

DEVELOP BIOGAS TO IMPROVE THE ENVIRONMENT AND TO BOOST CONTINUAL AND RAPID DEVELOPMENT OF THE RURAL ECONOMY

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Summary

Guangxi Zhuang Autonomous Region, an agricultural region with 80 percent of population being farmers, is on the progress from traditional to modern agriculture. The shortage of resources and the environmental pollution are threatening the existence and development of the population. The popularization of biogas not only can protect the forests, improve agricultural ecological environment, utilize the resource in a reasonable and sustainable way, but can also avoid plunder-use, ill-use and the waste of resources, and raise the productivity and the value of resources in use.

1. The Status of Guangxi's Biogas Development

Guangxi, with sub-tropical humid monsoonal climate and rich resource, has advantage for the development of biogas technology. During the past years, Guangxi government has emphasized the development of biogas and has built 200,000 biogas plants each year. By the end of 2000, the total number reached 1.02 million sets. Biogas has provided the farmers with 408 million cum of quality fuel, 27.9 million tons of high-efficient fertilizer and saved as much as 1.02 billion yuan (about 123 million US dollars) for the farmers. The construction of biogas has been a good way for Guangxi's farmers to improve the environment and develop the rural economy.

During the International Symposium on Recyclable Energy held in Guilin from during 23-25, 2000, participants visited biogas sites in Guangxi and highly appreciated its comprehensive use and technology. They suggested to spread the experience of Guangxi to developing countries.

The advantages of developing biogas include:

- (a) Biogas is a clean energy. It not only provides the farmers with fuel, but also protects the forest and improves the environment. Usually a biogas plant with a volume of 6-8 cum, which gets the excreta from 3 to 5 pigs as fermentable material, can generate more than 400 cum of biogas annually. This is equal to 501.6 kilojoule of energy, which can meet the demand of a rural family's cooking and lighting. Without biogas, the family would have to burn 1,500 kilograms of firewood to get the equivalent energy. The biogas plants in Guangxi have so far saved 1.53 million tons of firewood. This means the saving of 765,000 mu (51,000 hectares) annually.
- (a) Developing biogas makes the rural area free from pollution. Firstly biogas can ease the air pollution in rural area. When farmers burn wood they waste the energy and pollute air. The smoke contains some harmful matters such as carbon monoxide, sulfur dioxide and sulfur trioxide. However biogas, which is 70% CH₄, produces only heat, water and carbon dioxide but no harmful matter when burning. Secondly, biogas can avoid the air pollution made by garbage and excreta and prevent the spread of pathogenic organisms. When a biogas tank is put into use, garbage and excreta are put into the tank as fermentable material. This makes the environment clean and eases the possibility of infectious disease. Thirdly, biogas will reduce water, air, soil and food pollution from pesticides and chemical fertilizer. A biogas tank of 8 cubic metres, provides every 10 days

enough fertilizer for 3-5 mu (0.2-0.3 hectares) fruits trees or 2-3 mu (0.13-0.2 hectares) cropland. It not only increases the productivity of cropland, but also reduces environmental pollution. Fourthly, biogas is a good way to produce green food. The biogas liquid is a kind of high-efficient fertilizer. It can be applied to crops, vegetable, fruit trees etc. The use of biogas liquid will reduce the use of chemical fertilizer and ease the possible pollution made by them.

- (b) The construction of biogas will boost the development of the rural. Biogas is not only a solution to rural energy but also good for animal-husbandry, fishery and planting. It can save fuel, electricity and labour while increasing the supply of fertilizer and the productivity of the farm. It reduces the dissemination of pathogenic organisms and cleans the environment. It is low-cost and suitable for rural area, where fuel and fertilizer are shortages.

2. Current Problems

- (a) Shortage of funds. Setting up a biogas plant requires about RMB 1,500 (about 181 US dollars), and for the farmers in poverty-stricken areas a subsidy is required. Guangxi, as an under-developed region, is short of funds for this purpose.
- (b) Technology support and management should be boosted.
- (c) The knowledge of comprehensive use of biogas needs spreading.
- (d) The market for biogas appliances and spare parts needs to be regulated.

3. Proposals

- (a) Enhanced guidance from the leadership.
- (b) Improve the organization for the construction of biogas plants.
- (c) Regulate the market for biogas appliances and spare parts.
- (d) Raise fund from various sources.
- (e) Build some demonstration plants to spread the biogas technology to larger areas.
- (f) Apply new technology to biogas, and set up a biogas industry.