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Waste-to-Biofuel Integrated System and Its Comprehensive Techno-economic Assessment in Wastewater Treatment Plants

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Waste-to-Biofuel Integrated System and Its 1 **Comprehensive Techno-economic Assessment in** 2 **Wastewater Treatment Plants** 3 Chunhua Xin^{a,b}, Min M. Addy^b, Jinyu Zhao^c, Yanling Cheng^b, Yiwei Ma^b, Shiyu Liu^b, 4 Dongvan Mu^d, Yuhuan Liu^e, Paul Chen^b, Roger Ruan^{b,e,*} 5 ^a School of Management, China University of Mining and Technology (Beijing 6 Campus), Ding 11 Xueyuan Road, Beijing 100083, China. 7 ^b Center for Biorefining and Department of Bioproducts and Biosystems Engineering, 8 9 University of Minnesota; 1390 Eckles Ave., St. Paul, MN 55108, USA. ^c School of Economic and Management, Beijing University Of Civil Engineering And 10 11 Architecture, No 1 Zhanlan Road, Beijing 100044, China. ^d School of Environmental and Sustainability Sciences, Kean University, USA. 12 ^e The MOE Engineering Research Center for Biomass Conversion, Nanchang 13 14 University. 235 Nanjing Road, Nanchang, Jiangxi 330047, China. 15 * Corresponding author, Distinguished Guest Professor, Nanchang University, and 16 Professor and Director, University of Minnesota, St. Paul, Minnesota, USA. Tel.: +1 17 612 625 1710; fax: +1 612 624 3005. E-mail address: ruanx001@umn.edu (R. Ruan). **ABSTRACT.** Combining wastewater treatment and biofuel production is considered the 18 19 cost-effective way for better waste remediation and lowering the environmental impact for biofuel production. In this study, an innovative integrated system 20 incorporating sludge, scum and centrate treatment and biofuel production was 21

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