Processing urban waste for energy for reduced greenhouse gases

Rahul Basu
Sambhram Institute of Technology, India

Increasing CO$_2$ and other carbon emissions classed as pollutants is a major concern worldwide. The generation of power from imported fossil fuels remains a major source for underdeveloped and developing countries. Deforestation and depletion of green cover in urban areas and surroundings is a daily phenomenon coupled with rising urban population, migration into the cities, poverty and unemployment. Together with cheap two wheeler transport large amounts of toxic gases are dumped into the overhead garbage bin, the atmosphere. Large amounts of waste material and trash are also generated in the mega urban population centers of India, like Mumbai, Delhi and Bangalore. Processing of urban waste has reached choke point in cities like Bangalore, where sewage is dumped directly into lakes by high rise luxury apartments built around scenic lakes and advertised for their aesthetic value. The use of waste material to produce biogas by bacterial action results in a sludge which has a high nitrogen and carbon content after methane production. The sludge can be reused as fertilizer and also further processed to give producer gas. Waste materials like coconut husk, agricultural and cellulosic wastes could be used directly. The disadvantage of slow reaction times from biogas (methane) production by bacterial action is avoided. The producer gas can be stored or used directly in place of LPG as a substitute for methane which has hazardous qualities. In earlier times in cities like Mumbai it was piped directly to homes for cooking and used as a petrol substitute in Europe for vehicles when petrol was scarce. The possibility of direct bacterial action on sludge to give alcohol is investigated.

Biography

Rahul Basu is a Professor at Sambhram Institute of Technology, under VTU. Experience in Biotechnology and Renewable energy extends to Solar energy, Biogas, gas turbines, non polluting motive power sources like Stirling technology, associated with the Environmental Protection Agency in RTP, NC in areas of pollution modeling with the UNAMAP series then on mainframe, which were adapted to PC format using an expert system engine. He has also been associated with other companies in the RTP area in project submissions for Bioenergy, and has since continued his work in pollution and renewable energy including the Kuznets curve.

raulbasu@gmail.com

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