

Changes in water demand patterns in a European city due to restrictions caused by the COVID-19 pandemic

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ABSTRACT

A COVID-19 pandemic in early 2020 has significant impact on socio-economic systems worldwide, which are strongly connected with the use of natural resources. Restrictions introduced in many countries changed the daily habits of society and set hygiene standards to support public health. This study aimed to define how water demand patterns have changed during the lockdown, covering both the amount of consumed water resources as well as its location within the city. The study uses a visual analytics approach for detecting changes in water use patterns in the period from January 2018 to April 2020 for the case of a regional European city (Wrocław, Poland). The results of the study showed that the total water consumption in April 2020 did not change significantly, therefore, it did not impact available water resources in the water supply system. However, the amount of used water in different water intake points changed comparing to the previous month mostly in housing buildings (+13.2%), commercial objects (–17.2%), and education facilities (–38.1%). The relatively similar structure of groups of users within the city is a favorable factor, as it results in stable water consumption in each urban district, which is beneficial from the point of view of the urban water supply system. The results of the research might be useful for emergency preparedness in urban water and wastewater utilities in case of unexpected events.

Keywords: SARS-CoV-2; Coronavirus; COVID-19; Pandemic; Urban water management; Water consumption

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