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Nota di contenuto	Introduction to microbial niche nexus sustaining biological wastewater treatment -- Establishment of microenvironments with substrate gradients -- Emerging challenges for biological wastewater treatment -- Microbial niche nexus -Future growth, perspectives and challenges -- Development of wastewater treatment plants based on microbial niche-based design -- Enhancing microbial cooperation within the microbial niche nexus-based system through co-enrichment of r/K-

strategists -- Strategies for emerging compounds removal through microbial niche tuning -- Synergistic removal of toxic contaminants from effluent -- Microbial ecology to manage processes in environmental bio-technology. Resources recycling and energy recovery from industrial effluent -- Recycling of waste into useful material and their energy applications -- Substrate-based microbial niches and their applications in wastewater treatment -- Energy-nutrients-water nexus: integrated resource recovery in treatment plants -- New directions in biological nitrogen removal and recovery from industrial effluent -- Advanced technologies in desalination and wastewater treatment -- Recent developments to improve industrial wastewater treatment and reuse -- Sustainability approaches for sludge management including energy generation and disposal -- Emerging technologies for nutrient and resources recovery from industrial waste -- Environmental protection & pollution prevention of emerging contaminants in industrial effluent -- Advanced developments in microalgae for biofuels, value-added products, and energy production -- Development of innovative green technologies for waste to energy conversion technologies -- Bioelectrochemical systems for energy production and Useful resource recovery for sustainable future -- Ecofriendly technologies for sustainable water treatment Oppurtunities of open access data and big data analysis for Environmental communication -- Sustainable consumption and green practices: Case studies -- Innovative bio-greentechnologies for sequestration of Carbon dioxide and utilization for sustainable energy -- Sustainable development in green syntheses of materials from industrial waste -- Water-energy- Environment nexus approach as a rallying point for sustainable future -- Climate Change Adaptation: Geological Aspects -- Does environmental engineering concents really help rural industrial development? -- Does managing the water-energy-environment nexus is very important to India’s future? -- Microbial Fuel Cells—A Sustainable approach for simultaneous clean energy production and wastewater treatment -- Artificial intelligence in wastewater treatment and sludge management -- Sustainable upgrading biological effluent treatment based on anammox technology.

Sommario/riassunto

In most of the industries, industrial effluent treatment plants are playing vital roles to ensure the efficient management of industrial effluent for supporting sustainable development of our society. Due to the technological development, new concepts about future wastewater management are being incorporated by process industries in the whole world, including recyclable resources and energy/nutrient recovery from industrial effluent, etc. However, conventional treatment methods including biotechnological methods used in treatment plants are facing a lot of difficulties due to the strict discharging norms and coming out of new-fangled pollutants. Recently, a novel concept microbial niche nexus sustaining biological wastewater treatment was introduced, which can accomplish the significant removal of toxic emerging pollutants by different microbial communities, with the concern of other components like integrated and healthy ecosystem. The book focuses on research related to future potential and progress of microbial niche-based environmental biotechnology such as microbial enrichment, microbial function, system design, new technological developments and its applications. Besides, the book reviews important interconnections between water, energy, and the environment as security in water and energy, and the environment is associated with human beings, natural resources, economic, and environmental sustainability. In addition, the book describes innovative green technologies with the aim of enhancing the present state-of-the-art

technologies in the various fields like water, energy, the environment, and the related potential fields of industrial wastewater treatment.