

## **Fuzzy Data Reconciliation in Life Cycle Inventory Analysis**

Raymond R. Tan ([tanr\\_a@dlsu.edu.ph](mailto:tanr_a@dlsu.edu.ph)); Alvin B. Culaba ([culabaa@dlsu.edu.ph](mailto:culabaa@dlsu.edu.ph))

Data uncertainty is a critical issue in life cycle inventory analysis (LCI). Recent work has demonstrated that fuzzy mathematics provides a computationally efficient alternative to probabilistic methods for representing data uncertainty. A related problem is the utilization of different, and potentially conflicting, LCI data sources such as physical measurements, estimates or databases. A fundamental requirement of a valid LCI is that the data must not violate material and energy balance principles; however, data from diverse sources may result in inconsistencies. Normally such inconsistencies in LCI data can be addressed through the use of data reconciliation methods based on probability theory. This paper presents an alternative data reconciliation method based on fuzzy mathematical programming. A simple LCI case study is included to illustrate the methodology.

Center for Engineering and Sustainable Development Research  
College of Engineering  
De La Salle University-Manila  
2401 Taft Avenue, 1004 Manila, Philippines

Tel. No. +63-2-536-0257

Fax. No. +63-2-524-0563