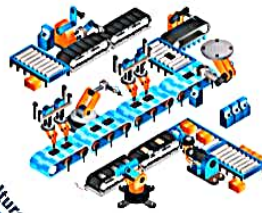




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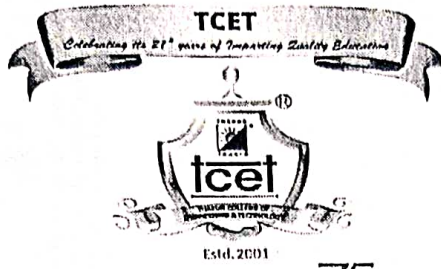
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# Certificate

## APPRECIATION

This is to certify that Dr./Mr./Ms. Puja Kadam has presented / participated / contributed for a FLP length paper with the title Rain Water Harvesting & Waste Management for Community Building & A Review in the International Conference on Advances in Mechanical & Civil Engineering (IC-AMCE 2023) organized during February, 24<sup>th</sup> & 25<sup>th</sup>, 2023 at Thakur College of Engineering and Technology, Kandivali (E), Mumbai.

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# *Rain Water Harvesting & Waste Management for Community Building— A Review.*

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**Abstract —** Nowadays, water scarcity is a severe problem and the liquid and solid waste generated cause's environmental pollution so rainwater harvesting system, sewage treatment plant and waste composting respectively, are the best practices that needs to be adopted everywhere. Through rainwater harvesting, the rainwater can be conserved, stored & used as per convenience. The sewage treatment plant is designed as a primary treatment for the sewage water of households. Along with the rainwater harvesting system and sewage treatment plant, in-house composting of organic solid waste will help in reducing the quantity of solid waste reaching landfills. This paper briefly overviews the research carried out in the designing of rainwater harvesting system, sewage treatment plant and management of organic waste. Based on these review papers, we are going to adopt these techniques in our case study of a community building which is located in Dahanu (Palghar), in which we are going to design a rainwater harvesting system, along with the design of sewage treatment plant for sewage treatment. Our survey of that area showed that the solid waste management system is poor, so we are also going to plan the collection, handling, storage, segregation, disposal, and treatment of organic waste by composting for that community building. This review paper concludes that the adoption of such best practices in societies will help in solving the problem of water scarcity, disposal of solid and liquid waste in the premises itself.

**Keywords—** Best Practices, Rainwater Harvesting, Sewage Treatment Plant, Composting

## I. INTRODUCTION

As the world population increases, the demand increases for quality drinking water. Also, surface and groundwater resources are being used faster than they can be recharged. Therefore, rainwater harvesting is an old practice that is being adopted by many nations as a viable decentralized water source [1]. Rainwater harvesting is one of the most effective methods of water management and conservation. It is the term used to indicate the collection and storage of rainwater used for human, animal, and plant needs. It involves the collection and storage of rainwater at the surface or in a subsurface aquifer before it is lost as surface runoff [2].

Water consumption is increasing, but availability is decreasing, so the demand for water is increasing [3]. So, sewage treatment is the process of removing contaminants from waste water, primarily household sewage. Physical, chemical and biological processes are used to remove contaminants and produce treated waste water that is safer for the environment [4]. Therefore, proper sewage treatment is essential, and sometimes treated sewage can be used for other purposes. To assess the STP's technical efficiency, the quality of its influent (raw) sewage and effluent (treated sewage) needs to be studied [5]. Thus, proper treatment and management of sewage become an essential process for ensuring the health and quality of life of living beings [6].

The study shows the generation of waste has increased from 0.26 kg/day to 0.85 kg/day, and close to 90% of waste is disposed of without proper treatment, causing environmental pollution [7]. Therefore, waste management involves the collection, transportation, processing, recycling, or disposal of waste that is generated from different sources, like residential,