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Bioenergy, Environment and Sustainable Development

Abdeen Mustafa Omer

Energy Research Institute (ERI), United Kingdom

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ABSTRACT

Sustainable energy is energy which, in its production or consumption, has minimal negative effects on human health and the healthy functioning of vital ecological systems including the global environment. Renewable energy is an accepted fact that it is a sustainable form of energy which has attracted more attention in recent years.It will require a great deal of renewable energy potential, environmental interest, as well as economic consideration of fossil fuel consumption and high emphasis on sustainable development in the future.

INTRODUCTION

The increased demand for gas and petroleum, food crops, fish and large vegetative matter sources mean that the global carbon harvest has intensified in turn. It could be said that the human race mines almost everything except its piles of waste. It is simply a matter of time until full capture is made of the significant carbon stream present in municipal solid waste. While, waste industry needs to move along the road to raising awareness and better-optimizing biowaste services.

Renewable energy resources are especially suitable for rural power supplies and a major advantage is that equipment such as flat plate solar driers, wind machines, etc. can be constructed using local resources and with the advantage resulting from the feasibility of local maintenance and the positive influence such local manufacturing has on small- scale rural based industry. This study provides some examples of small-scale energy converters, but it should be noted that small conventional engines, i.e. engines, are currently the major power source in rural areas and will continue to be so for a long time. Some more improvement is required to adjust to local conditions, reduce spares holdings, optimize engine parts and engine applications interchangeability. Total local production will be emphasised.

Bioenergy is an ever-increasing source of power playing an ever-increasing role in electricity provision. The potential contribution of the waste industry to bioenergy is huge and has the ability to account for a source of large amount of total bioenergy production. Woody biomass is typically transformed to power by combustion or gasification. In the case of energy crops, biomass can be cultivated especially. Waste wood accounts for a significant proportion of a range of streams of municipal, commercial and industrial waste.

The nations as a whole would benefit from savings in foreign exchange, from energy security, and socio-economic improvements. With a nine-fold increase in forest plantation cover, the nation resource base would be greatly improved. The non-technical concerns that have recently been discussed include: (1) Environmental and ecological factors (e.g. sequestration of carbon, reforestation, and revegetation). (2) Renewables as a CO2 neutral fossil-fuel replacement. (3) Greater awareness, at policy and planning levels, of the importance of renewable energy , particularly modern biomass energy carriers. (4) Greater awareness of and attempts to increase the challenge of gathering effective and accurate data on biomass energy. (5) Studies on the harmful health effects of biomass energy especially from traditional energy users. Further improvement is required to adjust to local conditions, minimize spares holdings, optimize the interchangeability of both engine parts and engine operation. Full local manufacturing should be emphasised (Abdeen, 2008a).

Energy is an important development factor because it promotes economic growth and development. Fossil fuels, especially oil and natural gas, are finite in extent, and should be regarded as depleting assets. The efforts are oriented to new energy sources. The clamour all over the world for the need to conserve energy and the environment has intensified as traditional energy resources continue to diminish whilst the environment becomes increasingly degraded. Alternative energy sources can potentially help to fulfill the acute energy demand and sustain economic growth in many regions of the world. Bioenergy is beginning to gain importance in the global climate change fight. The scope for exploiting organic wastes as a source of energy is not limited to direct incineration or refuse-derived fuels burning. Other forms of energy sources which can be derived from organic waste materials include biogas, biofuels and woody biomass. Such sources of renewable energy have important potential in fighting climate change (Abdeen, 2008b).

Nonetheless, energy conservation and rationing in some form would have to be practiced by most countries in order to reduce oil imports and change trade balance positions. Meanwhile, the development and the application of nuclear power and some of the traditional solar, wind, biomass and water energy alternatives must be set in hand to supplement what remains of the fossil fuels. Encouraging greater energy use is an important component of growth. In the short-term it requires mechanisms to enable the rapid increase in energy/capita, and in the long term we should be working towards a way of life based on energy efficient, and without environmental degradation or health issues. Such a program should be based on renewable energy resources, as far as possible (Abdeen, 2008c).

Large, conventional, power plants like hydropower have an important role to play in development. However it does not provide a complete solution. For the greater use of small-scale, rural power plants, there is an important complementary role. Such plant can be used to assist development as it can be built locally using local resources, making it possible to build up rapidly in total equipment without a corresponding and unacceptably large demand for central funds. Renewable resources are particularly suitable for providing such equipment with energy, and their use is also compatible with long-term objectives.

METHODS, MATERIALS AND APPROACH

A major field survey was undertaken to assess the availability of raw materials as well as the current situation of biomass technologies with a view to achieving the objective. Analysed the results. Agricultural residues recycling helps to reduce the intensity of use of natural resources, decreases the need for waste disposal, decreases the specific energy consumption in manufacturing and also provides reasonable levels of profits for those in the business.

This article highlights the potential energy saving that could be achieved through use of biomass energy source. It also focuses on optimizing and improving the conditions for the operation.

In compiling energy consumption data it could be possible to categorise usage according to a number of different schemes:

• Traditionalsector- industrial, transportation, etc.

• End-use- space heating, process steam, etc.

• Complete energy consumption associated with vehicles, food, etc.

• Energy source- oil, coal, etc.

• Energy form at the point of use- electrical drive, low heat, etc.

The aim of any modern biomass energy systems must be:

• To maximise yields with minimum inputs.

• Utilisation and selection of adequate plant materials and processes.

• Optimum use of land, water, and fertiliser.

• Create an adequate infrastructure and strong research and development (R&D) base.

CONCLUSION

Turning to chemical engineering and the chemical process industry experience represents a wake-up but does not lead to an immediate solution to the problems. The conventional techniques are not very kind to biological products which are dominated by difficulties and specific physico-chemical properties such as low mechanical, thermal and chemical stability.

Furthermore, investigating the potential is needed to make use of more

and more of its waste. Household waste, vegetable market waste, and cotton stalk, cloth, and pulp waste; and paper industries may be used to generate useful energy by either direct incineration, gasification, digestion (production of biogas), fermentation, or cogeneration. Adopting green or sustainable solutions to how society is run is viewed as an important tactic in seeking a solution to the energy problem. The key factors for minimizing and regulating CO2, which is the main contributor to global warming, are the use of alternative approaches to producing energy and the discovery of how these alternatives are used today and can be used in the future as green energy sources.

Also with limited assumptions about land quality, robust fuel-wood farming programs provide major benefits for electricity, economy and the environment. Such incentives can be distributed in rural areas where they are much needed and can serve as ties for further growth of the rural economy. The nations as a whole will benefit from foreignexchange savings, increased energy stability and socio-economic enhancements. With a nine-fold rise in forest cover – plantation cover, the resource base for a nation will be greatly enhanced. The international community will benefit from the reduction in emissions, climate change and expanded trade opportunities resulting from new sources of income.

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