INTERNATIONAL JOURNAL OF ADVANCE RESEARCH, IDEAS AND INNOVATIONS IN TECHNOLOGY

ISSN: 2454-132X
Impact Factor: 6.078
(Volume 7, Issue 4 - V7I4-1795)
Available online at: https://www.ijariit.com

An ekistical approach towards impact of water on human settlements

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ABSTRACT

In present scenario, the issues related to water, such as water stress, water scarcity, water quality are gaining much importance as these real-life problems are increasing day by day. It has been known that once pollution has come up in the environment, it may remain concealed for many years and makes the water resources unsuitable for consumption and other uses. The rate of degrading groundwater levels and depletion of water quality (both surface and groundwater) is of major concern in major cities and towns in the country. Thus, a metropolitan city must be selected as a study area, which is facing severe problem of water pollution and its management.

Keywords: *Water Pollution, Human Settlements, Ekistics, Impact*

1. INTRODUCTION

1.1. As Ekistical Classification

"Ekistics by definition, comprises 5 elements: nature, man, society, shells (structures) and networks; these are the basic elements that, taken together, generate a complete, operative Human Settlement, a system of HSs, or a region conditioned by Human Settlements. Nature, in this sense, one of the 5 Ekistics elements, represents the entire natural environment of this planet, in the broadest sense, either virgin and unspoilt, or interfered with, adulterated, or degraded (rarely ever cleaned) by man. Nature, in this way, represents a basic and most valuable constituent of all Human Settlements."

- (Professor John G. Papaioannou in Environment and The Role of Ekistics)

Nature

The quality of water in water bodies may get contaminated by natural resources.

Depending on the region where a particular water body is found, the source of contamination varies. The rainwater falling on leaves flows down into the ground in forests and percolates into the ground. The soil being rich in nitrogenous compounds contaminates the ground water. Water body in volcanic zone gets contaminated with the minerals erupting out in the form of lava from the volcano.

Anthropos

Industrialization, urbanization, mining, deforestation, exploitation of fuel reserves, unhygienic disposal of human & livestock waste, unsafe solid waste discharge, etc.

"Dirty Water, Disease and Death: ***Dirty water is not the only, or necessarily the most important, transmission route for intestinal pathogens that cause diarrhoeal diseases and infant mortality. Infection can also be caused by consuming contaminated food or meeting unwashed hands, flies or contaminated cooking/eating utensils.***

Religious Offerings and Other Refuse: ***The toxic chemicals used in making the idols tend to cause serious problems of water pollution and pose a serious threat to the underwater ecological system. When immersed, these colors and chemical dissolve slowly leading to significant alteration in the water quality."***

(Dhote et al., 2001)

Shell

Severe water-related disasters such as floods, droughts, tsunamis, windstorms, landslides, storm-surges and epidemics have escalated since the turn of the 21st century. In addition, climate variability and change are already affecting water resources and their management in various regions. The temporary encroachments in the Riverbed area aggravate the pollution in riverbeds i.e.

the piece of land at the course of rivers or other water bodies, that gradually filled up by dumping garbage or construction waste gives way to different kind of illegal constructions and unauthorised temporary settlements.

Society

Economically and socially marginalized communities typically sleep in unauthorized or illegal colonies and slums, wherever provision of basic services, particularly water, is irregular, inadequate, and of unacceptable quality. The issue of participating in decision making is closely linked to the existence of Transparency in concerned authorities, Accountability, and Participation (TAP) mechanisms. Improvising and implementing TAP can and will help in tackling the surging water crisis, with Decision-making processes as well as stakeholder involvement and capacity building can alter the situation. Broad Issues are: Political and Social Boundaries, Factors Inhibiting Equity in Water Governance and Lack of Transparency, Accountability and Participation Concerns

Network

Poor and marginalized communities always suffer because of unequal distribution of water. They found a broken network which rarely reaches to them. In India cultural diversity and patterns cast hindrance in the water distribution as well. With the majority of the divisions ruling on caste, religion etc, the lowest section of this groups a part to the hierarchy are often the most under privileged ones. The lowest or the untouchables are mostly the most suffering strata.

1.2. Ekistics Matrix

Analysis of impact of water on human settlements (directly or indirectly). The Ekistics Matrix helps the Program Evaluation Review Technique (PERT) to break-down the individual tasks of a project for Diagnosis, analysis and synthesis.

DIAGNOSTIC ANALYSIS of EKISTICS MATRIX

	Investigation	Trend analysis	Intervention analysis	Synthesis
NATURE	Water pollutant load - TDS, BOD, OD. Environmental effects and imbalance of ecosystem	Significant concentration of Pollution Source identification	Disturbing aquatic Life Treatment at source	Revitalize the treatment at source
MAN	Demographic profile Requirement & consumption Health hazard: water borne diseases	Killer disease : typhoid, Availability of water	From supply & ground water both	Regular check by authority.
SHELL	Physical hazards: flood, droughts.	Building on flood plains (low lying)	Flood proneness increasing	Strategy- Bunds, dams
SOCIETY	Inequalities in distribution and (Over-stressing of services) Lack of infrastructure	Physical development Awareness Urban infrastructural services	Scarcity for marginalized Eco- friendly environment	Creating popular awareness and understanding ICS Integrated comprehensive scheme
NETWORK	Transmission and distribution of water supply Tanker Piped	Cross boundary scenario Influence zone	Income group variations Distribution timings	Supply should reach at basic standards

Chart No. 1: - Diagnostic Analysis of Ekistics Matrix

-Source: Self

2. CONCLUSION

This research shows control on consumption is very necessary before thinking of more and more production. Firstly we need to resolve the issues that have been diagnosed throughout the research and it will become very easy if we do it from our principles of Ekistics as dividing the problems into 5 small categories to break its thrust. We can start in a chronological manner like: -

a) Resources (**NATURE**) should not be exploited. A demand vs supply cycle of consumption of water resource and returning the end product should be remained balanced.
b) Consumption should be wise and controlled, this can be achieved only by the resident's (**ANTHROPOS**) involvement with the govt. and private stakeholders. Awareness among people, transparency in working of authorities and participation of both should be promoted.
c) 'Prevention is better than cure' so we should categorize water at the doorstep (**SHELL**) into stormwater and sewerage.
d) Equity should be maintained in the settlement in all the **SOCIETIES** without showing the economical boundaries for water type of basic need.
e) **NETWORK** of supply as well as network of resource should be maintained properly to prevent the rusting on one hand and the leakage and water theft on another. Segregation of stormwater and wastewater can easily increase the efficiency of water treatment plants and lower the burden of sewage treatment plants.

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