

INTEGRATED SEWAGE TREATMENT AND COASTAL MANAGEMENT IN MUMBAI METROPOLITAN REGION

Sanjay RODE

*S.K.Somaiya college , University of Mumbai , India
sanjayrode@gmail.com*

Abstract

Urbanization in Mumbai Metropolitan Region has resulted in the growth of population, industrial and, commercial units. Municipal corporations are supplying drinking water to population and all other units. Water is used for different purposes and activities. Water related activities generate sewage in metropolitan region. Municipal Corporation of Greater Mumbai generate highest where as the Mira Bhayander Municipal Corporation generates lowest sewage. All the municipal corporations do not treat entire sewage. The sewage is discharged in rivers and sea. It has severe effect on the health of people and marine resources. The least square regression shows the positive correlation of sewage with population, industrial units and health care institutions. The sewage generation will rise in future because of growth of urbanization and number of units. Therefore Municipal Corporation must increase the sewage treatment capacity and do the budgetary provisions through issue of debt instruments. Environment education, behavioral change among people will help to reduce the sewage generation. Compulsory sewage treatment of Municipal Corporations will improve the health and environment across the region.

Keywords: Infrastructure, Treatment, Health

REFERENCES

- Abdel-Halim, W., Dirk Weichgrebe, K.H. Rosenwinkel and Johan V. (2008). "Sustainable sewage treatment and re-use in developing countries" Paper presented in twelfth International water technology conference, IWTC, 12, 2008, Alexandria, Egypt- 1397.
- Connor, Richard and Hannah Stoddard (2012). "Recognizing the centrality of water and its global dimensions" in the United Nations World Water Development Report, Volume 1, Published in 2012 by the United Nations Educational , Scientific and Cultural Organization , Paris, SP, France.
- Coulibaly, L.J., Kouakou, I. S. and Germain G. (2008). "Domestic wastewater treatment with a vertical completely drained pilot scale constructed wet land planted with *Amaranthus hybridus*" African Journal of Biotechnology Vol.7 (15) pp-2656-2664, 4 August 2008.
- CSP (2012a). "City sanitation plan for Bhiwandi-Nizampur city Municipal Corporation" Submitted to ministry of urban development, GOI through water supply and sanitation development, government of Maharashtra, March 2012.
- CSP (2012b). "City sanitation plan for Mira-Bhayander Municipal Corporation" Submitted to ministry of urban development, GOI through water supply and sanitation development, government of Maharashtra, March 2012.

- Dhinadhayalan, M. and Arvind Kumar N. (2012). "Decentralized wastewater management – new concepts and innovative technological feasibility for developing countries" Sustainable environmental Resources, 22(1), 39-44 (2012).
- ESR (2010a). "Environment status report for Thane Municipal Corporation" March 2010, for MPCB.
- ESR (2010b). "Environment status report for NMMC" Navi Mumbai, India, 2010.
- Farahani, Hossein Aliabadi (2011) "The effect of irrigation by pollution water on flower yield in Saffron at Iran" Paper presented at International Conference on Technology and Business Management, March 28-30, 2011.
- Gayathri Devi, Mekala, Brian Davidson, Ane-Maree Boland (2007). "Economics of waste water treatment and recycling: An investigation of conceptual issues" A paper presented at 51th annual conference of Australian Agricultural and resource economics society Queenstown, New Zealand, 13-16 February 2007.
- Gayathri Devi, Mekala, Brian Davidson, Madar Samad and Anne-Maree Boland (2008). "A framework for efficient waste water treatment and recycling systems" Working paper no-129, International Water Management Institute.
- Greene, William H. (2003). "Econometric Analysis" Fifth edition, Pearson Education Private, Ltd, Indian branch, Delhi, India.
- KDMC (2010). "Environment status report 2010-11" Kalyan-Dombivali Mahanagar Palika, Kalyan, Maharashtra.
- Massoud, May A., Akram Tarhini Joumana A. Nasr (2008). "Decentralized approaches to wastewater treatment and management: Applicability in developing countries" Journal of environment management 90 (2009) 652-659.
- McCullough, James S., David H. Morean, Brenda L. Linton (1993). "Financing wastewater services in developing countries" Watch technical report 80, prepared by the office of Health Bureau for research and Development, U.S. Agency for International development under Wash, task No. 386. October 1993.
- MCGM (1995). "Mumbai City Development Plan 2005-2025", Mumbai, India.
- Neason, M., H.T. Odum, M.T. Brown A. Alling (2001). "Living of the land" Resource efficiency of wetland wastewater treatment" Adv. Space. Res. Vol. 27 no. 9 pp-1547-1556, 2001.
- NIUB (2008b). "Appraisal of city development plan Kalyan-Dombivali", June 2008, New Delhi.
- NIUB (2008a). "Appraisal of city development plans Mira- Bhayandar", July 2008, New Delhi.
- NNMC (2006). "New Mumbai Municipal Corporation City Development Plan", April 2006, New Mumbai, Maharashtra.
- Okoh, Anthony I., Emmanuel E. Odjajare, Etinosa O, I gbinosa and Augustina N. Osode (2007). "Wastewater treatment plants as a source of microbial pathogens in receiving water sheds" African Journal of Biotechnology, vol. 6 (25) pp 2932-2944, 28, December, 2007.
- Tendulkar, M., Uemura, I. Machdar, A. Ohashi and h. Harada (2005). "A low cost municipal sewage treatment system with a combination of UASB and the "fourth generation" down flow hanging sponge reactors" water science and technology" Vol. 52 no. 1-2 pp323-329.
- TMC (2006). "Thane Municipal Corporation City Development Plan", April 2006, Thane.

UMC (2006). "Ulhasnagar Municipal Corporation City Development Plan", April 2006, Ulhasnagar.