The Impact of Gasfier Stoves Use on Socio-Economic and Environment in Tanzania: The Case of Arusha and Moshi Municipalities

Agnes Godfrey Mwakaje*

Institute of Resource Assessment, University of Dar es Salaam, P.O. Box 35097, Tanzania

Abstract: This study examined the socio-economic and environmental impact of the adoption of gasfier stoves by households in Arusha and Moshi towns in Tanzania. A total of 55 respondents were selected purposely from the gasfier stoves. For comparative purposes another 55 charcoal users were selected randomly for interview making a total sample of 110. There were also focus group consultations and key informant interviews. Structured and semi-structured questionnaires were used to collect data, which were analysed using the Statistical Package for Social Sciences.

The results show that the respondents who were using gasfier stoves had significant reduction (p=0.001) in the cost of energy for cooking compared to charcoal stove users by spending only T.shs 13,396 per month compared to T.shs 36,932 for charcoal users. The use of gasfier stoves also had a positive impact on the environment. Findings show that by using gasfier stoves 15.4 ha were saved from deforestation per annum and about 365.4.tonnes of carbon were saved for sequestration an act that reduces carbon emissions and global warming.

Nevertheless, despite the impressive performance of gasfier stoves for cooking, the rate of adoption has remained low. The main reason for this was reported to be the high price, poor quality of the pellets and unfriendly usability. The adoption of gasfier stoves could only be enhanced by addressing these constraining factors.

Keywords: Gasfier stoves, economic and environmental benefits, Tanzania, Sub-Saharan Africa.

1. INTRODUCTION

The University of Dar es Salaam under the Policy Innovations System for Clean Energy Security (PISCES) programme has involved in renewable energy technologies since 2007 for a period of six years up to 2013. The Project was funded by the Department for International Development (DFID) of the United Kingdom. The project was implemented in the four countries of India, Kenya, Sri Lanka and Tanzania. The goal of this project was threefold: one, to contribute to the wide transfer of knowledge and understanding of bio-energy; two, to demonstrate policy change in the target countries of the programme; and three, to maximize the contribution of bio-energy to gaining access to clean energy and improved livelihoods.

The PISCES at the University of Dar es Salaam focused its research on the development of biofuel and bio-energy appliances, which could be easily accessed by rural communities. There is a growing interest among researchers and stakeholders in finding out the outcome of the developed technologies by the PISCES-UDSM in relation to the goals of the project.

*Address correspondence to this author at the Institute of Resource Assessment, University of Dar es Salaam, P.O. Box 35097, Tanzania;
Tel: +255 222 410 144; Mob: +255 784 391220; Fax: +255 222 410 393;
E-mail: agnes_mwakaje@yahoo.co.uk

The main objective of this paper was to assess the benefits realised by adopting the gasfier stoves and highlight the challenges encountered by users of the stoves in the urban centres of Arusha and Moshi. It also intended to provide insights into the impact of gasfier stoves on deforestation and environmental management. The reasons for the choice of the two urban centres were that, a considerable number of adopters of gasfier stoves were found there, as well as many producers/artisans, which facilitated the implementation of the study and helped to clarify most of the issues raised during the study, and the fact that access to charcoal and fuelwood in these two urban centres is declining due mainly to population growth. The findings from this study will inform policy and decision makers on how best gasfier stoves could be developed and disseminated for wide use and positive impacts, both economically and environmentally. It also informs researchers and artisans the areas of strengths and weaknesses (if any) of the stoves for making improvements. Furthermore it adds to the body of knowledge through publication in the areas of bio-energy, poverty and the environment.

2. GASFIER STOVE TECHNOLOGY, A LITERATURE REVIEW

2.1. Biomass Use

Although biomass is a renewable source of energy, traditional biomass-fired stoves cause significant

E-ISSN: 1929-6002/13 © 2013 Lifescience Global