STATE OF ENVIRONMENT REPORT-HYDERABAD-2015

EXECUTIVE SUMMARY

From Bhagyanagar under the Qutb Shah Dynasty to being the jewel city of the Nizam's and present-day Greater Hyderabad it is known for rich culture and heritage. A mix of the ancient Hindu and Muslim Motifs, Mahals, Museums and eateries merge into the modern western trappings effortlessly. The blend of modernity with the old world charm is the most endearing aspect of Hyderabad. Hyderabad also called the "City of Pearls" because of its the pearl trade, is the sixth largest city in the country and its unique vivacity, accommodating and engaging cultural diversity and reasonable standard of life. Though it was moved from 139th to 144th rank in terms of the quality of living (Mercer's Quality of Living survey, 2017). However, Hyderabad city ranked first when compared to other cities in the country (Mercer's Quality of Living survey, 2018).

Hyderabad is the central administrative, industrial and commercial hub of the current Telangana state and of the erstwhile undivided Andhra Pradesh State. Its legal jurisdiction and domicile status of its citizens had come into sharp focus during the bifurcation of the state. Constitutional debates have shown that it was being considered as the second capital of the country. It's prominent standing in the world of information technology (IT) and IT-enabled knowledge hubs and as the most important center for life-science pharmaceuticals in the country is unparalleled. Today arts, commerce, education, entertainment, fashion, finance, healthcare, media, professional services, research and development, tourism and transport, all have been contributing to its rapid urbanization. Globalization is witness to Hyderabad becoming a preferred destination for MNCs (Multi-National Companies).

However rapid urbanization has led to a fragmented metropolitan. Though it has become place for the world-class facilities, addressing of issues pertaining to slums over a larger metropolitan region, traffic congestion, poor housing water and sewage facilities, scientific disposal of wastes, pollution of air, surface water and groundwater. Urban planning with a thought to Urban Ceiling Act to rehabilitate, rejig, retrofit the city to address these issues is envisaged.

Hyderabad's unique rocky topography of natural and man-made lakes dotted its landscape and all these drained naturally into the Musi. This unique feature not only maintained the cleanliness of the city, its biodiversity, its water table but was a key reason for its beauty and past glory. The lakes are increasingly been encroached upon and polluted and the Musi has today become the most polluted river streams in the country. The impact of the

eutrophication of the lakes and the unabated and unresolved pollution of Musi is by one estimate contributing to an adverse health impact on the citizens of Hyderabad.

Urban growth and Industrialization: From its origins as a small town, today Hyderabad surrounds nearly 650 km^2, and the larger metropolitan region extends up to 7228 km^2. The density of population in Hyderabad in 1961 was 266 persons/ km^2 that rose to over 18172 persons /km^2 by 2011. This compounded as stated earlier with a poor urban land assemblage policies has led to the growth of slums and unhygienic living conditions in several areas of the urban region.

Subsequently, the growth of the financial services sector has helped Hyderabad evolve from a traditional manufacturing city to a cosmopolitan industrial service center with a large share of micro and small industrial units including IT-related, engineering and pharma industries predominantly. The total number of industries in Hyderabad was 7,751 of which micro industries accounted for 56%, small industries 39%, large industries 4% and medium industries only 1%.

Change in the Land Use and Land Cover: the projected population is further expected to increase to about 19 million by the year 2041 in Hyderabad. Accordingly, Land Use and Land Cover studies (2011-2015) revealed that urban growth is observed at a rate of 2507.74 ha annually. There is a decrease of 4839.62 ha in cropland and 2755.51 ha of fallow land which in turn gets converted into urban growth. The highest construction of Roads was observed in Hyderabad during 2001-2015. About 1624.07 ha land is converted to Roads. Barren rocky / Stony waste has been decreasing at the rate of 749.63 ha as input for construction sites. Forest plantation has come down to 94.21 ha due to construction activities.

Road and Pavement Length: Urbanization has been accompanied also by a decrease in the road and pavement length. The number of vehicles in the city has been increasing every year but not the road space, adding to traffic congestion. Nearly six lakh vehicles of all categories were registered in Hyderabad in 2015. About 800 vehicles are being added every day, increasing the load on already congested roads. Road space is less than 12 % of the total geographical area of the city. A city with a vehicle population of over 40 lakh needs a road space of at least 20% of its total geographical spread (Central Road Research Institute, 2015). Though there has been an increase in road area during the study period, increase in vehicular strength is contributing to the traffic congestion in the city progressively. Hyderabad has less than 12% road space.

Decreases in Ground Water Table, Access to Water Resources and Climate Change:

Rapid urbanization is significantly altering the natural water sources and watersheds. In the last 12 years, Hyderabad has lost 3,245 ha of its wetlands. Not just the water bodies, even open spaces, green cover is rapidly shrinking within and around Hyderabad. Groundwater resource was over-exploited in Hyderabad, it is semi-critical in 10 Mandals in Ranga Reddy district and semi-critical in 7 and over-exploited in 14 Mandals in Medak district. This is indicative of the fact that the present state of urbanization in Hyderabad region and industrial development in Ranga Reddy and Medak districts has taken a toll on groundwater resource in this region. The population density and associated groundwater draft can be correlated to the occurrence of water levels at deeper depths in the region. In many places of the city, the depth to water level exceeds 20m during pre and post monsoon periods where population density is high. According to BIS 1172: 1993 & 1998, water requirement per capita/day was 135 LPCD. However, it is envisaged that water scarcity will be one of the problems to be resolved. The state government is planning to bring Godavari water at great cost to the city as the only sustainable solution.

Moreover, GIS technology reports (Samara National Research University, Russia) indicated that the vulnerability index of the city shows that it is under threat. The study revealed that Just 2.24 % of the city, or 32.28 km^2, is 'resilient' to hazards like climate change whereas 13.2 % (190.22 km^2) is "at risk'. The shortage of water resources and water availability are further exacerbated by climate events, greater monsoon variability, endemic drought, flooding, and resource conflict. Such climate-induced challenges of water scarcity and increases in water-borne diseases affect urban populations.

Uncontrolled urban sprawl in Hyderabad has affected not only the water resources, climate, and vehicular traffic but also one of its unique characteristic features: the beautiful rock formations in and around the city. The area around Hyderabad is covered by unclassified granites and granite gneisses of Achaean age. Because of their uniqueness in geology, they add value to the ecology of Hyderabad which is evident in the form of impressive landscapes. Geologists date the rocks back to 2.5 billion years. Geological formations in Hyderabad are facing a threat of being encroached upon to cater to the built space demand owing to urbanization. Hence expansion of the urban agglomeration in the city led to use of the hard rocks for construction purposes. Subsequently, it also influenced the ecology of water bodies associated with this rock formation leading to the disappearance of water bodies, loss of biodiversity and decrease in the number of gardens. In fact, the city lost its unique synergy between geology and ecology due to urbanization.

In the context of urbanization coupled with industrial development, it is very important to address various environmental issues that are being faced by Hyderabad city. It necessitates the framing of policies to improve everyday liveability in Hyderabad. Moving forward, interestingly, the urban recharge of the water component of groundwater in Hyderabad has been observed to be more than ten times higher than the natural recharge. Therefore, in order to address the impact of urbanization on the natural hydrological cycle, urban water recharge can be considered as a solution for urban water balance. Furthermore, sewage network and water supply system in Hyderabad needs to be maintained and improved to mitigate pollution of groundwater. In projects aiming at increasing use of groundwater, adequate analysis of the potential of existing aquifers must be conducted and no withdrawal above the mean annual total recharge rate should be allowed. Policy measures for accounting for groundwater withdrawal and proper analysis of water resources in the city is required. Such policy initiatives can serve as a basis for better sustainable urban planning to reduce the leakage losses of water and their impact on the environment. An adequate number of Sewage Treatment Plants, to ensure that clean water flows through Musi is the need of the hour not just from the historical aesthetic and cultural point of view but also from the health perspective as mentioned before.

Industrialization and population growth in Hyderabad raise concern about pollution of the environment. Environmentally induced respiratory disorders are found to be persistent in polluted areas. Incidence of respiratory disorders is greater in the study group when compared to controls at a statistically significant rate. It was also emphasized that the relative occurrence of respiratory disorders in the study population was found to be double the incidence when compared to control. Assessment of cancer incidence revealed that the occurrence of cancer in the study group to be 11 times higher than in the control group, which is statistically highly significant. Incidence of heart disease in the study group was found to be at least 16 times more than that of the control group.

Policies that assist in shifting the transport from private motorized means to clean mass transit will benefit the environment and public health. A specific electric or has based public transport mode called Bus Rapid Transit (BRT) which incurs moderate cost of implementation, relatively short implementation time, high quality of service, and capacity to move large numbers of passengers can be opted in the city. "Active Transport/ Non-motorized transport" include walking and cycling (and all other modes that have wheels but no engine such as pedicabs and freight tricycles), as well as related infrastructure, policies

and education is also a necessary solution for mitigating the environmental impacts of vehicular transport (which is currently contributing about 50 % of the total pollution load.)

The city has to go green by adopting a holistic approach for sustainable development in terms of green building concepts, renewable energy on roof tops, streets, offices and industries, efficient land-use, developing its developing its 129 Reserve Forest Blocks within the HMDA area as lung spaces out of which 70 are conservation blocks, 52 are Urban Forest blocks and remaining 7 are Ecotourism blocks around the city as lung spaces, reclaiming its lakes to former glory, promoting gardens including rooftop gardens, water recharging structures, shifting of industries out of Hyderabad, refurbishment of ancient heritage architecture as important landmarks. The need to revamp the slums, provide sewage and storm water drains, better waste management by having decentralized dumpsites located in cardinal directions serving specific zones, timely upgradation of biogas, vermicomposting and incineration plants based with advanced technologies, promotion of recycling of waste and by setting-up of waste to energy plants where feasible, building basic necessary flyovers and having a policy on parking spaces, registration of vehicles, green transportation of taxes to begin with is the way forward. Finally, have a master plan designed in collaboration with people and citizens groups for future population settlements along radial roads is perhaps the future of the city of Hyderabad.