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Analysis of Problems with Family Biogas Plants in Central Vietnam

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Abstract

The resource limitations of fossil fuels and problems coming from their combustion have led to widespread renewable energy resources. Anaerobic digestion is considered one of the most significant environmental improving technology, as it is solving waste management problems and producing biogas and at the same time is producing digestate as fertiliser for agricultural use. Where there is a big amount of biogas plants (BGP) in developing countries, there is as well a significant number of their problems and complications with them. This study aims at finding problems with this technology at the level of owners of BGP (n=100) and local facilitators (n=9) in the area of districts Huong Tra and Phong Dien (central Vietnam). The survey was carried out from July to August 2012. Methods of data collection included focus group discussions, semi-structured personal interviews and questionnaires. Collected data were processed with Statistica 10. Our findings show that average size of field of farms with BGP is larger than 2800 m², with almost 2000 m²-share of rice, which is above the average of the whole country. This fact could be explained by lower density of population in the area. The survey revealed that 29 % BGP-owners have experienced problem with this technology. The main problem is connected to leakages in reactor (35 %), leading to undesired CH₄ emissions and even stopping the functionality of BGP. This was reported by 20 % of respondents within the first year of use of BGP. Further mentioned problems deal with biogas cooker (15 %) and solid digestate floating in a main tank decreasing the production of biogas (14 %). The respondents ask for better skills of masons, who are often not able to solve occurred difficulties with BGP. The study also involved the calculation of return on investment (ROI). Our findings revealed linear relations between ROI and satisfaction with BGP technology, biogas and biogas programme. In addition the study suggests improvement of skills of facilitators as principle mediators between BGP-owners and implementers, because they have a direct impact on quality of trainings of BGP-owners and masons as well.

Keywords: Analysis of problems, central Vietnam, family biogas plant, payback period of investment