

## ABSTRACT

Bio conversion of organic, domestic, and farm residue to obtain energy for different applications has become increasingly attractive as the evidence of experiences from both small and large-scale projects in several countries including Sri Lanka. Since biogas production plants use renewable resources which might otherwise pollute the environment. Biogas generation serves a triple function, namely, waste removal, management of the environment and energy production. In the organizational vice, it has been observed that continuous variation in gas production prices has made an enormous impact to the expenditure on the Directorate of Supply and Transport vote in Sri Lanka Army. Sri Lanka Army allocates considerable amount from their financial allocations to purchase energy for cooking. The costs involved in the expense for purchasing LP gas and firewood in year 2018 was nearly Rs 680 344 826.00. Considering the environmental effects and unbearable demand in the selected sector of using petroleum-based products such as LP Gas, it is the necessity of searching for alternative fuels to fulfil energy requirements in day-to-day consumption. The biogas can be generated from locally available food wastes materials. That is one of the answers to create energy within the Army cantonment. In the Panagoda Army Cantonment around 5000beneficiaries available in the camp and they are creating 3500 Kg food wastes per day. Dry Batch Reactor System is an indigenous Sri Lankan model. The Plug Flow reactor system biogas plants can be introduced to the Army cantonment as per the requirement and available resources in the camp. The gas production per a day from this project is calculated as 172 m<sup>3</sup> and total gas weight including other gas is 215.62 kg per a day. Therefore, it can produce 17 cylinders of 12.5Kg. Total capital estimated for the project is Rs 927 6060.00. As per the gas production, the capital can be recovered approximately in one year and six months. The proposed biogas generation programme at Sri Lanka Army primarily focused to resolve food waste management issue in the NCO's messes. Biogas plants are useful waste management tool to find solutions for effective garbage disposable, energy cost, and liquid organic fertilizer requirements within the Army cantonment at Panagoda.

**Keywords:** *Biogas, Plug Flow reactor system, Sri Lanka Army, Wastes Management*