Waste Management in China: Issues and Recommendations

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Scale of the Problem

- China recently surpassed the U.S. as the world’s largest MSW generator.
- In 2004 the urban areas of China produced approximately 190,000,000 tonnes of MSW.
- By 2030 this amount will increase to at least 480,000,000 tonnes.
- No country has ever experienced as large, or as rapid, an increase; the implications both domestically and internationally are enormous.
How much is China’s MSW Projected to Grow?

How does this compare to the next largest producers?
Critical Issues for China

**Waste Quantities:** Unsurpassed rate of growth in waste generation, dramatically changing composition, and minimal reduction efforts.

**Information Availability:** Lack of reliable and consistent waste quantity and cost data makes planning for waste management strategies very difficult.

**Decision-Making Process:** Lack of consistent policy and strategic planning toward technology selection, private sector involvement, cost recovery, inadequate public access and participation in planning process.

Critical Waste Issues for China

**Operations:** Facilities do not always meet design standards, particularly in pollution control. Facility operations are deficient and waste collection operations are often not rationalized.

**Financing:** Inadequate cost recovery through user charges and tipping fees.

**Institutional Arrangements:** Inadequate decentralization of collection and transfer services, inadequate municipal capacity for technology planning and private sector involvement, inadequate clarity on mandates between government agencies, and inadequate delineation between central and local government responsibilities.
Critical Waste Issues for China

Private Sector Involvement: The government’s goal of increased private sector participation is hindered by unclear and inconsistent ‘rules of engagement’, non-transparent purchase practices, non-sustainable subsidies, inadequate municipal cash flows, unclear and inconsistent cost accounting practices and an unclear regulatory framework.

Carbon Financing: Increasing in importance in the Chinese MSW sector. Chinese cities could generate as much as $1 Billion per year from the sale of carbon emission reductions, resulting from landfill gas recovery, composting, recycling and anaerobic digestion. The opportunity may however be time limited so quick interventions are needed, i.e. the Umbrella Fund.

Key Recommendations Made in the Report

Waste minimization should be a key priority to MSW planning in China:

- China needs to move up the hierarchy of waste management, achieving more waste reduction, reuse, recycling, and recovery (composting and digestion), thus minimizing the amount of solid waste disposed.

- Particular emphasis is needed for the organic fraction of the waste stream (which will be >50% of the total waste stream in the foreseeable future) and for paper (the fastest growing component in the waste stream).

- The recycling industry needs to be improved: professionalization, improved product standards, market development and better operating standards.
China’s Waste Composition

**Key Recommendations Made in the Report**

**Landfills need urgent attention:**

- Improvements in the overall operating conditions are needed: must be sloped to minimize leachate, developed in stages, and operated according to international standards for “sanitary landfills”.

- More attention needed on post closure uses of landfills, i.e. seen as an integrated and needed land use- golf course or green spaces.

- Chinese cities will most likely need an additional 1400 landfills over the next 25 years.
Key Recommendations Made in the Report

Consistent national policies on MSW legislation are needed:

- Policies should encourage cross-jurisdiction and inter-agency coordination, and facilitate implementation of economic instruments for improving waste management.

- An integrated sustainable waste management approach with a long-term objective of waste segregation is needed. The approach should involve key stakeholders in the planning and decision-making process and should take a holistic view of the entire system: waste minimization, collection, transfer, treatment, recycling, resource recovery and disposal.

Key Recommendations Made in the Report

Special attention must be given to technical issues:

- **Composting**: May increase in importance, however product marketing requires that compost quality be reviewed and marketing programs established.

- **Incinerators**: Are growing in popularity but usually growth is driven by artificial subsidies and non-transparent financing structures, as well as a lack of understanding and experience about incineration facilities. Incinerators must meet Japanese-EU emission standards for dioxin and mercury, and should have sufficient level of operating training. Cost-benefit analysis should be performed in all cases.

- **“Special Wastes”**: Increased planning and service provision needed for hazardous wastes, demolition waste, medical waste and other problematic wastes: batteries, diapers, etc.

- **“Brownfields”**: These will grow in importance in cities as they continue to affect public health, environmental quality and land value. There are approximately 5,000 of these sites now in Chinese cities. Costs of cleaning these sites are significantly higher than costs of disposing waste properly. This is an area poorly understood in China.
Key Recommendations Made in the Report

Encourage 'Pilot' cities to introduce Replicable Sustainable Models

- The pilot should aggressively pursue waste minimization strategies, generate credible and comprehensive waste management data (especially costs and quantities), and serve as 'centers of excellence' for waste management technologies, policies, and training in China. The pilots should provide venue to develop long-term management plans, i.e. over 20 years.