

# Waste not, Want not

The city of Fort Worth in the United States produces 2,278 tonnes of waste (the weight of 380 elephants) each day. Jakarta's daily waste would fill a full-sized soccer pitch 3.5 metres deep - while the people of Asia's towns and cities would together bury the same pitch under 3,780 metres of rubbish every day (the equivalent of 12.5 Eiffel Towers, stacked one on top of each other).

City dwellers generate two to three times more trash than their rural counterparts, mainly due to increased consumption of pre-packaged goods. In a world expecting to see more than 5 billion - two out of every three people - living in urban areas by 2030, already strained municipal waste management systems will be hard pressed to cope.

Developed countries are running out of space to contain growing volumes of consumer discards, while developing countries lack appropriate systems and infrastructure to service their populations. In many parts of Africa, Asia and Latin America, informal garbage collectors clear more refuse than do municipal employees.

Historically, cities have dumped, burned or buried their waste. Dumping and burning are widespread in places with poor collection and sanitation services, particularly in slums and squatter settlements. Lacking proper facilities, residents have no other option but to dispose of their waste as best they can: usually burning flammables and

tossing the rest into rivers, ditches or streets. Uncontrolled decomposition of food and human waste helps spread diseases like diarrhoea, typhoid, cholera, dysentery, tuberculosis and malaria, while fumes from open fires damage lungs and release harmful pollutants into the air.

In wealthier areas, residents pay for garbage removal to landfills and incinerators, both of which can cause human and environmental damage through groundwater contaminants, emissions of methane (a greenhouse gas) and cancer-causing dioxins. And while conscientious citizens often choose to recycle, public apathy and high operational costs can diminish the effectiveness of these programmes.

In 2000, the world's people produced 12.6 billion tonnes of waste, more than 2 tonnes for every one of us; by 2050, we will face a projected 26.7 billion tonnes each year, nearly 3 tonnes per person. Unprecedented volumes of paper, plastics,

textiles, cardboard, glass, metals and organic mass - just to name a few - will need to be got rid of somehow.

Fortunately, scientific advances and the application of common sense can help to reduce and reuse the messes we create.

Clean power plants already operate in Brazil, Argentina, Chile and Venezuela, turning biomass (plant and organic matter) into



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Santa Clarita in California, USA, that separate and sanitize the plastics, wood fibres and super absorbent polymers contained in them. These raw materials are then sold to manufacturers for reincarnation as shoe insoles, roof shingles, oil filters and wallpaper.

From state-of-the-art procedures to simple innovations, solutions for waste management exist. A

few have been adopted quickly, while others may take some getting used to – as Ethiopian Almaz Terrefe can attest. Her home-grown vegetables certainly are tasty, yet in seven years she has only attracted about 300 other people to try her organization's system of food production through ecological sanitation – using treated human waste as fertilizer.

electricity for over 5 million customers.

In the United States, more than 6,000 cities have adopted Pay-As-You-Throw programmes that charge residents based on the number and sizes of trash containers collected. By increasing the cost of garbage disposal and keeping recycling fees low or free, cities like Falmouth, Maine and Mount Vernon, Iowa, have seen solid waste decrease by more than 35 per cent. Dover, New Hampshire, reduced annual waste by over 7,000 tonnes for eight years running after switching to the scheme, and increased recycling levels more than 50 per cent.

Even soiled nappies can be remade into useful items through clever technology. Knowaste, a New York-based company, runs two processing facilities in Arnhem in the Netherlands and

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## LIFE on the tip

Cuts, bruises, infections and fights with wild pigs and dogs are daily occupational hazards for 13-year-old Yashoda and 10-year-old Rukrnini. Along with their mother, aunt, grandmother and 12,000 other women and children from their slum in Pune, India, the sisters set off early each morning for nearby rubbish dumps, where they earn their living recycling others' trash.

Up to 2 per cent of the developing world's urban population survives by scavenging. They come from the most disadvantaged and vulnerable segments of society. Each day 20,000 waste pickers scour every square metre of Calcutta's municipal dumps, sorting and collecting bottles, cardboard, plastic, metal and other materials for reuse and resale. This scene is recreated each day in rubbish sites from Cairo and Manila to Lagos, Lima and Baghdad.

Work-related disease, injury and social stigma all take their toll – in Mexico City, dumpsite pickers have a life expectancy of 39 years, compared with 67 years for the general populace. Pay generally varies but rarely rises above \$2 a day (one notable exception is Beijing, where rubbish pickers make three times the salary of university professors).

Encouragingly, scavenger cooperatives are springing up across Latin America and Asia to empower the poor, combat exploitation and reward entrepreneurial initiative. Once organized, many groups are able to negotiate reasonable prices for their goods from middlemen and even win contracts from local governments. In Colombia, a non-governmental organization called the Fundación Social helps rubbish pickers to form cooperatives and provides grants, loans and legal and business advice to newly formed ventures. Similar networks are in place in Argentina, Brazil, India, Indonesia, Mexico and the Philippines.



photo: Thomas Aledro/UNEP/Topham