

TRANSFORMATION OF WASTEWATER TREATMENT AREA INTO NATURE PARK

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1. INTRODUCTION

One of the objectives of the sustainable development is to reduce the gap between resource input and waste output. A city consumes resources and produces waste where disposal has become difficult and expensive. Recycling helps in bringing the ecological balance. In Kolkata, India sewage fed wastewater is taken into wetlands to produce fish through a photosynthesis process where shallow ponds with sunlight produce phytoplankton which provides fish food and generates oxygen. Waste water, sludge and natural compost produce good quality of vegetables. A biotic environment is created. An area in south west Kolkata has become a nature park which is now an educational and recreational area. This is managed by the fishermen and profit is given to the welfare of the family members and social benefits. (Ghosh, 2001)

2. METHODS

About 85 – 90% of the water consumed in the city becomes waste water, sometimes mixed with sewage and its disposal has become a problem. In the conventional water management, recycling of wastewater has not been given adequate attention though reuse of waste water is in practice in many countries for a longtime At the end of 1961, a group of fishermen formed a cooperative society, in the name of Mudialy fishermen cooperative society Ltd (Mfcs) and took lease of 70 ha from Kolkata Port Trust. It was derelict and marshy land previously the area was much bigger and gradually it was filled up. Later 10 ha was obtained from the State Government of West Bengal and the Cooperative Society owned 2.5 ha later on and total is 82.5 ha, of which effective water area is 55 ha, nursery pond 3.5 ha, for social forestry 13 ha and embankment 11 ha. There are about 100 members and 300 families depend on this. A large number of casual daily labourers including women work here.

About 10 km from heart of Kolkata, this is located in a densely populated area with industries so the effluent waste water is 70% from industry and 30% from domestic sources. Average daily loading is 23 million litres. There are 9 ponds including a nursery pond. The first pond is used for settlement and lime is used to remove oil and grease water hyacinth is used to remove dirt and metal particles. Often sludge is removed. The first tank is an aerobic tank. The water flows into the second tank which is a breeding tank. Water then flows through other tanks through a narrow passage and quality of water is improved also and finally the water flows through a drain towards the river far away.

It is estimated that one hectre water area full of phytoplankton takes about 306 tons of CO₂ from the air and leaves 25 tons of Oxygen; Plantation area figure is about 10 times less (Mfcs, 2001).

The method is indigenous. The ponds act as solar reactors. The shallow ponds receive sunlight for photosynthesis process. Phytoplankton algae is developed which provides fish food and emits oxygen. The rich nutrient is responsible for quick growth. The wastewater and the sludge are used in nearby area to produce good quality vegetables and natural compost is also used. 34 varieties of fishes are produced here and produce goes to city markets nearly, and cost of transportation and marketing is minimized. (Fig. 1)

A deer park has been established with rabbit and peacocks. Besides fish, poultry and piggery have been developed. Extensive plantations are done. About 30% percent fodder (legume varitis). 30% dust and chemical resistant plants, 30% shady and fruit trees for birds and 10% for horticulture. With the help of Zoological Survey of India a survey of birds have shown that 120 species of birds came, to the area out of which 27 species were migratory birds. Besides these there are some microorganisms. (Fig. 2)

The dissolved oxygen is found to be 0 mg/litre at the inlet point to 16-20 mg/l on the outlet. The bio-chemical oxygen demand (BOD) a critical parameter of waste water quality is 150 – 180 mg /g at the inlet to about 15 – 32 mg/l at the outlet (USAID, 1995).



Fig. 1: Fish Produce



Fig. 2: Nature Park

3. RESULTS AND DISCUSSION

There is ground profit from the sale of fish but money is spent for welfare of families. With boating facility provided this area has become a recreational area. It is known as Nature Park. There is information centre, a small laboratory and a class room and training ground for biodiversity. Besides cleaning waste water and reusing it for urban food products, it employs poor people and low income families. The produces oxygen and absorbs carbon dioxide. The overall maintenance is good but more area is to be taken as mosquito control is not effective yet MFCS due to the success of the project is building a guest house and other facilities which should be controlled and renting to outside patients for various activities may danger the flora and fauna. More fruit trees and aquatic plants are required. The marketing through retail chain and other programmes are to be carefully analysed.

4. CONCLUSION

The MFCS for developing this waste water treatment area as nature park has received many awards and vide films have been made and newspaper articles have appeared and school children are often around for scientific knowledge with environment. This can be a model and some other areas are being developed.

5. REFERENCES

- MFCS (2005) Nature Park. A report by Mudialy Fishermen's Cooperative Society Ltd. Kolkata.
- USAID (1995). Integrated Wetland System for Wastewater Treatment and Recycling. Basic Manual. USAID Arlington, Virginia, USA.
- Ghosh, Santosh (2001) Indigenous Technology in Waste water recycling, Calcutta case study. International Congress in Irrigation and drainage. Seoul, September 2001. Proceedings.