PROMOTING WATER EFFICIENCY IN A STUDENT RESIDENCE AS A CONTRIBUTION TO SUSTAINABILITY: HYDROSAAP INNOVATION PROJECT

 F. Silva [1] JB J. Barros[2] MA M.J. Afonso[3] GO G. Oliveira[4] IF I. Fachada[5] AA A.M. Antão-Geraldes[6]

[1] ESTiG, Instituto Politécnico de Bragança, FibEnTech, GeoBioTec-UBI (PORTUGAL)
[2] Serviços Centrais, Instituto Politécnico de Bragança (PORTUGAL)
[3] ESTiG, Instituto Politécnico de Bragança (PORTUGAL)
[4] ESTiG, Instituto Politécnico de Bragança (PORTUGAL) / Universidade Tecnológica Federal do Paraná, Campus Pato Branco (BRAZIL)
[5] Centro Ciência Viva de Bragança (PORTUGAL)
[6] CIMO, SusTEC, Instituto Politécnico de Bragança (PORTUGAL)

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Abstract:

In addition to the constraints on water availability caused by climatic factors, many urban areas face demographic and pollution phenomena that can affect the efficient supply of water to the population. Therefore, it is increasingly important to implement water efficiency measures, such as reducing consumption by installing water-efficient devices (e.g., taps, showers, and flushing cisterns), without neglecting behavioral aspects, and using alternative sources for non-potable uses. Thus, the "HydroSAAP" innovation project was designed and launched in May 2023 to improve the management of water consumption in a student residence of a Higher Education Institution in the northeast of Portugal, while promoting technical and scientific knowledge about rainwater harvesting systems, still little explored in Portugal.

The project phases are:
(1) installation of a rainwater harvesting system for non-potable uses, such as floor washing and irrigation of green areas, and water-efficient devices;
(2) estimation of water consumption per use after installation of the system and devices (by carrying out a survey to the residents and employees), and promotion of technical and scientific knowledge about the system (e.g., evaluation of the quality of the collected rainwater considering the type of roof, local climatic conditions, and storage time in the reservoir) and
(3) knowledge transfer to the academic community and other stakeholders:
(i) disseminate the system and devices installed and the knowledge obtained in phase 2;
(ii) raise awareness of the importance of the project in water management and
(iii) organize seminars, lectures and school visits to the building, as well as activities in collaboration with civil society institutions such as the Ciência Viva Centre.

The results of this project include the completion of phase 1 in July, with the installation of the system, seven showers and a kitchen tap with a class A water efficiency rating and certified by a national organization. Phases 2 and 3 are underway. In phase 2, the quality of the rainwater collected by the system has been analyzed since September. The survey about "Water consumption habits in the student residence" was approved by the Institution's Ethics Committee at the end of November and will be addressed to the residents and employees. In phase 3, the project has already been combined with educational practice, having been disseminated to the academic community through the organization of the seminar "Sustainability in the use of water: Importance, techniques and challenges", which took place in November at the Institution, with the participation of experts in the field of sustainable water use and reuse, mostly involving students from Civil and Environmental Engineering and local stakeholders. It is important to note that the involvement of the students and stakeholders in this project will help to disseminate the obtained knowledge and could be the starting point for further promoting education for sustainable water use. It is also intended to replicate this project for other types of buildings and other non-potable uses, and to extend it to the industrial and agricultural sectors. As the activities of this project will be extended beyond the funding period (planned until December 2023), it is hoped that it will make an overall contribution to promoting sustainable water management in urban areas.

Keywords:

Water efficiency, rainwater harvesting system, student residence, education for sustainable water use, STEAM.