

**Technology :**

There are two technology options for Municipal Waste To Energy (MWTE).

**Biomethanation** (like gobar gas production) produces methane from 'wet' waste (food, fruit, flowers) at near room temperature in a closed chamber. It works best in decentralized locations when the heat energy of the biogas is directly used in kitchens etc to replace LPG, as at BEL Bangalore.

**Burn options** like incineration, pyrolysis, plasma, etc all burn waste to heat water and make steam that drives turbines to produce electricity. These plants are very harmful and cause ill health around such units because of release of dioxins and furans which form when PVC-type plastics in mixed waste are burnt. They are also totally uneconomical for low-calorific content Indian waste.

In the West, where there is no longer any informal recycling, their waste has about 80% of discarded packaging, so the calorific value of their waste is above the minimum 5,500 kcal/kg required for viable waste-to-energy from burning. Only max 25-30% of the energy content of waste can be recovered as electrical energy this way. The rest of the energy is in waste heat which the West uses for centrally heating its buildings and offices.

Indian waste contains only 10-15% high-calorie dry waste and in large cities most of this is collected by waste-pickers for recycling, which supports 1-2% of a city's poorest population. What is left is either low-calorie wet waste which contains upto 70% water that consumes much energy to dry it enough for burning, or 15 – 25 % non-combustible dirt and sand (inerts) from road sweepings. So Indian waste of about 1,800-2,000 kcal/kg cannot at all support burn options for waste-to-electricity, and may not even produce enough energy to run the WTE unit itself. It requires the purchase and addition of alternate fuels like sawdust, groundnut-shells and other high-calorie byproducts to be able to burn Indian municipal waste at all.

That is why the SAARC recommendations at Dhaka in 2004 resolved in section 4 that **“SAARC countries agree that incineration as well as unproven technologies such as Plasma, should not be considered as an option for the treatment of their municipal solid wastes for low calorific value and environmental pollution potential.”**

**Economics :**

In India, WTE options for waste processing cost 12 to 43 times more than composting options.

The capital cost for power production is 9 to 13 crores per megawatt (MNRE figures March 2013) vs about Rs 6 crore per megawatt of thermal power plants. So on both counts there is no benefit to the nation in going for burn WTE from municipal waste.

Why then this huge push for the MWTE option at all levels? On one side, entrenched corruption makes such super-costly projects hugely more attractive to official decision-makers than simple low-tech affordable and doable options.

On the other side, there is huge lobbying from the West to push WTE to developing countries with lax environmental standards, because MWTE is being phased out in their own countries and few or no new business opportunities exist now. This is because of stable urban populations and periodic tightening of their air quality standards which makes pollution control and flue gas treatment for dioxin removal cost as much as the MWTE burn-cum-power-generation unit itself. India for example has only two dioxin-measuring units in the whole country and each test costs Rs 1 lakh and takes several days. We do not even have legally-specified dioxin limits for MWTE plant emissions, let alone effective enforcement of existing standards.

How then do businessmen wanting to invest in MWTE hope to make money? Legally, they induce cities and States to agree to very very high “tipping fees”, a payment per ton of waste ‘accepted for processing’ whether it is actually processed or not, for years together. Another way is to create a hugely inflated proposal for banks, so as to draw and enjoy an initial advance and then neither repay nor start operations. In other cases, Govt of India’s MNRE is induced to pay a ‘subsidy’ in advance of any operations or even plant completion, for promoters to enjoy those funds too.

### **Legal Position :**

The Hon. Supreme Court in WP(C ) 888/96 [Almitra Patel vs Gol] in January 1998 appointed an Expert Committee to prepare a Report on Solid Waste Management in 300 Class 1 Cities of India [over 100,000 population as per 1991 census]. Their March 1999 Report, written as a manual for city managers by navaratna city managers after taking consensus opinion of 300 city commissioners etc, was endorsed by the hon. Supreme Court which noted on 13.8.1999 that “the response of the States is positive”. On 15.2.2000 it directed the “statutory authorities” that “**they shall endeavour to comply with the suggestions and directions contained in the report prepared by the Asim Barman Committee**”.

The Executive Summary of this 1999 Committee Report clearly states: “**Caution against using unproven technologies : Local bodies are cautioned not to adopt expensive technologies of power generation, fuel pelletisation, incineration, etc until they are proven under Indian conditions and the Government of India or expert agencies nominated by the Government of India advises cities that such technology can be adopted**”. No such endorsement has been given by Gol to date.

In 2000, the Municipal Solid Waste (Mgt & Handling) Rules 2000 in Schedule II Section 5 stated that “Municipal authorities shall... **make use of wastes so as to minimize burden on landfill.**” 5 (i) directs that “biodegradable wastes shall be processed by...appropriate biological processing for stabilization of wastes” and 5(ii) requires that “recoverable resources shall follow the route of recycling”. For “incineration...in specific cases, Municipal authority or operator...shall approach the Central Pollution Control Board to get standards laid down before applying for grant of authorization”.

This requirement is being regularly flouted wherever cities are induced to go for MWTE MoUs or Agreements.

In October 2004 at Dhaka, SAARC countries recommended as above that “incineration as well as unproven technologies such as Plasma, should not be considered as an option for the treatment of their [SAARC] municipal solid wastes for low calorific value and environmental pollution potential.”

On 6.5.2005 in response to IA 14 in WP(C ) 888/96 seeking an independent Non-Governmental Review Committee of Experts to inspect existing plants and assess process viability through energy-balance, mass-balance and water-balance calculations, the hon. Supreme Court noted that power production at Lucknow had dipped to a mere 0.3 - 0.5 MW against planned 5 MW, directed the GoI to appoint a Committee of Experts which should include NGOs, and hoped that **“till the position is clear, the Government would not sanction any further subsidies”** [to proposed and future Municipal Waste to Energy Projects]. The Committee’s members were all hand-picked by the MNES, except for an NGO and an academic whose Dissent Note recommended a freeze on WTE projects until completion of full-fledged pilot studies.

On 15.5.2007 the hon Supreme Court’s Order read “...we modify the order passed by this Court earlier and permit Ministry of Non-conventional Energy Sources (MNES) to go ahead for the time being with 5 pilot projects chosen by them, keeping in view the recommendations made by the Expert Committee and then take appropriate decision in the matter.”

### **Indian Experience of MWTE to date:**

From 1995, the MNES (Ministry of Nonconventional energy Sources), now renamed MNRE (Ministry of New and Renewable Energy) has been actively pushing for MWTE. This program has by its own admission to the Supreme Court been always foreign-driven, which is its major weakness.

By 1998, before the MSW Rules 2000, there were 33 feasibility reports signed for MWTE and 4 signed agreements. By 2003 there were 17 dropouts or non-starters from failed MWTE agreements. There are also many ongoing legal disputes, four convictions and two jail sentences for such fraudulent promoters of WTE.

For some time, two MWTE plants (both now shut down) operated in Hyderabad and Vijayawada, endlessly cited as success stories by MNES. Actually, both were similarly fraudulent, accepting only a token amount of municipal waste, throwing most of it onto a highly polluting open dump outside their walls, and clandestinely operating almost entirely on biomass like groundnut shells, sawdust and paddy husk. This is because they claimed the exorbitant MNES-mandated high tariffs for power from municipal waste (Rs 2.48 for base year 1997 and Five Percent annual increases), much higher than AP’s purchase price for easily-produced biomass-based power. The MNES tariff paid by AP today would be Rs 5.41 per unit vs average NTPC purchase price of around Rs 3, with the burden passed on to even the poorest as higher electricity bills.

A third plant, unrealistically based on biomethanation of mixed waste, was set up in Lucknow at a cost of Rs 84 crores. It too shut its doors suddenly in December 2004 and its promoters ran away leaving its workers unpaid.

In March 2013 the MNRE informed Parliament that it is implementing five MWTE units “coming up presently...[which] are considered viable”, but without the detailed monitoring recommended in the Dissent Note. Their list of seven WTE plants shows only one “Commissioned” at Okhla in Delhi and six “Under Installation” since 2007, including the incomplete Bangalore unit at Mandur which after so many years has not even unpacked its alleged WTE equipment and is simply open-dumping the waste for which it is being paid a tipping fee.

The Okhla MWTE sought approval for a plant with state-of-the-art pollution control equipment, but actually installed cheap Chinese technology. This is blanketing homes in the neighbourhood with ash and soot all day and night, On 31 May 2013 TNN reported from Delhi : “The Central Pollution Control Board's report on the Sukhdev Vihar waste-to-energy plant has revealed that levels of toxic substances dioxins and furans are 30 to 40 times higher than the levels prescribed by Delhi Pollution Control Committee (DPCC). The level set by DPCC, which sources claim is ad-hoc, was prescribed when they issued consent to operate to the plant. "India has no standards for dioxins and furans. DPCC set a standard of 0.1 mg/cu m specifically for the plant. The plant is violating norms and releasing high levels of dioxins and furans," said a source.”

This resulted in a PIL. The Hindustan Times on 11.9.2013 reported that “**The National Green Tribunal** on Tuesday [10.9.13] warned the Jindal Group that its waste-to-energy plant in south Delhi could face closure if it did not improve pollution-control measures in three weeks.”

So India has not a single MWTE success story to show despite efforts since 1995.

### **Tipping Fee :**

In USA, businessmen buy up huge acreages of land for longterm use as a scientific lined landfill, with daily cover of carefully placed and compacted waste. They charge a “tipping” (= unloading) fee per ton to cities using this facility, as a way to recover their capital investment in land, just as hoteliers charge room rent for use of their real estate.

In India, this “tipping fee” has become a huge source of corruption that brought Bangalore to its knees in July 2012, as the city regularly paid an alleged waste processor tipping fee to accept 700 tpd waste onto the city's own land given to them for a pittance at taxpayer expense, while turning a blind eye to the open dumping being done instead of the planned 300 tpd composting.

That is why the Expert Committee recommends payment on outcomes only, in the form of a support price on compost produced and not payment for acceptance of raw waste.

Similarly, in a MWTE proposal pending before the Govt of Karnataka for approval at Mavalipura, the Expert Committee strongly recommends rejection of all burn

technology. The Expert Committee is not against biomethanation provided support payment, if any, is based on measured quantities of biogas or KWH produced and not on raw waste accepted for alleged processing.

### **Environmental, Health and Social Impacts :**

The lucrateness to decision-makers and monitoring officials of the tipping fee on raw waste tonnage sent to so-called landfills is driving huge resistance within the BBMP to all efforts to minimize waste quantities going there. This extends to ongoing stalling of an excellent hotel-waste-diversion project at Kanahalli which was almost finalized in February 2013. This nexus also discourages contractors from minimizing waste through segregated collection and segregated transport of waste carefully handed over to them in unmixed form by responsible citizens.

Wherever there has been an attempt at producing energy from waste through burn technologies, the MWTE promoter actively discourages wastepicker or even PK access to the dry waste now going for useful energy-saving through recycling, because they fear a reduction in calorific content of their waste destined for burning. This not only deprives thousands of the poorest of their informal livelihoods but again totally undermines efforts at Waste Minimization by keeping wet and dry unmixed, as required by the MSW Rules.

This covert and overt encouragement of mixed waste collection plays havoc with the environment, as Bangalore has seen at Mavalipura and Mandur.

The ill health of residents documented worldwide around WTE plants has already been mentioned. If this is so in relatively well-managed WTE plants, the fate of residents near poorly monitored or non-monitored WTE plants in India will surely be far worse. India Today July 14, 2013 reported on a UGC/MOEF study of Delhi air by JNU and published by the National Academy of Sciences, which found that the maximum (2,118 ig/m<sup>3</sup>) presence of particulate matter and an alarmingly high concentration of cadmium was observed at Okhla (near the WTE plant) along with a high presence of lead, manganese and nickel. This too is reason enough to stop more burn-WTE plants from coming up.

*(Note prepared by Almitra Patel for BBMP Expert Committee on SWM, 13.9.13)*

**Press Information Bureau  
Government of India  
Ministry of New and Renewable Energy  
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Urban & Industrial Wastes Energy Programmes.**

The Ministry of New and Renewable Energy is implementing Programme on energy recovery from urban and industrial wastes, which, inter-alia, includes setting up of five pilot projects based on municipal solid waste / garbage.

The programme provides for central financial assistance @ Rs 2.00 crore per megawatt limited to Rs. 10.00 crore per project for five pilot projects based on garbage

set up by State Nodal Agencies, Urban Local Bodies/ Municipal Corporations or entrepreneurs. In addition, customs and excise duty concessions are also provided for initial setting up of these projects.

The projects being set up presently are based on biomethanation, combustion and gasification technologies followed by engines or turbines for power generation. The projects at Bangalore, Delhi and Hyderabad are employing combustion technology based on reciprocating grate boilers, whereas the project at Pune and Solapur are based on gasification and biomethanation technologies, respectively. These projects are being set up on Build, Own, Operate and Transfer basis. These are considered viable and will supply power to the State Transmission Companies at a tariff of Rs. 2.59 to 4.25 per kWh, which is comparable with the cost of conventional power.

### **List of Municipal & Urban waste based power projects taken up**

<b>S. No.</b>	<b>Project promoters</b>	<b>Location</b>
1	M/s. Timarpur Okhla Waste Management Private Ltd. (TOWMCL), Jindal ITF Centre, 28 Shivaji Marg, New Delhi (Promoted by Jindal Urban Infrastructure Ltd.)	Old NDMC Compost plant, New Okhla tank, New D
2	M/s East Delhi Waste processing Company (P) Ltd., New Delhi (Promoted by DIAL, IL&FS Energy Dev. Co. Ltd. (IEDCL) and SELCO International Ltd.)	Gazipur, Delhi
3	M/s Srinivasa Gayatri Resource Recovery Limited No. 303, Shreshta Bhumi Complex, No. 87, K.R. Road, Next to Gayana Samaja, Bangalore	<b>Village Mandur, Bangalore</b>
4	M/s. RDF Power Projects Ltd. 401, Galada Towers, Adjacent Lane to Pantaloons, Begumpet, Hyderabad	Chinnaravulapally Village, Bibinagar Madal in Nalgonda A. P.
5	M/s. Delhi MSW Solutions Ltd., Sector-5, Pocket No-1, Bawana Industrial Area, Bawana, New Delhi. (promoted by Ramky Enviro Engineers Ltd., Hyderabad)	Bawana, Delhi
6	M/s. Rochem Separation Systems (India)	Pune

	Pvt. Ltd., 101, HDIL Towers, Anant Kanekar Marg, Bandra (E), Mumbai.	
7.	M/s. Solapur Bio-Energy Systems Pvt. Ltd., CBD Belapur, Navi Mumbai.	Solapur

This information was given by Minister for New & Renewable Energy, Dr. Farooq Abdullah in Lok Sabha today.

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