

***A study on wastewater reuses practices and reuse potential in urban areas of Maharashtra – pilot case of developing wastewater reuse plan for Kolhapur***

*“The wars of twenty-first century will be fought over water”*

*-Ismail Serageldin*

*FAO's AQUASTAT database estimates that Over 2 billion people live in countries experiencing high water stress. (UN, 2018). Understanding the situational crisis and expanding over MDG's, the 2030 Agenda for Sustainable Development has an increasingly thorough objective for water, going beyond the issues of water supply and sanitation. Target 6.3 focuses on reducing the pollution of water resources and promoting recycle and reuse of treated wastewater. Today, 12 per cent of India's population is already living the 'Day Zero' scenario (Down to Earth, 2019). Considering the situation, the recently formed Jal Shakti ministry with an agenda to tackle water issues in a holistic and integrated perspective identifies wastewater reuse as one of its four major verticals to ensure water security. Recycling and reuse of treated wastewater are an important part of the sanitation cycle and critical in an environment of decreasing freshwater availability and increasing costs for delivering acceptable quality water supply to cities for multiple uses. The increased demand for drinking water from urban centers along with water demands by other economic sectors, climate variability and its implications has directly affected the availability of water resources. This combined with continued pollution of freshwater sources due to inadequate collection and treatment of the return flows, is today a statement of challenge and also a window of opportunity, i.e., to use the municipal wastewater generated in urban centers for productive use.*

*This research focuses on identifying these productive uses and its associated economic benefits for the state of Maharashtra. It also provides supporting information on the potentials and current practices of wastewater reuse on the lines of the state policy frameworks guiding the latter. Following this, the research also presents possible strategies for city and state policy makers to initiate the discourse on wastewater reuse in the local milieu for planned forward movement.*

*In the first part, an attempt is made to identify the water deficit areas of the state based on a detailed assessment of its river basins where wastewater reuse can be taken up on a priority basis. Followed by this, a detailed suitability study is conducted specifically for reuse in thermal power plants, industries and agriculture as these are known to be the biggest consumers of water resources in the state and also does fall in the priority list of reuse categories as mandated by the State Reuse Policy, 2017. This study is largely based on the qualitative and quantitative requirement for each of these usage types and matching it with the output quality and quantity of the nearest STP.*

*The second leg of the study is more of a working model of wastewater reuse plan for Kolhapur city on the lines of findings drawn from the state assessment. This part deals with probing the reasons for which Kolhapur should consider reuse its wastewater & also takes in account the associated benefits with the same . The reuse plan is developed by firstly identifying the best-fit areas for*

*reuse within the city followed by calculation of respective water demand based on data collected from site visits and stakeholder discussions. In the next step, a cost-benefit analysis is carried out for each potential reuse options, which could strike a balance between ULB and the buyer to generate a sustainable business model. On a whole, this plan proposes to reuse 31 MLD of water produced from both the city STPs which is equivalent to one third of the daily treated wastewater generation in the city.*

*As a part of the conclusion, taking cues from the case of Kolhapur, the study ends with a suggestive six-staged action plan that can help promote reuse of wastewater. Also, if the same is adopted at the state level in Maharashtra, wastewater reuse can be mainstreamed at an even larger scale fetching a host of tangible and intangible benefits and ensuring an overall water security and water resilience for the state in the future.*