

Sustainable Swimming Pool Management Under Climate Stress: A Structured Review of Water-Energy Strategies in Europe

Authors

- **Athena Deligianni** Department of Public and Community Health, School of Public Health, University of West Attica, Athens, Greece <https://orcid.org/0009-0002-9014-1263>
- **Gerasimina-Theodora Zapanti** Department of Public and Community Health, School of Public Health, University of West Attica, Athens, Greece
- **Athanasios – Foivos Papathanasiou** Department of Water Resources and Environmental Engineering, School of Civil Engineering, National Technical University of Athens, Athens, Greece <https://orcid.org/0000-0003-4307-8492>
- **Constantina Skanavis** Department of Public and Community Health, School of Public Health, University of West Attica, Athens, Greece

DOI:

<https://doi.org/10.37256/est.7220269586>

Keywords:

sustainable pool management, climate change adaptation, water saving, energy saving, public health adaptation, recreational facilities, sustainability

Abstract

The accelerating impacts of climate change—including intensifying heatwaves, recurrent droughts, and growing water scarcity—are placing increasing pressure on urban infrastructure, including recreational facilities such as swimming pools. The review considers both public and private swimming pool facilities, with particular relevance to urban and tourism-oriented pools that face increasing resource pressures under climate stress. While pools provide important public-health benefits by offering spaces for exercise, social interaction, and thermal relief, they are also highly water-and energy-intensive. This paper develops a conceptual framework for sustainable swimming pool management under climate stress, integrating the water-energy nexus, climate-resilient infrastructure, and sustainability transitions.