sustain the massive urbanization campaigns initiated by the communist regimes.

# General context

- After the fall of the Iron Curtain and the collapse of the Soviet Bloc, landscapes developed under socialism were then **adapted and remodeled to new conditions** shaped by the transition to capitalism (Sýkora 2009).
- This phase began in the '90s and implied complex processes of urban change, with **suburbanization** as the most important spatial phenomena. However, such trends have diminished in some of the more “advanced” post-communist states that have joined the EU (Bouzarovski 2016).
- The **dynamic expansion of built-up space** and **grey infrastructure** associated with forced industrialization and, more recently, with **suburbanization, amplified the urban-rural temperature differences** and determined the **intensification of UHI in Eastern European cities**.

# Aim of the study

The objective of the present paper is:

- to analyze UHI studies in Eastern European countries in terms of geographical patterns, historical trends, and research foci;
- to provide an integral, up to date review covering urban heating magnitude at the atmospheric, surface, and subsurface levels;
- to compare the literature from the EU to non-EU states and highlight the potential gaps.

# Study area

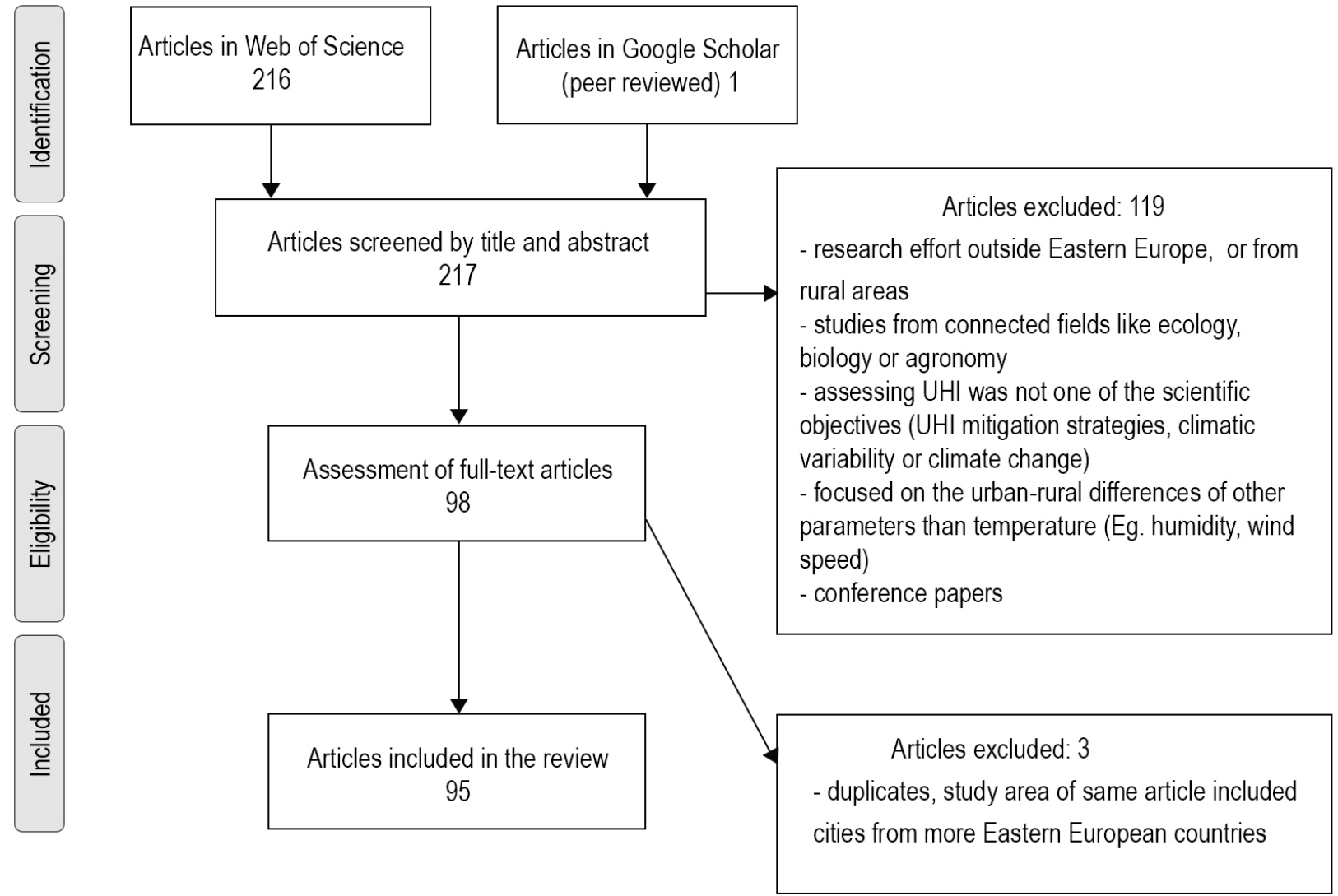
In the present review, studies from 10 different countries were included,

- Belarus;
- Bulgaria;
- The Czech Republic;
- Hungary;
- Moldova;
- Poland;
- Romania;
- Russian Federation;
- Slovakia;
- Ukraine.

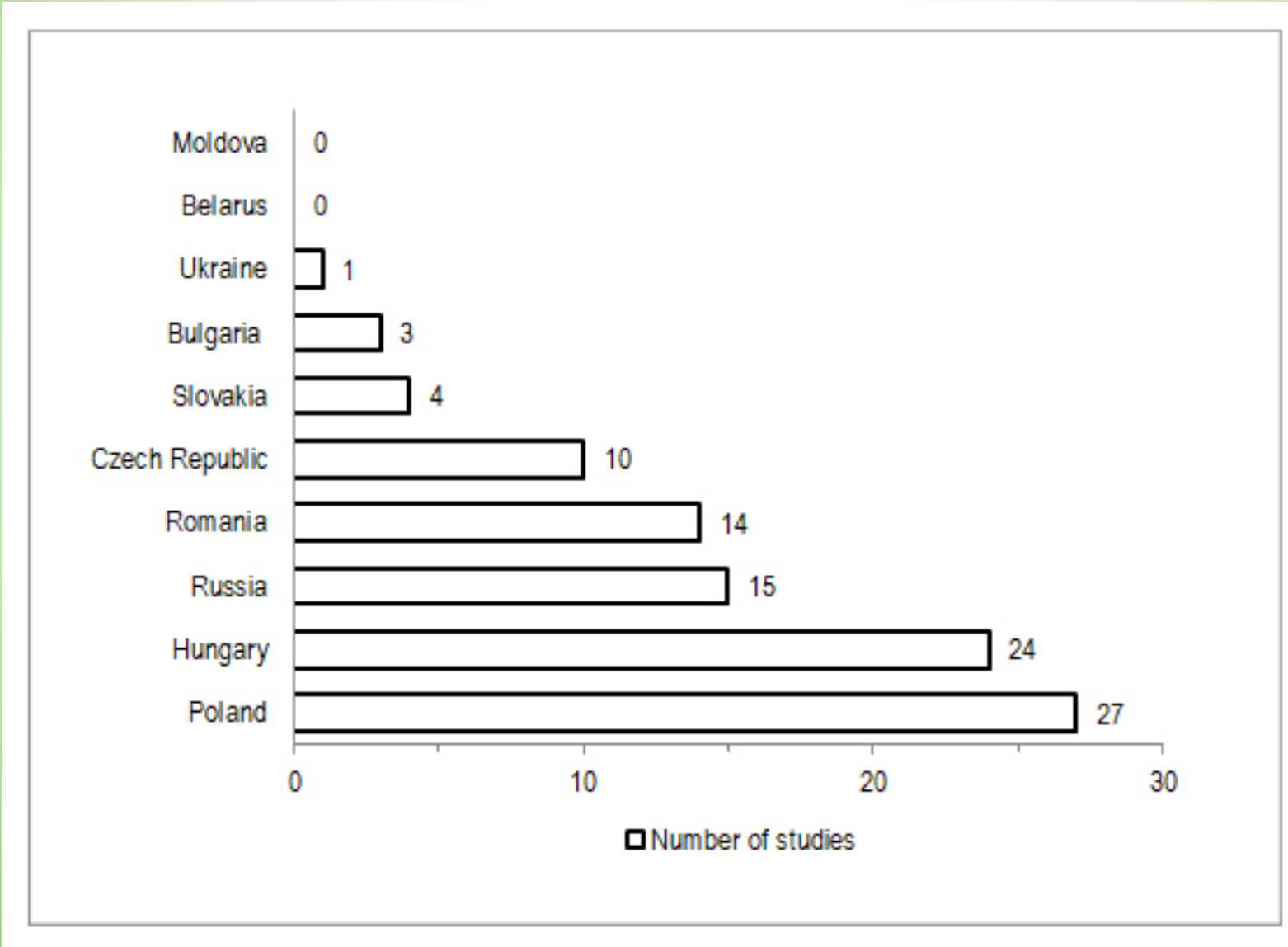


# Data and Methods

Period: 1991-2019



# Results



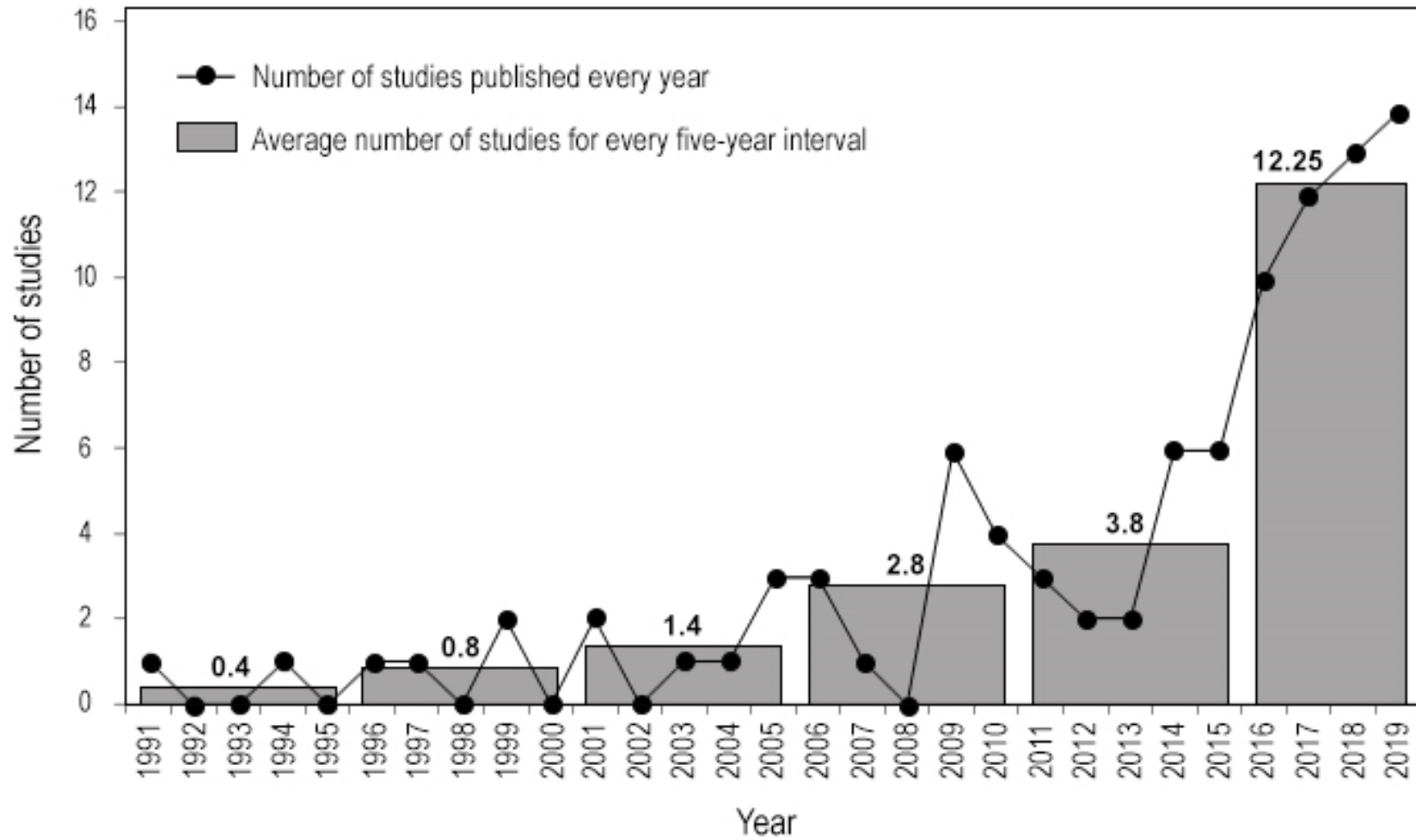
# Results



*Cities for which studies on UHI have been performed*



# Results



# Follow-up

- **Up-date the database;**
- Analysis by cities;
- Analysis by data and methods used;
- Analysis by publication (before and after “Urban climate”);

# Acknowledgement

- This research was developed under the framework of the project ***Îmbunătățirea Calității Vieții prin Evaluarea Insulei de Căldură Urbană*** (INTEGRATE) funded by the Executive Unit for the Financing of Higher Education, Research, Development and Innovation in Romania (UEFISCDI), grant number PN-III-P2-2.1-PTE-2021-0147.

*Thank you very much !*

Contact: [adina.croitoru@ubbcluj.ro](mailto:adina.croitoru@ubbcluj.ro)