

Industrial symbiosis in Tanzania: a case study from the sugar industry

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Abstract

The concept of industrial symbiosis (IS) offers enormous potential for more sustainable manufacturing processes. This paper sets out to explore the IS forms occurring at a case study of the Kilombero Sugar Company Limited (KSCL), the largest sugar refinery in Tanzania; and identify the underlying factors based on the data collected through key informant interviews, observational site visits, and relevant documentary reviews. Findings reveal an evolving IS network at KSCL involving physical exchanges of bagasse, molasses, filter cake, and boiler ash and utility sharing among seven co-located units. Through these modest internal IS arrangements, KSCL has optimized resource use, thereby minimizing negative environmental impacts inherent from emissions, as well as generating additional revenues from resource recovery, in particular the alcohol distillery unit. Results also show that KSCL's industrial ecosystem is fragile due to limited functional and structural diversity. We identify several drivers and barriers as possible leverage points. The lessons from KSCL are expected to provide a valuable reference for IS development in Africa.

Keywords; Africa, industrial ecosystem, industrial symbiosis, Tanzania

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