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# **Renewable Energy: Addressing Environmental Issues in Bangladesh**

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## **INTRODUCTION**

Undesirable synergies are being witnessed in Bangladesh between disrupted environmental norms, an increasing demand for energy and widening poverty. The country has experienced natural mishaps throughout its history, but not as frequently as they are happening currently. The trend of untimely appearance of floods, droughts and cyclones is now common and it affects harvests and normal living. Other environmental problems such as desertification, rapid loss of biodiversity, silting of rivers, rising temperature, salinisation, arsenical contamination of potable water and destabilisation of mangrove forests, all are emerging phenomena requiring mitigation measures. All these phenomena affect harvest and economic safety, they beget poverty which in turn predisposes the poor to have more children for security. This in turn puts pressures on the country's resource base in terms of exploitation beyond its natural regeneration capacity. In addition, traditional and modern systems of using primary energy source have also contributed to environmental degradation and climate change (Hossain, 2001:210).

The rising need for energy sources, coupled with population growth and economic development, continues to push the unsustainable exploitation of the country's limited natural resources. There is a need for a different approach to combat this trend and the paper argues for the endorsement of renewable energy as an optimal solution. In addition to the environmental benefits, these types of technologies offer the benefits of being relatively small-scale with the potential to be home based which fits well within the village culture of the country (Hossain and Marinova, 2003).

## **RESOURCE DEGRADATION**

Bangladesh's basic biological resources are cropland, forests and fisheries. They have supplied not only food but also most of the raw materials for industry. Though the carrying capacity of these three natural systems is essentially fixed by nature, the power of human made technologies has been able to easily change the natural systems' balance. The observed demand for biological resources in Bangladesh is around the sustainable yield threshold of the country's biological systems but in some areas the increasing demand is satisfied by over-exploiting its productive

resource base. This in turn causes the resource base to shrink (Campos-Lopez, 1980:379).

An example of the seriousness of the problems and the attempts of the Bangladeshi government to deal with them is the country joining the United Nations Convention to Combat Desertification more than 10 years ago. At the national awareness seminar held in Dhaka on 'Combating Desertification and Land Degradation' in 1998, some of the major reasons for deforestation were linked to the scarcity of cooking energy, brick burning, income generation for timber traders, harvest and sale of wood fuel by the poor to counter poverty (MOEF, 1998:pp.28-29). Thousands of people are still directly employed in the commercial exploitation of mangrove timber and fuel-wood resources from the mangrove Sundarbans alone (BUP/CEARS/CRU, 1994:362).

Traditionally, villagers use primary energy sources such as fuel-wood, biomass and cow dung. However, these have been depleting since late 1960s when the Green Revolution (GR) technologies made their way into the traditional agricultural practices. The technologies that the GR brought were chemical fertilisers, pesticides and insecticides, and mechanised irrigation for the introduction of high-yielding variety (HYV) of crops (Islam, 1994:181). The HYV crops are shorter in length than the indigenous ones and as a consequence providing less biomass. This has created a shortage of energy in the rural areas and also led to a considerable occupational and environmental imbalance caused by unsustainable felling of trees (Khan and Hossain, 1989). The shortage of biomass also has affected the natural fertility of the soil which farmers consider as renewable resource.

Agricultural practices under the concept of GR are also contributing to land degradation. More and more cropland has been pressed into use for the monoculture of particular grains round the year. This has two adverse repercussions. Mono-cropping or the repeated planting of the same crop on the same tract of land have depleted specific nutrients in the soil. Secondly, the lack of diverse cropping has necessitated importation of cooking oil, pulses and spices which Bangladesh had once in surplus (Islam, 1994).

Biodiversity is the inter-related multiplicity of life forms. Maintenance of biodiversity is necessary for sustainable development (Kirkby et al., 1995:17; Tisdell, 1999:25). As elsewhere on the globe, biodiversity is decreasing in Bangladesh, mainly because of natural resource degradation taking place as a consequence of clearing of forests and the drying of wetlands, pools and streams to meet increasing agricultural and consumer needs. Soil degradation, decreasing water quality and destructive GR activities have caused many species to disappear during the last three decades. Many others are in an endangered situation. The Barind Tract has been under particular threat due to rapidly growing desertification and the lowering of the ground water table (MOEF, 1998). The negative environmental impacts on the 'Bils'<sup>1</sup> and the Barind aquifer have been alarming (Brown, 1995:143-155).

Cropland productivity, economic growth, population stabilization, biodiversity and water scarcity have been directly related to energy, poverty and the state of the natural environment in Bangladesh (Brown, 1995:7-8). The necessary solutions for

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<sup>1</sup> Bils, also spelled as Beels, refer to natural lakes in Bangladesh.

this do exist but their uptake has been slow partially due to the lack of interest in the past by donor and aid organizations (Hossain and Marinova, 2003).

## **RENEWABLE ENERGY AS ENVIRONMENTAL FIX**

There is abundance of renewable energy sources in Bangladesh. The clear sunshine and the fairly strong wind force are conducive to solar and wind energy technologies. Its provision for cattle raising and agro-forestry can supply bio-energy for households, including for household cooking. If sludge from bio-digesters is used to maintain land fertility eliminating chemical fertilisation, the degradation of water quality due to chemical run off will be mitigated.

The 1998 Pre-Feasibility Study on Bangladesh Renewable Energy Project (ISTP, 1998) put forward a convincing argument for the potential of renewables to contribute towards improving the environmental health of the country. The village philosophers and elders opined that renewable energy technology systems (RETS) would bring back the country's balance, including that of the Barind (which covers 12% of landmass), at the pre-GR socio-economic, eco-systemic, biodiversity and climatic levels. The potential positive effects are numerous. Depleted soils would be replenished. Surface water, ground water, and soil moisture would be sustained at a desirable level. The restoration of the ecological balance will take place. The sustainability of fish, crops, vegetables, fruit, fodder and fibre production would also be assured. Depleting biodiversity would return. Women's quality of life affected by cooking with biomass fuel would improve. The nutritional and economic poverty of the people would be eliminated. A major expectation is for overall environmental resilience to occur.

The lack of significant progress since has allowed for further environmental deterioration and only recently there has been some interest related to opportunities offered by the clean development mechanisms (CDM) under the Kyoto protocol (Amin, 2005 and Barton, 2006). Incorporation of RETS would empower the poor to access recyclable renewable resources for their economic well-being as well as to restore the ecological balance in the ecosystems. Renewables and technologies in RETS are the only feasible means that can be sustainably adapted by village people of Bangladesh (writers such as Ahmad, 1994; Biwas, 1980; Hossain, 1989, to list a few, frequently stress this).

## **GLOBALISATION OF RETS**

In its simplest term globalisation is the act of establishing linkages of human activities throughout the world, ostensibly for mutual benefit. A process of integrating RETS into human environmental activities globally thus requires globalisation, and this is possible. Tofazzal Hossain<sup>2</sup> observes that globalisation not only can offer opportunities for optimum utilisation of resources, availability of capital and financing, and maximisation of consumer welfare, but also for acquiring and integrating (local) knowledge and technology for sustainable (socio-economic)

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<sup>2</sup> Economic Globalisation by Md. Tofazzel Hossain (The Daily New Nation, Bangladesh, November 4, 2000).

development. The importance of combining local knowledge into global energy solutions is crucial. Shiva (1987:vii) stresses that the local environment can only be conserved by the traditional knowledge and practices of indigenous communities whose survival and sustenance are intricately linked to biodiversity protection, utilisation and conservation of natural resources.

It is argued that in its current form of operation, globalisation affects economies, politics, commodities, technologies and culture (Baylis and Smith, 1998:9). To further the proposition that environmental problems can be addressed through the global implementation of RETS, their currently marginalised position needs to change. They need to become an instrument for socio-economic development and a focus for energy policy. Johansson et al. (1993:9) assert that a strong international institution could assist and coordinate national and regional programs for increased use of RETS, though this needs to be done with respect to local knowledge and capacities in order to avoid the mistakes of globalisation, both in its old (colonisation) and new (neo-colonisation).

## CONCLUSION

The landscape of Bangladesh looks like a magical green tapestry intricately woven by nature. The environment however also offers a lot of potential for the implementation of renewable energy technologies. They range from solar and wind to biomass and biogas. In addition to providing the most needed energy they can also help arrest the trend and restore the degraded country's environment. Bangladesh is also a potential candidate for global transfer of technologies under Kyoto's clean development mechanism.

It is important that if Bangladesh becomes part of the globalisation of renewable energy technologies, the mistakes of the past be avoided. A respect for local knowledge and building local capacities are major considerations. The innovative and creative potential of the country's population can help revive its degraded environment and provide a more sustainable and optimistic future.

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