World Academy of Science, Engineering and Technology
International Journal of Energy and Environmental Engineering
Vol:17, No:05, 2023

Cleaner Production Options for Fishery Wastes Around Lake Tana-Ethiopia

Authors : Abate Getnet Demisash, Beshatu Taye Hatew, Ababo Geleta Gudisa

Abstract : As consumption trends of fish are rising in Ethiopia, assessment of the environmental performance of Fisheries becomes vital. Hence, Cleaner Production Assessment was conducted on Lake Tana No.1 Fish Supply Association. This paper focuses on determining the characteristics, quantity and setting up cleaner production option for the site with experimental investigation. The survey analysis showed that illegal waste dumping in Lake Tana is common practice in the area and some of the main reasons raised were they have no option than doing this for discharging fish wastes. Quantifying a fish waste by examination of records at the point of generation resulted in generation rate of 72,822.61 kg per year which is a significant amount of waste and needs management system. The result of the proximate analysis showed high free fat content of about 12.33% and this was a good candidate for the production of biodiesel that has been set as an option for fish waste utilization. Among the different waste management options, waste reduction by product optimization which involves biodiesel production was chosen as a potential method. Laboratory scale experiments were performed to produce renewable energy source from the wastes. The resulting biodiesel was characterized and found to have a density of 0.756kg/L, viscosity 0.24p and 153°C flash points which shows the product has values in compliance with American Society for Testing and Materials (ASTM) standards.

Keywords : biodiesel, cleaner production, renewable energy, clean energy, waste to energy
Conference Title : ICECRES 2023 : International Conference on Energy Conservation and Renewable Energy Sources
Conference Location : Vancouver, Canada
Conference Dates : May 22-23, 2023