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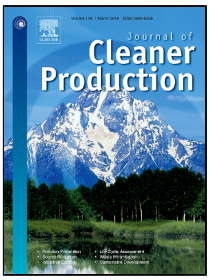

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PII:	S0959-6526(18)30252-X
DOI:	10.1016/j.jclepro.2018.01.221
Reference:	JCLP 11901
To appear in:	*Journal of Cleaner Production*
Received Date:	03 May 2017
Revised Date:	18 January 2018
Accepted Date:	27 January 2018

Please cite this article as: Luiz Paulo de Lima, Gabriel Browne de Deus Ribeiro, Ronaldo Perez, The energy mix and energy efficiency analysis for Brazilian dairy industry, *Journal of Cleaner Production* (2018), doi: 10.1016/j.jclepro.2018.01.221

The energy mix and energy efficiency analysis for Brazilian dairy industry

Luiz Paulo de Lima[1,*], Gabriel Browne de Deus Ribeiro[2], Ronaldo Perez[3]

ABSTRACT

This paper focuses on an analysis of the energy mix profile and energy efficiency of the Brazilian dairy industry. It investigates dairies' energy mix and energy efficiency and identifies some actions for a cleaner energy mix. Primary data from 37 dairy cheese-making establishments distributed among the Brazilian regions were obtained from online surveys. The results indicate that woodfuel plays a critical role, being the most used fuel in thermal energy generation, while diesel is dominant in electric generation. It also emphasizes that only 51% of the dairy establishments utilize electric energy generators. Other alternative biomass sources are still incipient in the sector, restricted to just 9.5% of the cases for thermal energy generation and no cases for electricity. Regarding the energy efficiency analysis, the results suggest dairies are more scale efficient than pure technical efficient. However, the dairies present a low energy efficiency level. There is no evidence that inefficiencies are differently distributed according to their size. These findings are important for government agencies, industry associations, scientists, universities and research institutes. High inefficiencies, regarding the use of electricity and thermal energy, are a key issue in sustainable bioenergy production.

Keywords: Energy efficiency, Food industry, Milk processing, Renewable fuel, Sustainability

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