

In-Farm Wood Gasification Energy Micro-Generation System in Brazil: A Monte Carlo Viability Simulation

Authors : Erich Gomes Schaitza, Antônio Francisco Savi, Glauca Aparecida Prates

Abstract : The penetration of renewable energy into the electricity supply in Brazil is high, one of the highest in the World. Centralized hydroelectric generation is the main source of energy, followed by biomass and wind. Surprisingly, mini and micro-generation are negligible, with less than 2,000 connections to the national grid. In 2015, a new regulatory framework was put in place to change this situation. In the agricultural sector, the framework was complemented by the offer of low interest rate loans to in-farm renewable generation. Brazil proposed to more than double its area of planted forests as part of its INDC-Intended Nationally Determined Contributions to the UNFCCC-U.N. Framework Convention on Climate Change (UNFCCC). This is an ambitious target which will be achieved only if forests are attractive to farmers. Therefore, this paper analyses whether planting forests for in-farm energy generation with a woodchip gasifier is economically viable for microgeneration under the new framework and at if they could be an economic driver for forest plantation. At first, a static case was analyzed with data from Eucalyptus plantations in five farms. Then, a broader analysis developed with the use of Monte Carlo technique. Planting short rotation forests to generate energy could be a viable alternative and the low interest loans contribute to that. There are some barriers to such systems such as the inexistence of a mature market for small scale equipment and of a reference network of good practices and examples.

Keywords : biomass, distributed generation, small-scale, Monte Carlo

Conference Title : ICBAME 2017 : International Conference on Business Administration, Management and Economics

Conference Location : Madrid, Spain

Conference Dates : September 11-12, 2017