

Urban Hydrology and Sustainable blue plan

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The rapid urbanization and growth of large cities in Asia with highrise and high density development at the centre and lowrise sprawl in the periphery are creating conflict between land and water. Waterbodies are being filled up and underground water is being depleted. Water scarcity as well as wastage, uneven distribution, misuse of water resources can be seen in many cities. Siltation, water logging and flooding encroachment and disposal of waste into water and pollution, receding aquifer level, death of aquatic species, associated health and hygiene problems are quite common. An integrated plan for water with rivers, canals, streams, wetlands and groundwater coordinated with landuse, water supply, storage, distribution etc. is necessary together with some nonphysical aspect, like pricing, management taxation. Some major problems in urban hydrology plan can be identified: (i) Depletion of ground water and aquifer recharge: Over extraction in urban areas has caused receding aquifer level and scarcity. Aquifer recharge is being encouraged. (ii) Contamination of chemicals: Vast areas of south and south east Asia have arsenic, fluoroide and other chemical contamination in water affecting health. Abatement is a major concern. (iii) Revitalisation of rivers, canals and wetlands: Conservation and revitalisation of canals are required. (iv) Recycling of wastewater: Waste water disposal is a major problem and recycling for productive use must be a part of urban hydrology plan.

Urban hydrological cycle is an integral part of ecological cycle which is based on biological, human and environmental criteria. Programme like Integrated Water Resource Management has broaden the scope. Urban hydrology should be a component of regional environment to plan with defined objectives for sustainable water resource covering conservation, environment and development. It is a holistic process and every Asian city should have such a plan. This will include several components (i) study of parameters – physical, biological, human and environmental, supply and demand, projected need, sources etc. and development of data base and information system, inventory of rivers, canals, wet lands etc. (ii) Assessment of large dam, construction, upstream downstream development etc. on urban water system (iii) Regulation control – zoning, building codes etc. control on ground water, water bodies and wetlands. (iv) Interaction between urban water system with canals, streams, rivers and other natural resources (v) mechanism of pollution control and water related diseases (vi) Method of disaster management specially coastal cities and also a removal of water logging and urban flooding. (vii) Socio economic aspects and urban governance and participatory development (viii) Environmental monitoring and multiple effect on development of urban agri-horti-aquaculture etc. (ix) Actions regarding recycling of waste water, conservation of water, aquifer recharge, rainwater harvesting etc. An urban hydrology plan is a blue plan for the city integrated with ecologically sustainable landuse.