

**Quality assessment of mechanical and storage characteristics of biomass briquette from  
Small scales entrepreneurs in Tanzania**

**Joseph Emmanuel Ismail**

**MSc (Renewable Energy)**

**University of Dar es Salaam, College of Engineering and technology, 2018**

Wood fuel is the most usable source of energy for cooking in Tanzania, leading to deforestation and climate change. Although researchers, policy makers and entrepreneurs in Tanzania made efforts in promoting the usage of briquettes, yet the quality of the products have not been studied. This study assessed the quality of biomass briquettes manufactured by small-scale entrepreneurs in Tanzania and evaluated the influence of both briquetting technology and feedstock material on the quality of the product. Baseline survey and sampling of briquettes using air tight bags was done to the briquettes manufacturers in order to understand the feedstock and technologies used for densification. The collected samples were subjected under laboratory analysis at TBS laboratory to determine the mechanical properties of the samples. The surveyed manufacturers use either piston press or screw press densification technology, with either sawdust or rice husk being the feedstock. The range of densities of 1,164Kg/m<sup>3</sup> to 1,387Kg/m<sup>3</sup> and 948Kg/m<sup>3</sup> to 1008Kg/m<sup>3</sup> for screw press and piston press respectively showed insignificant difference. Briquettes made by piston press were determined to have weak water resistance of about 87.87%, while the ones made from screw press had better water resistance of about 96.83% which is above 95% as stated by other studies. The analysis done using t-test with 95% confidence level revealed that there is no significant difference in mechanical properties in relation to technology and feedstock used for densification. The findings of this study should be used as a baseline to stimulate regulatory authorities to develop nation standards for the mechanical quality of the biomass briquettes in Tanzania.