AOGS 2005

Regeneration of Urban Lakes: a Component of Urban Hydrology Plan

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With rapid urbanization in Asia water bodies have been filled up and the urban lakes have deteriorated due to real estate and other economic developments. Aquifer level has receded and there is eutriphication.Regeneration of urban lakes within a framework of long range environmental management is necessary.

Aquifer recharge, conservation and restoration of water bodies, recycling etc. are required with control on surrounding developments.

Eastern Salt Lake in Kolkata is under a recycling zone with large number of sewage fed fisheries known as 'Bherry'.Water is recycled into the fishery and has thus developed a lake which has become a nature park.

In Kolkata Metropolitan Area one of the large wetlands-Dhakuria lake known as Rabindra Sarovar , an artificial lake 77.6 ha in area has been listed under the National Lake system. Excavated by the Calcutta Improvement Trust for leveling and developing the surrounding area for residential development, road system, parks, walkways and water sports. Gradually a stadium was built along with a covered auditorium and areas leased to different clubs.The water is now 29.5 ha of which 1.2 ha has been leased out and area for public use is 34 ha. Impact of human activities, discharging drainage water etc. have already polluted.Water birds are less in number and certain kinds of fishes do not grow .High-rise construction around the lake has lowered the aquifer. It receives only rainwater and there is no recharge. A survey of Geological Survey of India showed that water level has receded upto 3.0 m in the vicinity of Dhakuria Lake.

Restoration: It is said that wetlands are amongst the Earth's most productive ecosystems. But they deteriorate due to siltation and addition of plant and organic materials, leading to entrophication consequently a decrease in the volume of the lake.

Restoration cannot be on piecemeal basis, an integrated ecological –environmental management plan, a part of overall metropolitan landuse plan with long term perspective is to be prepared with new innovation and techniques. Restoration includes regeneration of aquifer, of water bodies and recycling.

Case Study: A fisherman's cooperative in South West Kolkata took lease of 15 ponds, 50 ha in area from Kolkata Port Trust to treat 23 million wastewater daily. Each pond facilitates natural aeration through wind action of shallow depth for 1.5m to allow sufficient sunlight to reach upto its bottom to promote growth of algae and photosynthetic oxygen at the assured rate of 1gm of algae to produce 1.25 gm of oxygen. Fitted with two sluice boxes as inlet and outlet points for waste water exchange, aquatic plants (water hyacinth, duckweed water) used to purify water, aeration enhanced by exposure to oxygen and wind. It has a lake and a nature park with recycled wastewater. It has attracted birds and there is a deer park.Tree plantation and horticultural developments have made this area green. It thus provides employment, food, gives money and keeps the parts of the metropolis blue and green, creating pollution free environment. A metropolitan wide limnological study is required.