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CITYSPACE by Christopher Choa

trashy shanghai

waste not, want not

When the humble plastic bag was introduced to Shanghai in the 1970s, consumers found it so useful that they saved it, washed it and reused it. Since then, of course, plastic bags have become so ubiquitous that they've contributed to disposal problems as the rate of trash production has increased in step with the booming economy. Handling trash is an important, if unsung, task of urban planning, albeit one that most people prefer to have performed out of sight.

The stats

Shanghai residents produce 15,000 tons of garbage daily - 400 kg per person - the majority of which is buried in open landfills. Although the average American tosses out double that amount, Shanghainese are catching up at an alarming rate. Interestingly, organic food waste makes up 60 per cent of Shanghai's municipal trash by weight, compared with around nine per cent in a city like New York. Thanks to scavenging, some products are pulled out of the waste stream before they are dumped. Paper waste, for example, amounts to only around four per cent of total waste domestically, compared with 30 per cent in the West, while metal accounts for just 0.4 per cent, or one-tenth that of the West. On the other hand, China produces ten times as much inorganic waste (brick, tile, coal, ash, and concrete dust) as developed countries.

The cover-up

Most of Shanghai's trash is loaded onto open barges along Suzhou Creek, and towed to suburban landfills or incineration plants. A visit to one of these transfer stations is less than gratifying, given the high proportion of wet food waste. But creative design has come to the rescue. China's first urban sunken transfer station, located on the bank of Suzhou Creek, handles more than 400 tons of trash daily. As part of the ongoing rehabilitation of Suzhou Creek, a 5,000 sqm. waterfront park is planned on the site of the original transfer station. A dozen other stations along the river will be moved underground and covered by landscaping.

The big fill

China produces about 145 million tons of household garbage annually, of which 90 percent is dumped untreated into landfills, causing serious air and water pollution. These sites also burp out "landfill gas", principally methane, which has a potential greenhouse effect twenty-one times that of carbon dioxide. Yet Shanghai's newest landfill is set to become a technological savior. Located south of the Pudong airport, Laogang Phase IV, measuring four sqk., boasts leachate treatment and systematic compaction facilities. What's more, the gas control system captures the methane gas and converts it into electricity. When completed, the entire landfill will be hermetically capped, covered with topsoil, landscaped and transformed into recreational parkland.

Up in smoke

Trash incineration is popular in Shanghai because the incineration plants occupy less space than landfills and have the potential to generate electrical power. However, due to the high food and inorganic waste content, Shanghai's trash produces one-sixth the heat value of trash from, say, Vancouver. Worse still, many local incineration plants are rudimentary affairs that spew carcinogenic dioxin fumes. But once again, Pudong leads the way: the garbage produced daily by its one million residents is processed at China's first large-scale incineration power plant. Located in the Yuqiao Industrial Park, this plant can generate enough electricity for 100,000 households. More importantly, the furnace operates at 800 degrees Celsius, the temperature at which dioxin safely decomposes.

Recycling the future

Forget the Kyoto Protocol; recycling is the real key to a cleaner environment, and a profitable one to boot. Shanghai has large-scale digesters, for instance, that swallow sorted trash, add chemical fertilizers, and then sell the resulting agricultural compost. Scrap paper and metals enjoy a booming trade and methane produced from waste is sold for power generation. Pudong's Yuqiao incinerator plant generates about 250 tons of ash daily that is reprocessed into cement for construction. Indeed, trash is big business, and China's Construction Ministry has invited a number of foreign-funded enterprises and NGO's to help with the cleanup. Now where did I put that plastic bag? ■

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an architecture and development firm*