

Quantitative Analysis of Potential Rainwater Harvesting and Supply to a Rural Community at Northeast of Amazon Region, Brazil

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Abstract : Riverside population of Brazilian amazon suffers drinking water scarcity, seeking alternative water resources such as well and rivers, ordinary polluted. Although Amazon Region holds high annual river inflow and enough available of underground water, human activities have compromised the conservation of water resources. In addition, decentralized rural households make difficult to access of potable water. Main objective is to analyze quantitatively the potential of rainwater harvesting to human consumption at Marupaúba community, located in northeast of Amazon region, Brazil. Methods such as historical rainfall data series of municipality of Tomé-Açu at Pará state were obtained from Hydrological Information System of National Water Agency (ANA). Besides, Rippl method was used to calculate, mainly, volume of the reservoir based on difference of water demand and volume available through rainwater using as references two houses (CA I and CA II) as model of rainwater catchment and supply. Results presented that, from years 1984 to 2017, average annual precipitation was 2.607 mm, average maximum precipitation peak was 474 mm on March and average minimum peak on September was 44 mm. All months, of a year, surplus volume of water have presented in relation to demand, considering catchment area (CA) I = 134.4m² and demand volume = 0.72 m³/month; and, CA II = 81.84 m² and demand volume = 0.48 m³/month. Based on results, it is concluded that it is feasible to use rainwater for the supply of the rural community Marupaúba, since the access of drinking water is a human right and the lack of this resource compromises health and daily life of human beings.

Keywords : Amazon Region, rainwater harvesting, rainwater resource, rural community

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