

Lapaks and Bandars Convert MSW in Indonesia

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In Jakarta, Indonesia – where 5,000 tons of MSW are generated daily – the primary source of income for a growing portion of the population is tied to collecting, processing and marketing recyclables. Often called “scavengers,” these people collect and deliver glass, paper, cardboard, metals and wood too small entrepreneurs known as “lapaks,” who sort, clean and bundle. The scavengers earn steady incomes that typically exceed the average wages of unskilled factory workers in Jakarta. Often the lapaks will sell their different streams of recyclables to brokers or specialized middlemen known as “bandars” who purchase particular materials from the lapaks and transport and resell them to factories where they are recycled.

Research has shown that this informal system may capture anywhere from 88 to 98 percent of these higher valued materials. What remains is primarily organic in nature. It became evident that with the right approach a large fraction of this remaining waste could be captured, processed and sold as a valuable soil amendment, and done in a manner that would not work against but be compatible, with the already existing urban recycling system. The basic premise for how best to intervene to improve the solid waste management system in Jakarta was that value resides in the organic portion of the waste and composting was a way to realize this value. The challenge was to adapt an approach to the constraints of a relatively capital poor but labor rich country where available space within the cities was already quite constrained.

During the past several years, an advisory team from the Harvard University’s Institute for International Development (HIID) and research staff from Indonesia’s Center for Policy and Implementation Studies (CPIS) explored the technical and economic viability of small-scale operations for the composting of municipal solid waste. An interdisciplinary task, this research involved the cooperation efforts of experts in solid waste management, biology, economics, agriculture, information systems management, social anthropology, and urban planning.

Under this cooperation, improved methods for the recycling and processing of MSW were introduced in Jakarta. The first phase of this project was to develop an urban composting process that had rapid throughput, could fit on a constrained site, utilize indigenous materials, was labor intensive, could operate in a densely urbanized environment with a minimum of nuisance conditions and would result in a high quality soil amendment product. In addition, the process not only had to work technically but also economically since it was assumed that the private informal sector, not the formal public sector, would be the operators of such facilities. As such, an experimental station was established in November 1989 to: 1) Develop a composting technique best suited to Jakarta’s conditions (its waste streams, climate, and labor surplus economy); 2) Study the cost of producing compost with the technique developed; 3) Develop a training

methodology for future compost workers and managers and 4) Investigate the economic uses of compost and the nature and potential size of the compost market.

By late 1990, preliminary technical and financial results emerging from the experimental station were sufficiently encouraging to justify the establishment of pilot projects at four locations in Jakarta. These projects known as Enterprises for Recycling and Compost Production (ERCPS), are operated by private entrepreneurs, existing lapak operations. The lapaks were chosen as the best place to site these new composting operations because the managers were already seasoned entrepreneurs who had successfully managed employees and a business. In addition, these individuals were well acquainted with handling the waste stream and knew what it took to successfully market materials. In addition, the compost production would provide another revenue stream and employ additional informal sector poor.

This second phase of the research, development of pilot projects, was assisted by CPIS through the provision of partial startup grants, technical assistance, worker training, and a guaranteed purchase arrangement for the compost produced (that has yet to be exercised by any of the pilot projects because of strong private demand). The Jakarta city government also assisted the pilot projects by securing their access to suitable land and by arranging for the daily delivery of fresh garbage to the ERCPS and the removal of noncompostable residuals and hazardous materials as these accumulate. Thus far, the pilot projects are demonstrating that high quality compost can be produced by private enterprises at a relatively low cost.

ERCPS are not intended to solve the entire urban waste problem in large cities. A typical ERCP in Jakarta processes about three tons of raw waste per day, although larger ERCPS can also be established. ERCP size depends on land availability, on the supplies of labor and waste, and on demand for compost. The ERCP system is specially designed to be flexible and to be complementary to other systems of waste management. Thus, if Jakarta's 260 officially designated local municipal units had an average of one ERCP, they could handle about 10 percent of the city's solid waste; if there were an average of three, then 30 percent of the solid waste could be handled in this way.

Initial results point to the fact the ERCPS can be privately profitable, and that government interventions can be limited to research, training, help in dissemination of the idea, and assistance in arrangement of any required permits. The ERCP system is flexible in that arrangements for waste delivery and site location can be made either with the local government or privately, as appropriate to the particular circumstances. The system is also flexible in the sense that ERCPS can be developed in some areas of a city and not in others, as deemed appropriate for particular conditions; ERCPS are also easily movable from one site to another.

The HIID team is now exploring the expansion of the ERCP approach to other developing countries which have labor surplus economies. The purpose is to assess ERCP potential and explore possibilities for collaboration with in country counterparts on ERCP development.