

Biogas Support Program Is a Reason for its Success in Pakistan

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Abstract: Pakistan is situated in the south Asian region covering a total land area of 888,0000 square kilometers. It has a population of 140 million. Pakistan is agricultural country, more than 70% of the population is involved in agriculture and per capita income is about US\$ 480. Agriculture accounts for more than 35% of the GDP. The energy situation in Pakistan is characterized by very low energy consumption. The domestic energy demand Pakistan has been increasing by an average of 24% per annum. Almost 35% of export earning is needed for the import of petroleum products, which meet about 48.8% of total energy demand. Pakistan has very low forest cover, about 4 per cent of total land area is covered by forests, 5 per cent of which is protected. About 90 per cent of the country's wood production is used as fuel. Annually 7,000 ha. Of land is reforested in Pakistan. CO₂ emissions 0.65 per 1000 people. Looking at the nation's energy demand and living standard of the people, biogas technology is one of the reliable renewable energy sources used for cooking and lighting purpose. Biogas technology has proved to be very successful in the country since it not only produces gas for household purpose but also provides good fertilizer in the form of digested slurry. Thus, Pakistan's biogas support program has been considered one of the most successful programs in the country. This has been the result of standardization of design, an extensive system of quality control and financial incentive provided to the users for the installation of biogas plants. In this time we feel a strong network in the field of renewable energy sources between technician, experts, country and region.

Key words: Biogas support • quality control • house hold and domestic energy demand

INTRODUCTION

As a first biogas plant in Pakistan was plant in 1989. Pakistan is already meeting 1.50% of its energy requirements from biomass, whose consumption is increasing average at the rate of over 5% per annum [1]. This is due to increase in population and not due to change of any trend in energy concentration. The population that uses biomass as main source of energy lives in rural areas, small collecting woods and shrubs to meet their energy demands. About 62% of biomass users living in rural areas collect biomass for their use and only 24% buy wood. In urban areas 14% of biomass consumers buy, only 12% of these collect wood for their living and 66% use natural gas [2]. As about 70% of the Pakistan population lives in rural areas so majority of biomass users does not pay for their energy use nevertheless wood trading is quite a business in the country and many families live on this business. It involves cutting processing transportation selling etc. Research on various design of biogas plant such as floating steel drum design,

concrete fixed dome design, pre-cased tunnel design, plastic bag bio-digester, Ferro cement gas holders, brick mortar dome, mud dome were tested and experimented. However, fixed dome design is the only one recognized design and became more popular in Pakistan. Various researches namely biogas appliances were developed and tested, alternative feed stocks such as Eupatorium species, water hyacinth, night soil, industrial wastes were conducted. Research were also conducted on the application of gas for running engines for agro-processing, pumping water for irrigation and generating electricity and bio slurry for agricultural production and income generation. At present almost 1200 plants has been installed and out of the 98% are in function. Biogas Support Program (BSP) was introduced in 2000 to increase the number of additional 1200-biogas plants [3-6]. Now, we cross that target make success in this work. In addition, the next five year target is 1,00,00 number of plants. After that program, 27% of the total potentiality will recover. The Government of Pakistan has been assisted by the implementing a biogas project under

Biogas Support Program (BSP). The objectives of the proposal were to reduce the rate of deforestation and improve health and sanitation in rural areas and to increase agricultural production. With these developments, some INGOs also started to play an important.

The Govt. of Pakistan policy regarding the development of alternative energy including biogas technologies in the past has been widely criticized for its inconsistency and irregularity. From the Five Year Plan, the Government made a policy commitment to encourage the installation of biogas plants in the country by deciding to provide an ambitious target of 1200 plants along with a 75% interest subsidy on loan from Federal Government of Pakistan [6]. It was only in 1987 that a plan for the installation of biogas plant was first incorporated into a national plan document. In the Five Year Plan (2005-2010) which envisaged government efforts in developing alternative and decentralized energy source including provision for an institutional set up for the development of alternative energy in Pakistan. The objective was to gradually replace imported fuels by indigenous energy sources that could be locally exploited.

RESULTS AND DISCUSSION

Biogas plants have been popular and demands for their installation have been increasing in comparison to past 5 year's progress. There are several factors for the popularity and rapid growth of biogas technology in Pakistan. Here are some of the reasons for the success of the program.

Application of biogas and slurry: Biogas, as the word implies, has its emphasis on gas production. No direct. Cash income can be generated from this and consequently biogas is not seen as an attractive fuel alternative for marginal farmers. It has reduced the rate of deforestation and environmental deterioration by providing biogas as a substitute for fuel wood to meet the energy demand of the rural population. However, slurry extension program has been carried out for high crop yielding.

Well proven design and quality control mechanism: The quality of biogas plant is a major concern for commercializing the technology. A non-function biogas plant will damage the reputation of the technology. In order to promote the plants further among people in the lesser economic brackets, the construction cost of the

plant need to be reduced, alternative feed materials to be identified, gas yield at low temperatures should be increased and efforts made to use biogas and slurry for diversified uses For all these purpose, intensive research and development needs be carried out.

Monitoring and evaluation: There is continuous monitoring and evaluation of biogas programs both by external and local consultants. Monitoring of quality control is done on the very site. Every year around ten percent plant's quality control did by the Biogas Support Program (BSP). Within three year every plant visited by the After Sales Service Technician. As the key indicator of monitoring and evaluation is 98% biogas plant is in operation.

Effective promotion of the technology: In Pakistan, the technology has been promoted and popularized by various means such as leaflets, calendars, posters, manuals etc. Biogas users are supplied with operation and maintenance manual prepared in Pakistani local languages. However, it has been recommended that such manuals should contain less diagrammatic illustrations so that people can easily understand. Slurry extension program have been introduced to increase the market for biogas plants by maximizing the benefits of the operated biogas plants through improvements in the use of slurry in crop production. It has also supported in reducing the workload especially for women and girls.

Recognition of manufacturer: Biogas companies use a single quotation; as a result, the cost of the plant is not competitive but rather stable. In addition the quality of construction is more or less the same. Similarly, there are biogas appliances manufacturer, who prepare the appliances and after the inspection and Quality control sent to the biogas company. Again, Biogas Company sent these items after the quality control.

Extension, promotion and dissemination: To increase the number of biogas plants, it has been felt that some promotion materials such as biogas posters, radio and TV advertisement and program, publication of calendar, leaflet on slurry be used and developed for distributed. Similarly extension materials such as user's repair and maintenance manual, construction manual and instruction service guideline are available for customers.

Human resource development: Regarding human resource development, some professional institute with

professional personnel has been conducting both technical and management training for planners, policy makers and development workers. Every year an observation tour is organized for such people to see the performance of biogas plants both inside and outside the country. Due to the various approach of people with this technology the employment is generated in rural areas.

Proper channeling of subsidies and loan: Proper channeling of subsidies and loan support the program to be most successful. Federal Govt. of Pakistan and multi lateral project i.e. BSP recognize the qualified company and national banks to channel the subsidies to the farmers.

Carbon trading (Clean development mechanism): Only constructing biogas plant is not an indicator of success. The sustainability of the biogas plant is main thing. If we will discuss about the environment saving then we must control the green house gases in the environment. By the Kyoto protocol, there is one limitation in carbon removing in the open environment. If developing countries like Pakistan apply such types of technology by which we control the green house gases in the environment (like as biogas, solar, wind energy etc.). By following this rule, we take all the plants Geographical Positioning Standing (GPS), Carbon Emission Ratio in the environment, Sustainability of the plat etc. After then we calculate the number of plant, carbon emission amount, then fixed the price of the carbon in the international market. After construction the plant, we can take benefit every year from the Carbon trading business. By that money we can provide subsidy to new farmer, can do research and development activities etc.

Good co-ordination between its partners: So far there has been good co-ordination between the institutions involved in Biogas Support Program. They have created a Biogas co-ordination committee as well as slurry co-ordination committee.

Identification of key stakeholders: In order to commercialize biogas technology it should be market oriented, autonomous and adequately structured sector with maximum involvement of private organizations and also necessary to involve the Community Based Organization (CBOs), Non Governmental Organization (NGOs), International Non Governmental Organization (INGOs).

Biogas users: The active commitment of the users is to participate in installation and smooth operation of their biogas plants. They should be responsible for collecting construction materials such as sand, stone / bricks, pebbles etc., provide labors for back filling, making compost pit and regular and adequate feedings, so that the plant is properly maintained.

Biogas construction company and appliance manufacturer: The service for the construction, after sales service, user training is provided by the company. They provide the three years after sales service to the biogas plant owner. Biogas Company provides a guarantee of 3 years on structural parts of the plant; such as dome, digester, inlet, outlet, turret and water drain pit and one-year guarantee on appliances and fitting works. US\$ 10000/- are charged as guarantee fee as well as for visits conducted by the company.

Banks: At present the banks and Agriculture Development Bank are not financing biogas plants. Its need to be involved banks with low interest rate (5%). After providing support to the Co-operative, it is easy to take loan and construct biogas plant in the country.

Biogas Support Program (BSP): The Biogas Support Program was initiated in 2000 to develop and promote the use of biogas in Pakistan. For the first two phases of the program, BSP I and II, program support was provided by Federal Govt. of Pakistan.

Future prospectus: After achieve the success in the previous program, we have now some future challenges for doing;

- 10,000 biogas plants will construct in the next five year.
- We have challenge to construct sewage and waste water treatment plant in urban areas.
- We have necessary to construct septic tank treatment plant.
- Highly promote the kitchen waste material plant.
- Organic farming system application.
- Research and development in High altitude plant, Cost effective plant, various model and design, clean energy bank establishment, Carbon trading money management and utilization.
- In the future, it shows the growing and sustainable sign in the country.
- By the involvement of the partner and related organization, biogas technology future is very high.

CONCLUSIONS

In the present world is collecting in one place by the help of communication. However, in this biogas sector, which is necessary for the most of the world, is not in one place. We do not know each other's technology and idea. Therefore, to share knowledge idea and view it is necessary to establish a good networking between the biogas stakeholders. In present condition, there are two-part big size plant manufacturer and the small size biogas plant manufacturer. It is necessary to take together both of them in the one way by networking and sharing. Biogas is sustainable in the long run, as it can be continued indefinitely into the future. Poor countries usually face a chronic shortage of energy. Thus these countries should encourage the adoption of biogas technology as a source of renewable energy to meet their growing energy needs.

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