Global Science Research Journals

Global Educational Journal of Library and Information Science

Extended Abstract OpenAccess

Biogas: Usefulness, existing technology and major hurdles

Abdeen Mustafa Omer

Energy Research Institute, Forest Road West, Nottingham, UK

Abstract

There is strong scientific evidence that the average temperature of the earth's surface is rising and this may be attribute to increased concentration of carbon dioxide (CO2), and other greenhouse gases (GHGs) in the atmosphere as released by burning fossil fuels. One of the chief sources of greenhouse gases is burning of fossil fuels. Biogas from biomass appears to have potential as an alternative energy source, which is potentially rich in biomass resources. In the present study, current literature is reviewed regarding the ecological, social, cultural and economic impacts of biogas technology. In this communication an attempt has been made to give an overview of present and future use of biomass as an industrial feedstock for production of fuels, chemicals and other materials. However, to be truly competitive in an open market situation, higher value products are required.

Keywords

Biomass resources; biogas application; sustainable development; environment

Introduction

Energy is an important think about development since it stimulates, and supports economic process, and development. Fossil fuels, particularly oil and gas, square measure finite in extent, and may be regards as depleting assets, and efforts square measure minded to look for brand new sources of energy. The clamour everywhere the planet for the necessity to conserve energy and also the surroundings has intense as ancient energy resources still lessen while the surroundings becomes more and more degraded. the essential style of biomass comes primarily from fuel, charcoal and crop residues. Out of the full fuel wood and charcoal provides ninety two was consumed within the menage sector with most of fuel consumption in rural areas. The term biomass is usually applied to plant materials fully grown for non-food use, together with that fully grown as a supply of fuel. However, the political economy of production square measure such purpose-grown crops don't seem to be competitive with fossil-fuel alternatives beneath several circumstances in industrial countries, unless subsidies and/or tax concessions square measure applied. For this reason, abundant of the plant materials used as a supply of energy at this time square measure within the style of crop and forest residues, animal manure, and also the organic fraction of municipal solid waste and agro-industrial process by-products, like pulp, oil-palm residues, wood and wood off-cuts. The political economy of use of such materials square measure improved since they're collected in one place and sometimes have associated disposal prices (Bacaoui, Yaacoubi, Dahbi, Bennouna, and Mazet, 1998). Combustion remains the strategy of alternative for warmth and power generation (using steam turbines) for drier raw materials, whereas biogas production through anaerobic digestion or in landfills, is wide used for valorisation of wet residues and liquid effluents for warmth and power generation (using gas engines or gas turbines). additionally, some liquid fuel is made from purpose fully grown crops (ethanol from sugarcane, sugar beet, maize, sorghum and wheat or edible fat esters from oilseed, and oil oilpalm). the utilization of wastes and residues has established these basic conversion technologies, though analysis, development and demonstration continues to undertake and improve the

potency of thermal process through chemical process and shift, coupled to combined cycle generation. At a similar time significant effort is being created to extend the vary of plant-derived non-food materials. to realize this many approaches square measure being taken. the primary is to supply lower value raw materials for production of bulk chemicals and ingredients that may be utilized in detergents, plastics, inks, paints and different surface coatings. To an oversized extent these square measure supported vegetable oils or starch hydrolysates utilized in fermentation to made carboxylic acid (for polylactides) or polyhydroxbutyrate, furthermore as changed starches, polysaccharide and hemicellulose. the benefits square measure biodegradability, compatibility with biological systems (hence, less allergy in use) and scotch of fossil carbonic acid gas emissions (linked to climate chance). Associating AN quantity to those environmental edges, coupled to shopper preferences has contributed to accumulated production during this space. The second increasing activity is that the use of plant fibres, not just for non-tree paper, however conjointly as a substitute for crude primarily based plastic packing and elements like automotive components. These is also derived from non-woven fibres, or be supported bio-composite materials (lingo-cellulose chips during a appropriate plastic matrix). At the opposite finish of the dimensions, new strategies of gluing, strengthening, conserving and shaping wood have accumulated the building of huge structures with foretold long-lifetimes. These embrace a large vary of natural merchandise like flavours, fragrances, hydrocolloids and biological management agents. In spite of decades of analysis and development, engineering (recombinant polymer technology) is being wide investigated to realize this, furthermore on introduce new routes to uncommon fatty acids and different organic compounds. additionally such techniques square measure getting used to construct plants that manufacture novel proteins and metabolites that will be used as vaccines or for different therapeutic use. process of the crops for of these non-food uses can once more generate residues and by-products that may function a supply of energy, for internal use in process, or export to different users, suggesting the longer term chance of huge multi-product biomass-based industrial complexes.

POTENTIAL OF SMALL SCALE BIOGAS IN IMPROVING SOIL QUALITY AND REDUCING DEFORESTATION

Developing energy supply to interchange non-renewable sources has recently become a lot of and a lot of engaging because of the high energy demand, the restricted resource of fuel, and environmental issues round the globe. Biogas has become a lot of engaging as another to non-renewable fuels as a result of it's associate integrated system with multi-benefits like diversification of energy (cooking fuel) provide, reduction of native pollutants, reduced deforestation because of work for fuel; air quality, sanitation and crop yield improvement through sequestration of carbon in soils amended with the digestible organic waste. The challenge doesn't lie the event of the small-scale biogas digesters; the processes of digestion area unit already well understood and completely different styles for cheap digesters area unit operational. what's required is that the translational analysis to form it attainable for these digesters to become obtainable to folks in independent agency UN agency have very little or no income and access to solely restricted material resources. Development is required of effective, safe and reasonable ways for victimization small-scale biogas digesters to produce unit energy and improve sanitation within the vary of special conditions found in independent agency, whereas getting the most economic and environmental advantages from the digestible product, that area unit a crucial supply of scarce nutrients.

ENVIRONMENTAL ASPECTS

A great challenge facing the worldwide community these days is to create the commercial economy additional just like the region, that is, to create it a additional closed system. this may save energy, cut back waste

and pollution, and cut back prices. In short, it might enhance property. Often, it's technically possible to recycle waste in one in every of many other ways. for a few wastes there square measure powerful arguments for combustion with energy recovery, instead of material employment. Cleaner production approach and pollution management measures square measure required within the employment sector. the commercial sector world wide is chargeable for concerning one third of anthropogenetic emissions of carbonic acid gas, the foremost vital gas (Omer, 2014). business is additionally a very important electrode of many different greenhouse gases. and lots of of industry's merchandise emit greenhouse gases further, either throughout use or when they become waste. Opportunities exist for substantial reducing industrial emissions through additional economical production and use of energy. Fuel substitutions, the utilization of different energy technologies, method modification, and by redaction materials ways square measure to create use of less energy and gas intensive materials.business has a further role to play through the planning of merchandise that use less energy and materials and manufacture lower gas emissions. Environmental pollution could be a major drawback facing all nations of the globe. individuals have caused pollution since they learned to use fireplace, however artificial pollution (anthropogenic air pollution) has speedily exaggerated since manufacture began. several volatile organic compounds and trace metals square measure emitted into the atmosphere by human activities. The pollutants emitted into the atmosphere don't stay confined to the realm close to the supply of emission or to the native setting, and might be transported over long distances, and build regional and international environmental issues.

CONCLUSION

Biogas technology cannot solely offer fuel, however is additionally necessary for comprehensive usage of biomass biological science, farming, fishery, evoluting the agricultural economy, protective the surroundings, realising agricultural use, still as rising the healthful conditions, in rural areas. The biomass energy, one among the necessary choices, which could bit by bit replace the oil in facing the raised demand for oil and will be a sophisticated amount during this century. Any county will rely on the biomass energy to satisfy a part of native consumption. Development of biogas technology could be a very important part of different rural energy programme, whose potential is however to be exploited. A united result is needed by all if this can be to be completed. The technology can notice prepared use in domestic, farming, and small-scale industrial applications. Support biomass analysis and exchange experiences with countries that ar advanced during this field. within the meanwhile, the biomass energy will facilitate to avoid wasting exhausting the oil wealth. The decreasing agricultural land might hamper biogas energy development however acceptable technological and resource management techniques can offset the consequences.