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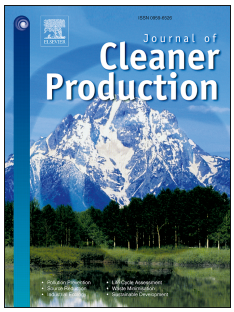

Modeling and dynamic assessment on sustainable development of drainage enterprise: Application of a coupled system dynamics-comprehensive assessment model

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Modeling and Dynamic Assessment on Sustainable Development of Drainage Enterprise: Application of a Coupled System Dynamics- Comprehensive Assessment Model

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Abstract：The operating efficiency, operating performance and service quality of a drainage enterprise are determined by its sustainable development level. Sustainable development is a dynamic process affected by many factors and their complicated interaction. Compared with regular assessment methods, which are usually static and discontinuous, this research applies the system dynamics (SD) method to study the dynamic process that controls the sustainable development of a drainage enterprise. This assessment can be achieved through building a dynamic feedback mechanism among operable factors, simulating the dynamic evolution process of each effect factor within a continuous time and combining a comprehensive assessment model. A case study is presented that can help drainage enterprise stakeholders to strategically understand the possible effects of policy implementation. In addition, three different sustainable development scenarios are presented, which were designed and simulated through the setting the key variables. These three variables are investment in environmental protection, wastewater treatment fees (yuan/m^3) and the growth rate of wastewater treatment capacity. The assessment results show that long-term sustainable development of a drainage enterprise is best served by improving the

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