

TOWARDS POLICIES FOR CLIMATE CHANGE MITIGATION: “BARRIERS FOR BIOGAS FAMILY-SIZED IN THE DISTRICT OF GIHANGA, BURUNDI”

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Abstract

Overview

Burundi is one of the great lakes countries. Since 2007, she has joined formally the East African Community (EAC). Within this community, members have committed to design and to implement common policies related to the open market, security and common energy policy. Available statistics mention that more than 80% of the Burundian are living in rural area, and the agriculture sector is their main source of income.

This country possess many energy sources including hydro, biomass and solar. Excepted the peat energy that is being exploited, fossil fuels (petroleum) are imported from abroad. The wind and geothermal energies are in the experimentation process. Among these sources of energy, one can classify traditional energies and commercial ones depending on the way in which they are used. It is highlighted that the traditional biomass energy dominates the Burundian energy balance, and most of these types of energies such as the fire wood are not commercialized in official pathways.

One also mentions that fuelwood is consumed in Burundi at an estimated of 1 216 000 tones oil equivalent (Toe). As it has been reported by the East African Community (2008), the firewood occupies the first place within the fuel wood. This last is used for cooking and for light needs in rural areas. The agricultural residues are the second to be consumed at 315 000 tones oil equivalent (toe) whilst Hydroelectricity, the modern energy, is consumed at 45 580 tones oil equivalent (Toe) in 2008.

This share lets understand that traditional biomass occupies a large part of the energy market. Indeed, within the biomass sector, one identifies 70.8% of firewood, 5.82% of charcoal, 18.35% of agricultural residues, 0.978% of bagasse and 0.01% of the biogas energy. The fossil energy occupies 0.04% for peat and 2.5% for petroleum products (EAC, 2008). It has also been shown that fuelwood dominates the energy balance in Burundi.

The fuelwood is used for cooking or/and for lighting during the night even though this consumption way has negative impacts on vulnerable people such as small children and pregnant mothers without forgetting the depletion of forest resources due to the high population growth rate that leads to the overconsumption of forest resources.

At these limits, it is important to mention the risk of depletion of these resources due to the overconsumption which is reinforced by the population growth.

The missing of substitute of fuel wood is a big challenge in Burundi, since the population is growing. (the natural growth rate of population is 2.4%). This will impact seriously on the forest resources if no policy is undertaken as a preventive. African Development Bank (2009:140) and OAG (2010:58) have reported that the consumption of fuel wood, in rural area, is estimated at 3Kg per person and per day.

Scholars have argued that the adoption of new technologies requires to fulfill socio economic and cultural conditions for their sustainability purposes. It is now observed that few literatures are focusing on socio economic and demographic effects on biogas technology adoption.

For developing countries, specifically in rural area, taking into the account of these factors, when it is the time of thinking and designing a renewable energy policy, is a key element since biogas technologies and their advantages are unknown, and therefore their cooperation to the development of these technologies could be missing, especially in rural area.

The aim of this study is to assess how biogas plants family-sized could be developed in Burundi by focusing on socio economic and demographic factors. Since biogas energy is ecologically and economically advantageous, it was necessary in this study, to assess whether rural households believe in climate change, and thus assess how they are willing to contribute to its mitigation through biogas technologies, due to the fact that they are victims of its variation's effects.

Methods

This study was based on a survey that has been undertaken in the period of June, July and August of 2012.

Before the formal survey, a baseline survey has been undertaken. This allowed the author to schedule the survey, since key informants have been identified at the same time.

For the secondary data collection, the author consulted available desk studies, reports from the National Authority of Energy and Mines in Burundi, reports from the Authority of Planning and Development Funding, and Local administration of the district under study.

For the primary data collection, the study participants were mainly farmers, and they have been selected randomly within each village of 6 villages that constitute the district. The gender aspect has been taken into account insofar the study included women that are household heads or women that could represent their husbands who were not available during the survey.

The methodology applied in this study was both qualitative and quantitative, and the author tried to maximize the sources of information in order to minimize different biases.

Quantitative approach was applied in gathering primary data from 150 households randomly selected among farmers groups of each village of the district. These study participants were categorized as farmers with livestock or not.

For the qualitative approach, three methods such as focus-group, observation, and discussion with local authorities and stakeholders in the development process have been applied. For data analysis and relevant computations, the author applied the SPSS and STATA.12 Softwares. By applying these tools, the author used the Ordinary Least Squared(OLS) method in order to determine how and to what extents the variables mentioned above could affect the household decision of investing in biogas plant family-sized.

Results

The findings show that socioeconomic and demographic factors, especially the household income, the household head age, the sex of the household head, the family size and livestock activities are main conditions for the biogas development in the district of Gihanga. We have also learned that the belief in climate change in Burundi could affect significantly the willingness to invest in the biogas digester family-sized. For household where woman has interviewed, we found that the average effect on the willing-to-pay(WTP) is negative. In the field research, one has also experienced that the decision of affecting the household income is the responsibility of man. Even though they are responsible to gathering firewood for cooking, and getting budget for candle expenditures, woman do not have the responsibility of deciding on what and how the household income can be used. The decision that is related to the investment needs to come firstly from the man. Most of women, in the village, do not have access to the information and therefore, biogas technologies and advantages remain unknown to them. Other findings were that the variation of the household head age affects negatively the willingness to invest in the biogas sector.

Conclusions

One can then conclude that aged people are not willing to pay monthly for investing in the biogas use. Young families are motivated to adopt these biogas technologies. During the field research, we experienced that in the district of Gihanga, old people are not willing to adopt biogas technologies whilst young families would like to learn more and be supported in the development process of these technologies. Most of aged families declared that they have never seen those technologies; they are not really motivated to follow those new things.

Biogas technologies offer good potential advantages; some are related to clean energy for cooking and for lighting. Others concern the effluents that are useful for the agricultural fertilization. All these advantages are combined to create the human well being, jobs and opportunities and sustainable development, especially in the rural area. Unfortunately, in Burundi, rural people do not know those advantages. Therefore, this study suggests:

- ❖ Awareness campaigns on biogas benefits is necessary, in these campaigns women should be included.
- ❖ The financial and non-financial incentives to households are necessary.
- ❖ The establishment of institutional framework could foster the development of the biogas plants.
- ❖ By focusing on socio economic and demographic conditions, water resource need to be embedded in energy policy that is to be implemented in rural areas.