Will Cutting-Edge Technologies Enhance Wastewater Management Services? A Palestinian Experience

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Abstract: The Palestinian communities face water availability challenges due increase in population growth, rapid industrial development, annual degradation and impact of climate change. Currently, wastewater management services are struggling with diverse problems including technical efficiency, economic profitability, and financial sustainability of wastewater treatment facilities. Policy makers envisage the establishment of low-cost, innovative, efficient and sustainable wastewater treatment and reuse schemes in urban and rural communities. This study raises relevant questions pertinent to what type of wastewater technologies are preferable. What sustainable criteria are necessary for the judgment on efficacy, reliability and availability of the technology installed? In the present study, we present the experience gained in two case studies, Alteereh membrane bioreactor (MBR) and Nablus West wastewater treatment plant. The available monthly reports are evaluated regarding the technical efficacy; economic profitability and financial sustainability of both case studies. Albeit the sanitation relevance for both cases, the results show that both treatment facilities lack optimal utilization of the available reclaimed water and stabilized biosolids. The current management practice at Nablus West WWTP warrants deep analysis compared with a private management contract of Alteereh MBR. The taxation exempt, a unilateral decision by the Israeli water authority exerts additional financial burdens on Nablus municipality. The uncontrolled discharge of industrial wastewater in Wadi Zaimer, mixing with treated effluent from Nablus West WWTP, makes the financial and economic profitability questionable. In addition, there are no specific decision making tools to monitor and track the impacts of illicit industrial discharges on the treatment processes in both case studies. The limitations of some monitoring tools developed in this study need further investigations. Enhanced water-land-food-energy security in Palestine urges water policy makers to balance the profitability with water resources protection and ecosystem sustainability. Finally, the study draws the conclusions and the possible future scope aiming at achieving sustainable sanitation and reuse schemes in Palestine.

Keywords: wastewater management, innovative technologies, sanitation sector, sustainability