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ABSTRACTS

Recycling of rainwater in a social and cultural center

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1. Introduction – According to the World Water Council [1] about 12% of the world's population does not have access to drinking water or water with quality for drinking. The consequences of climate change and the unsustainable use of water resources are demanding measures for minimizing the lack of water in quantity and quality. The Portuguese National Program for the Efficient Use of Water (PNUEA) [2] establishes measures that serve as a basis for the efficient use of water, promoting the valorisation of water resources. The high water supply billing in the social and cultural center of Santo Aleixo (Unhais da Serra, Covilhã, Portugal) (Image 1-a), led to the concern of finding potential solutions for reducing water consumption in the building. Thus, the objective of this study was to evaluate the potential of untreated rainwater reuse in the referred building (Image 1-b), proposing solutions for reducing drinking water consumption and doing a study of technical and economic feasibility of technical four solutions, which could be replicated in other areas of the country.

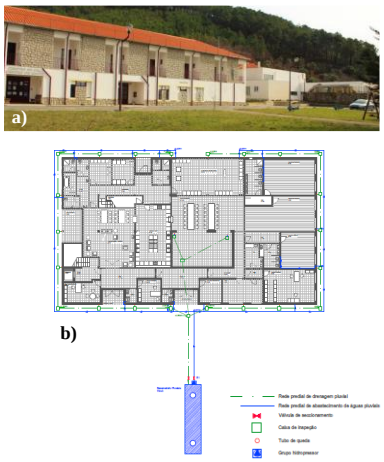

Image 1. Social and cultural center of Santo Aleixo, Unhais da Serra, Covilhã (a); Rainwater reuse (b).

2. Experimental – Two options were studied for reducing the consumption of drinking water in the building. The first involved a scenario of replacement and modification of some equipment, and the second involved the study of three scenarios for the reuse of rainwater [3]. The technical and economic feasibility of the four scenarios in the county of Covilhã were analysed.

3. Results and Discussion – In terms of water efficiency, the greatest saving was achieved with the option of replacing water taps and flushing cisterns with hydraulically efficient equipments together with the reuse of rainwater. This option has allowed an average annual saving of drinking water of about 80% [3].

4. Conclusions – Rainwater reuse in buildings, in addition to bringing economic benefits in areas where water billing reaches high levels, also brings environmental benefits by reducing drinking water consumption.

5. References

[1] "World Water Council", Janeiro 2008 (Online).
[2] Agência Portuguesa do Ambiente, "National Program for the Efficient Use of Water", APA, 2012 (in Portuguese).
[3] S. Abrantes, "Evaluation of the potential of water reuse in the social and cultural center of Santo Aleixo in Unhais da Serra". MSc Thesis in Civil Engineering, University of Beira Interior, Covilhã, Portugal, 2017, p. 159 (in Portuguese).

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