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Energy and environmental potential of solid waste in Brazil

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Abstract

The economic progress and sustainable developments are linked to the optimization and energy conservation. Conventional methods of production and energy utilization usually embed harmful environmental impacts, and hence the challenge to scientists to seek for mechanisms of energy production and use which are less harmful or better still free of unfavorable environmental impacts. Studies point out that municipal solid waste has great energy potential and its reuse, specifically the production of biogas from landfills and the recycling of solid waste presents a favorable mechanism to optimize energy use and preserve it. The present investigation includes the energy savings and the avoided emissions of CO₂ to the atmosphere as a result of recycling and production of biogas from landfills in one metropolitan with more than one million inhabitants and in Brazil. The results show that the rate of CH₄ production from the Brazilian waste landfills can avail for Brazil about 41.7 MW and the reuse of recyclables can avail to the energy system an additional quantity of 286 GJ/month enough for the consumption of 218,000 families.

Highlights

• This paper highlights four fundamental and potential points of solid waste.

- Energy, environmental and social aspects of solid waste as a source of energy in Brazil.
- The use of organic matter deposited in the landfills as mechanism to generate energy from biogas.
- Recycling economizes energy, raw material, creates jobs, income and social inclusion.
- Selective collection and recycling increases the Family Grants and the social inclusion in Brazil.



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Keywords

Energy; CO₂ emissions; Solid waste

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