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Environmentally friendly urban planning, sanitary challenges in Wetland Cities

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Introduction

More than half of the world's population lives in urban areas and this number is expected to increase to over 60% by 2050. As the population grows and more people move to urban areas, there will be a growing challenge to make our urban areas sustainable and more healthy places to live. The rapid increase in world population has put an incredible strain on our environment. The developed countries continue to pollute the environment and use resources while the developing countries are under increasing pressure for fast progress which makes them even more damaging in most cases .

Urban wetlands are those that essentially survived historical development where urbanization gradually took place. Some wetlands may also be newly constructed in an urban setting to make cities more liveable and green. Urban wetlands are part of the flood regulation system and act as a filter to improve water and air quality due to their potential for pollution degradation. The development of human settlements is a major concern for wetland conservation and wise use. As cities grow and demand for land increases, there is a tendency to encroach on wetland which degraded wetland and its nearby ecosystems due to various direct and indirect impacts .

In a new insight the urban wetlands are not wasteland and if be integrated into the development and management plans of cities can provide multiple economic, social, and cultural benefits. At the same time, they can reduce per-capita resource use and enable densification. Human settlements have historically evolved around the watercourses. Therefore, there are still many wetlands existed inside and around the cities which can be integrated into cities' common spaces if the environmental and sanitary issues are considered. Urban wetlands have to be conserved, restored and managed to maintain the services expected. However, the fact that they are not usually included within urban planning decisions, their conservation, and wise use could be a very challenging issue.

Methodology

As defined by the Convention on Wetlands (Ramsar, Iran, 1971), wetlands include a wide variety of habitats such as marshes, peatlands, floodplains, rivers and lakes, and coastal areas such as salt marshes, mangroves, and seagrass beds, but also coral reefs and other marine areas no deeper than six meters at low tide, as well as human-made wetlands such as waste-water treatment ponds and reservoirs. The Convention is an

intergovernmental treaty planned for the conservation and wise use of wetlands through local, regional, national, and international collaborations towards achieving wetland preservation goals in wild and build environments throughout the world.

Wetlands are one of the world's most productive ecosystems. They are also vital for human survival and play a valuable role in providing numerous economic, ecological, and wellbeing benefits, known as wetland ecosystem services. Wetlands have traditionally been undervalued, which has resulted in widespread loss and degradation. Therefore more than 60% of the world's wetlands have disappeared since the last centuries. The urban wetlands are also disappearing at a faster speed than coastal wetlands, which makes this clear that the overall trend is that wetlands and their benefits are being lost.

The sustainable use of wetlands located in the urban areas is very sensitive to the quality of water regarding its direct uses for recreation purposes i.e. fishing, water play, pedal boat, and watering the animals. These are usually not included within urban planning decisions regarding the direct responsibility of a municipality and poor governance of other agencies. In the current study, the experiences of Babol city in the province of Mazandaran for the planning of a spoiled wetland i.e. GoleNilofar wetland, to the common space of the city is reported. The quality of water which is the most challenging issue for the use of urban wetlands has been investigated by some microbial sampling and field testes.

Results and Discussion

Urban developments, if designed with green infrastructure, can deliver numerous financial, environmental, and socio-cultural benefits. Urban wetlands could be the heart of this in wetland Cities with multiple roles to plays in improving the quality of surface water and providing a green and habitable environment for endemic wildlife in the city. The quality of water in the urban wetlands has always been a concern as they receive swage in the network of local drainage system that ends in them. In this study, a year sampling for 4 seasons has been planned intended to investigate the microbial quality of water and its suitability for recreation and watering purposes. The sampled waters were tested for the total and fecal Coliforms. Total coliform bacteria are a collection of relatively harmless microorganisms that live in large numbers in the intestines of man and warm- and cold-blooded animals. A specific subgroup of total coliform bacterias is the fecal coliform collection. These organisms may be separated from the total coliform group by their ability to grow at elevated temperatures and are associated only with the fecal material of warm-blooded animals. Here in this study, the total and fecal coliforms as useful indicators of the existence of the pathogens in water were tested. The pathogens are microorganisms that can potentially cause health problems if humans ingest them.

The samples of 100 ml were taken in each season and used for the water testing from the point of inlet and two outlets. The results show that there was a high concentration for both total and fecal coliforms during the summer high above the standards of water use for irrigation, recreation, fishing, and swimming while the microbial contaminations were all in the good range for the other seasons. The presence of such a high level of contamination in summer indicates a potential health risk for all individuals that are

exposed to wetland water.

Conclusion

The ecosystem services provided by wetlands are often ignored during the planning and design stages for urban developments while wetlands can play a very important role to achieve sustainability in cities. So wetlands have the great potential to be included in urban planning as natural infrastructure for nature conservation, ecotourism, and recreation. The associated challenges in the urban environment were always the low quality of water and its environmental and hygienic considerations. A full year sampling was conducted at GoleNilofar wetland in Babol, to investigate the variation in its microbial contaminations for total and fecal Coliforms. The high level of the observed contaminations indicates that during the summer, a warning should be given to the visitors to keep themselves, kids, and their pets off the direct contact of water. At the official level also a specific regulatory should be taken and coordination should be developed among relevant government agencies that have a role in wetland planning to improve wetland conditions.

Keyword: Wetland Cities, urban development, Water quality, Babol.

References

Persian References:

- Ahmadi A. (2015). Modeling the fact and transport of nutrient contamination in wetlands, MSc Thesis, *College of Environment*, Tehran, Iran.
- Beheshty A.B., Loghmani, H. (2020). Analysis of effective criteria on happy city (Case study: District Two of Tehran), *Iranian Urbanism*, 3 (5), 24-33.
- Department of Environment, Islamic Republic of Iran, (2010), the office of human environment, Dept of water and soil, *Iran's water quality standards*, 5-12
- Mansouri, M. J., Khorsani, M.J, & Nematolah. D. (1985). Wetlands, values, and importance of them for humans, *Journal of Environmental Studies*, 13(13).
- Melekmohamadi, B., Jahanishakib, F., Yavari, A. (2016). Hydrogeomorphic Wetlands Classification to Determine Ecological Functions: A Case Study of Choghakhor Wetland. *Geography and Planning*, 20(56), 257-274.
- Movahed, k. (2006). Introduction to the principles of ecological cities. *Journal of Environmental Science and Technology*, 7(1), 95-105.
- Rajabisani, M. Ziari, K. (2020). Investigating the design tricks of residential settlements to improve environmental security, *Iranian Urbanism*, 3 (4), 36-49.

Latin References:

- Samsar Convection (2019), Good Practices Handbook for integrated urban development and wetland conservation, www.ramsar.org
- Kenworthy, J. R. (2006). The eco-city: ten key transport and planning dimensions for sustainable city development. *Environment and urbanization*, 18(1), 67-85.
- Suzuki, H., Dastur, A., Moffatt, S., Yabuki, N., & Maruyama, H. (2010). *Eco2 Cities: Ecological Cities as economic cities*. The world bank.
- Rusong, W. A. N. G., & Yaping, Y. E. (2004). Eco-city development in China. *Ambio: A journal of the human environment*, 33(6), 341-342.
- Register, R. (1994). Eco-cities: rebuilding civilization, restoring nature. *Futures by Design: The*

Practice of Ecological Planning.

- Wong, T. C., & Yuen, B. (2011). Eco-City Planning. *Policies, practice and design: Springer Science+ Business Media BV.*
- Cugurullo, F. (2016). Urban eco-modernisation and the policy context of new eco-city projects: Where Masdar City fails and why. *Urban Studies*, 53(11), 2417-2433.
- Bai, J., Cui, B., Cao, H., Li, A., & Zhang, B. (2013). Wetland degradation and ecological restoration. *The Scientific World Journal.*
- Gopal, B., & Sah, M. (1995). Inventory and classification of wetlands in India. In *Classification and Inventory of the World's Wetlands* (pp. 39-48). Springer, Dordrecht.

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