

## Global Summit on ENVIRONMENTAL HEALTH

October 10-11, 2022 | Webinar

**Greening Urban Areas with Decentralized Wastewater Treatment and Reuse: A Case Study of Ecoparque in Tijuana, Mexico****Gabriela Muñoz Meléndez<sup>1</sup> and Lina Ojeda-Revah<sup>1</sup>**<sup>1</sup>*El Colegio de la Frontera Norte, Mexico*

In rapidly growing urban areas, such as Tijuana, Mexico, the presence of urban green spaces (UGSs) can help stem soil erosion, improve infiltration, slow runoff, decrease flooding, reduce air pollution, and mitigate climate change. In many water-scarce parts of the world, where centralized wastewater treatment is not accessible or practical, decentralized wastewater treatment systems (DEWATSs) have the potential to supply the water needed for irrigating UGSs. Here, we first review UGS systems supported by DEWATSs and the water quality guidelines and challenges associated with implementing DEWATSs for urban greening in different countries, including Mexico. We also critically examine the linkages between the lack of UGSs in Tijuana, Mexico, extensive soil erosion, and failing sanitation infrastructure that has led to the infamously poor water quality in the Tijuana River. Tijuana's Ecoparque Wastewater Treatment Facility, a low-energy, aerobic DEWATS, which collects, treats, and discharges residential sewage for localized landscape irrigation, demonstrates how DEWATSs can meet the water demands for urban greening in rapidly urbanizing cities. The aerobic decentralized treatment using a gravity-fed trickling biofilter resulted in a >85% removal of chemical oxygen demand and dissolved organic carbon. Prior to treatment facility upgrades, there was a ~2 log reduction in total coliform and *Escherichia coli* and a <20% decrease in ammonia from the influent to final effluent. After the addition of a maturation pond in 2020, the effluent met Mexico standards for irrigation reuse, with a ~4 log reduction in fecal coliforms from the influent to final effluent. Case study results demonstrated the potential for decentralized wastewater treatment to meet effluent standards for landscape irrigation, provide water for urban greening, and prevent pollution in the Tijuana River and other urban waterways.