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FOOD IN, FIZZ OUT

Pepsi's scorching growth in foods has come at the cost of its cola business

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Stinking

THERE'S MONEY IN THOSE MOUNDS OF GARBAGE – AND SEVERAL COM

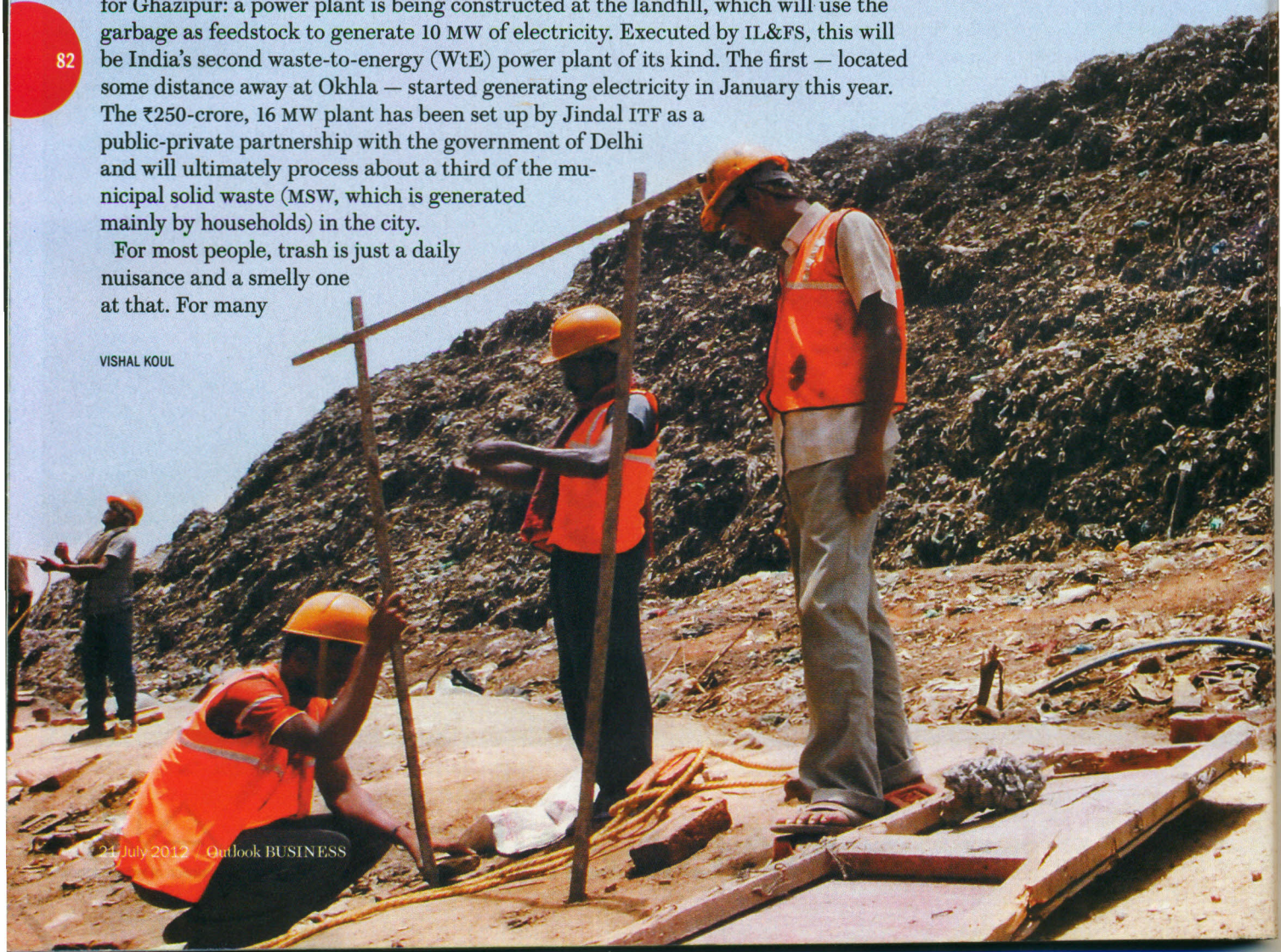
Kandula Subramaniam

Hundreds of birds hovering in the distant horizon are the first giveaway. Then the stench hits you, long before you actually see what appears to be a small hillock on NH24. Close to the border of Delhi and Ghaziabad, this is the Ghazipur landfill — 30 acres of filth that reached and breached saturation years ago and now just lies there, an enormous eyesore and a huge environmental hazard.

Getting rid of it — and of the over-8,000 tonnes of garbage the capital city continues to generate each day — is a gargantuan task. But last year, a solution was found for Ghazipur: a power plant is being constructed at the landfill, which will use the garbage as feedstock to generate 10 MW of electricity. Executed by IL&FS, this will be India's second waste-to-energy (WtE) power plant of its kind. The first — located some distance away at Okhla — started generating electricity in January this year. The ₹250-crore, 16 MW plant has been set up by Jindal ITF as a public-private partnership with the government of Delhi and will ultimately process about a third of the municipal solid waste (MSW, which is generated mainly by households) in the city.

For most people, trash is just a daily nuisance and a smelly one at that. For many

VISHAL KOUL



rich

PANIES ARE LINING UP FOR A SHARE

WASTE POWER: The 30-acre Ghazipur landfill will now host a 10 MW power plant

companies in India, though, it's a goldmine waiting to be tapped. Over the past five years, more and more companies have been getting into the business of solid waste management (SWM). And with good reason. Currently, the SWM opportunity in India is estimated at ₹3,000 crore, with the potential to grow up to ₹60,000 crore, according to AK Sahu, president of the National Solid Waste Association of India (NSWAI).

Certainly, the amount of trash generated isn't likely to go down any time soon. According to a study by India Infrastructure Research, India's urban population registered a CAGR of 2.57% between 2005 and 2011. During the same period, MSW grew at 3.56%. From 173,517 tonnes a day in 2005, the total urban waste generated in 2011 had grown to 214,091 tonnes a day.About 60% of this is biodegradable and can be composted. But the study says there are only about 110 composting facilities in India currently, which can together treat just about half the organic waste generated. That's not nearly enough, especially since the Supreme Court ruled a few years ago that all big cities must dispose solid waste in a scientific manner.

GARBAGE IN, CASH OUT

Why don't local municipalities and state governments take out the trash themselves? For one, there's too much of it already and more waste is being generated every day. For the longest time, burying the rubbish in landfills was the easy way out and as long as it was out of sight, it was also out of mind. But the apex court ruling of 2003 coupled with the fact that big cities are running out of space to create new landfills, meant new ways had to be found to tackle the mountains of rubbish. "You can't keep creating new landfills," says Mahesh Babu, CEO, IL&FS Ecosmart. "Land is limited, after all." *(see: Soiled land)*. Besides, it's not just municipal waste; there's also biomedical, electronic and hazardous waste. But MSW accounts for almost 70% of all trash generated, so it's the most obvious problem.

Even now, local bodies are preoccupied with getting the trash out of people's homes and public areas. "Earlier, municipal funds were mostly used towards collection and transportation. Scientific treatment and disposal of waste is now coming in focus," declares Sethi. The local municipalities have neither the funds, the technology nor the infrastructure to scientifically dispose waste on the scale required and that's why compliance in SWM is abysmally low, just 9% in processing and 1.4% in disposal *(see: Trash to cash)*.

For the corporate sector, waste management is an infrastructure business just like roads, ports or power — which means they are willing to take projects with long payback periods as long as the returns are justifiable. Of course, it's early days yet. "Even though the returns are not too attractive currently and the technology in SWM is yet to prove itself, companies are rushing in because this sector is totally untapped and offers huge potential," declares Goutham Reddy, executive director of Hyderabad-based Ramky Enviro Engineers.

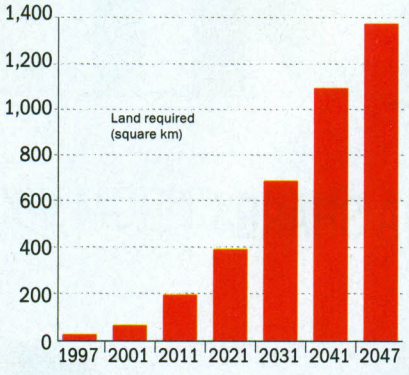
There are also some mild sweeteners from the government to encourage private participation in this sector, like there are in almost all other infrastructure projects. Some states offer subsidies of ₹25,000 per MW generated by a WtE plant. Estimates for the 12th Five Year Plan show there is need for over ₹40,000 crore for SWM projects while the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) has already sanctioned Central funds for 45 projects collectively worth over ₹2,000 crore. For the private sector, then, SWM is a stinking huge opportunity. As Sahu says, "Waste is money but the idea has been ignored for too long." Not any more.

LET'S TALK TRASH

Companies such as Ramky, A2Z, SPML, IL&FS, the Essel group and the Jindal group aren't the only players attracted by the potential for SWM in India; even international players such as Singapore's CGEA Asia Holding, the Swiss Hitachi Zosen Inova, Peat International and vendor credit agencies such as Germany's KFW are getting involved in India's SWM. The

Soiled land

At current rates, land required to dispose of solid waste will rise seven times over the next 35 *years*



Source: Industry

"You can't keep creating new landfills. Land is limited, after all

–MAHESH BABU
CEO, IL&FS Ecosmart

₹48,500 cr
investment required for SWM in the next 5 years

Source: GoI

types of projects companies are undertaking vary widely. In Delhi, for instance, there are already several companies involved in different aspects of SWM. While SPML handles waste collection, segregation and transportation for the Municipal Corporation of Delhi, companies such as Jindal and IL&FS are involved in its disposal, through WtE projects. IL&FS also runs a 200 tonne per day composting facility at Delhi. In other cities, the mandate from the municipalities can be different. These can range from just collection and transportation, scientific disposal (which involves processing, segregating and recycling garbage before dumping it in a sanitary landfill that has safeguards against leaching of toxins into the groundwater), to integrated waste management (doorstep collection of garbage to its scientific disposal).

Regardless, waste disposal is no longer about just collecting the trash and dumping it far away. The world over, sanitary landfills are still the most widely-used method, but new technologies are also being tried out. These include thermal depolymerisation (converting solid material into combustible liquid), pyrolysis (thermochemical decomposition using oxygen), mechanical biological treatment (recovering material from mixed waste for composting), among others. But most new technologies in SWM are prohibitively expensive, which is why companies are sticking to WtE plants, simple composting facilities, and ways to profitably extract methane from landfills.

WtE and composting projects also qualify for carbon credits under the clean development mechanism of the UN Framework Convention on Climate Change. But the value of the credits, which can be used for international funding, is dropping because of the uncertainty in global climate change policies. Typically, carbon credits can provide up to 15-20% addition-

₹2,000 cr funds sanctioned for 45 SWM projects under the JNNURM

Source: Ministry of urban development

al revenue for a project. Few years ago, carbon credits fetched about €10-12 per tonne of carbon not emitted; that's now down to €4. Internal rate of return (IRR) on SWM projects is typically around 15-16%. Ideally, in the infrastructure space, corporates expect above 20% IRR. The cost of setting up WtE projects, too, is higher than in conventional power projects. A thermal power plant requires investment of about ₹4 crore per MW — the Ghazipur project is being set up at ₹20 crore per MW while the Jindal ITF plant cost nearly ₹16 crore per MW. That's why, even though a WtE has no fuel costs, the power it generates doesn't come cheap at around ₹3.6 a unit.

But then, points out Babu, the objective of the exercise isn't to generate power: the idea is to get rid of the mountains of garbage and power is just a welcome by-product. Indeed, the conventional thinking in such WtE projects is that the comparison shouldn't be with other means of power generation; it should be against the cost of setting up and maintaining a landfill. "It would be wrong to look at WtE projects purely from an energy generation perspective. They go towards benefiting softer targets of development," says Girish Shirodkar, Global Partner and MD, SDG India & Asia Pacific.

SPML, which entered the SWM business in mid-2000, handles waste management in several other cities apart from Delhi. In Madurai, the company is designing and constructing a waste processing and disposal facility for 350 tonnes of trash daily, which will expand to manage 1,000 tonnes every day over the next 20 years. In Allahabad, Mathura and Dehradun, the company is developing integrated SWM facilities for the local municipal bodies as PPP projects. "In Delhi, the responsibility is only to collect MSW from secondary storage points, and to transport it to landfill sites," says Deepak Sethi, director, SPML. "In the other cities, the mandate is much larger — we have to collect the waste from the households, segregate and process it and finally dispose of it at the landfill site." Whereas in Madurai, SPML is paid a fee per tonne of garbage it processes and disposes, in Delhi, the company is paid a tipping fee for each tonne of waste it gets to the landfill.

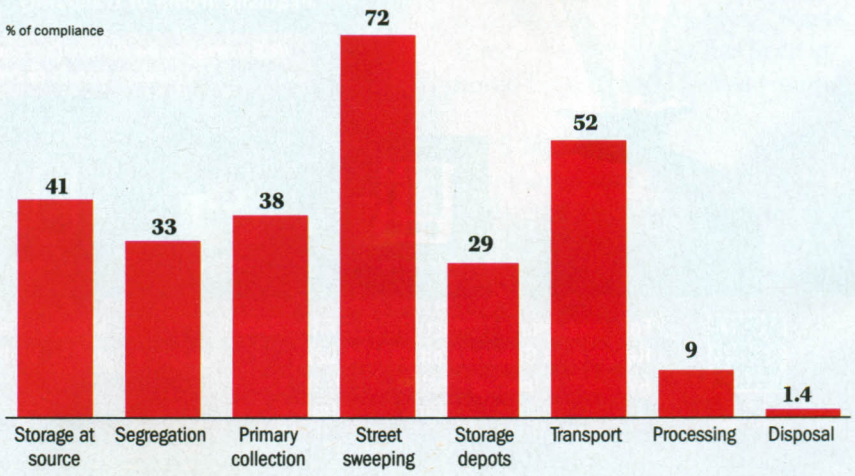
Ramky has the widest footprint in waste management, from MSW to hazardous industrial waste, e-waste and biomedical waste. In MSW, its projects range from processing and disposal, collection and transportation, street sweeping and integrated waste management in over 20 cities across India. It is also implementing WtE projects in Delhi, Bengaluru, Hyderabad, Guwahati and Pimpri. The Pimpri and Guwahati projects will dispose 500 tonnes of waste per day while the projects in other cities are of 1,000 tonnes and more.

The Gurgaon-based A2Z has 14 SWM projects across India, which range from integrated waste disposal contracts to just processing and disposal of municipal waste. IL&FS, on the other hand, handles scientific disposal while companies such as PEAT are looking at opportunities in India via domestic companies for introducing new technologies in waste disposal.

There's also growing private equity interest in the SWM sector. Consider IL&FS: not only does it have its own SWM arm, the company has also invested in Ramky Enviro Engineers through a consortium of PE investors. IDFC's India Infrastructure Fund has invested in Hanjer Biotech Energies; India Equity Partners, Beacon and Rakesh

Trash to cash

The poor compliance by municipalities in solid waste management can mean huge opportunities for the private sector



(Note: Experience of 128 cities in 2011; Source: World Bank and India Infrastructure Research)

Jhunjhunwala all invested in A2Z; and recently, Clearwater Capital invested about $10 million in Hydroair Tectonics.

TIPPING POINT

Trouble is, SWM is still an unorganised industry. There are multiple agencies involved at every step of every project, municipalities, state governments, the ministries of urban development and environment, and pollution control boards. "There is no holistic view nor is there enough technical expertise in SWM in India," says Sahu.

The Gorai landfill in Mumbai, the country's first SWM project, illustrates this. In mid-2000 the Mumbai municipality initiated a ₹60-crore, PPP project with IL&FS

₹60,000 cr is the potential of the SWM business from the current ₹3,000 cr

Source: Industry, experts

gas were to recoup the investment. As it turns out, the gas output at Gorai is far lower than anticipated. Project executives refused to comment on record but admit that realisations are less than half the target figures. "The entire planning for Gorai was faulty," declares Sahu. "This landfill was never meant for gas extraction; it should have been composted."

If faulty planning is to blame for some SWM projects, others are

"Now, scientific treatment and disposal of waste is in focus [for municipalities]

–DEEPAK SETHI
Director, SPML

"Waste is money but the idea has been ignored for too long

–AK SAHU
President, NSWAI

and other vendors to cover the landfill; falling in the Coastal Regulation Zone near Gorai creek, it had reached saturation limit and was considered a major environmental threat. By 2007, the landfill was covered and is now a lush, green hill. The methane emitted by the garbage underneath is supposed to be extracted and sold for power generation. The revenue from the sale of the gas as well as the carbon credits for curtailing emissions of the greenhouse

hanging fire because all stakeholders weren't brought on board when the project was conceived. In 2009, residents of housing colonies near the Jindal's WtE plant at Timarpur-Okhla filed a public interest litigation against the project, concerned about possible pollution and health hazards because of the plant and its emissions. Similar protests are mounting against the Ghazipur plant, with the capital's ragpickers also joining in on the grounds that their livelihood is threatened by power plants wanting to incinerate all rubbish.

There are other challenges as well. Consider the Ghazipur landfill, again. When operational, the WtE plant will dispose 1,300 tonnes of garbage a day. But the site already has 5 million tonnes of trash and 2,500 tonnes more is dumped there every day. That means it will take another 10 MW plant just to stop further accumulation of garbage at the landfill. And back of the envelope calculations suggest that one more, 20 MW plant processing 2,600 tonnes a day every day for five years to clean up the site is needed.

As things stand, it's highly unlikely that any company will be willing to sink ₹400 crore to set up plants to generate 20 MW at Ghazipur and that, too, for five years — not only will there be doubts on its ability to recoup its investment, what happens to the plant once all the trash is burnt?

Then, for a WtE plant to be viable, it needs to process at least 700 tonnes of MSW each day, but smaller towns in India generate not more than 400-600 tonnes. So a power plant may not be the optimal solution for such areas. There are also questions raised on the quality of compost produced from MSW, its pricing, and also how it will be marketed.

All these are issues that will need to be sorted out quickly if more companies are to enter the SWM project. Greater corporate participation in the sector is certainly needed — those mountains of dirt at Ghazipur aren't going to clean themselves, after all.