

# Urban Heat Island Effect on the Energy Consumption of Institutional Buildings in Rome

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The urban heat island (UHI) effect is constantly increasing the energy consumption of buildings, especially in summer periods. The energy gap between the estimated energy performance - often simulated without considering UHI - and the real operational consumption is especially relevant for institutional buildings, where the cooling needs are in general higher than in other kind of buildings, due to more internal gains (people, appliances) and different architectural design (more transparent façades and light walls). This paper presents a calculation of the energy penalty due to UHI in two institutional buildings in Rome. Urban Weather Generator (UWG) is used to generate a modified weather file, taking into account the UHI phenomenon. Then, two building performance simulations are done for each case: the first simulation uses a standard weather file and the second uses the modified one. Results shows how is it necessary to re-develop mitigation strategies and a new energy retrofit approach, in order to include urbanization ad UHI effect, especially in this kind of buildings, characterized by very poor conditions of comfort during summer, taking into account users and occupant-driven demand. © Published under licence by IOP Publishing Ltd.