Environment Economics of MSW management

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SWEEP Enviro

(IIT Bombay - SINE Incubated)

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IIT Bombay – SINE incubated firm

2013

Mumbai	Delhi	Karnataka

Life of Waste

- Generation at Source
- Transported to collection point
- Transported to Transfer Station
- Transported to Landfill Site

Emissions

- Land filled / Incinerated
- Leachate / Effluent
- Emissions / Emissions

Air, water, Land, Odour, Pollution

Project Cost

Direct Costs

- Transportation
- Tipping Fees
- Land filling Cost/ Incineration Cap Ex
- Landfill O & M/ Incineration Opex EX
- Machinery/ Pollution Control Devices

Hidden Costs (Who pays ??)

- Cost of Damages associated to air emission
- Ground water Contamination Cost
- Green Infrastructure Damage Cost
- Toxicity costs for Health
- Aesthetic Cost

Negative Externalities

Docs write to PM against Okhla plant

Say Polluting Emissions Can Cause Allergies, Asthma, Cancer & Reproductive Anomalies

Jayashree Nandi TNN

New Delhi: About 80 doctors from Holy Family Hospital in Okhla and some other hospitals across the city have written open letters to the Prime Minister's Office raising concerns about emissions from the Okhla waste-to-energy plant. In their letters, written on individual letterheads, doctors have said polluting emissions from the plant could lead to allergies, asthma, cancers and reproductive anomalies.

Many of these doctors also live close to the waste-to-energy plant. Central Pollution Control Board checks at the plant site have revealed dioxin emissions to be way higher than the permissible limit. Residents are extremely concerned about fly ash from the plant falling on their homes and vehicles. Delhi Pollution Control Committee issued a show cause notice to the plant in January for not meeting the air quality standard.

Delhi at risk as landfill sites leak cancer-causing chemicals into water supply

By BAISHALI ADAK

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A huge environmental hazard looms over the Capital as the city's three landfill sites - Okhla, Bhalswa and Ghazipur - continue to accumulate garbage beyond their shelf-life.

A study done by Jawaharlal Nehru University's Department of Environment shows that the groundsoil of these three sites harbours organic pollutants exceeding the permissible limits by up to 158 times.

These sites were found to be high in compounds like aliphatics, terpenoids, benzenes, ketones, pharmaceuticals and phthalates which do not degrade with time, enter the food chain quickly, and cause a variety of health issues such as hormone disruption, reproductive disorders, learning disabilities, heart diseases, diabetes and cancer.

Birth defect risks from landfill sites

Map: do you live near a landfill site?

ditor

Women who live within 2km - just over a mile - of a landfill site run an increased risk of giving birth to a baby with spina bifida, a hole in the heart or other defects, according to the biggest study of its kind carried out in the UK.

Eighty per cent of the population live within 2km of a site. The study found that women in those areas run a 1% increased risk overall - although higher for certain conditions - of having a baby with birth defects, which would mean 100 babies a year are being damaged.

The study was set up by the government after the worrying results in 1998 of a major European study looking at 21 sites including 10 in the UK, which found an increased risk of women having a malformed foetus if they lived within 3km of a landfill site.

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Case 1:: Decentralised Composting

Forest Benefit –	+150 $
Ground Water –	+50 $
Health Benefits -	+150 $
Clean Air –	+50 $
Total benefit =	+ 400 $
Waste Accumulation =	-50 $
Net Benefit =	+350 $

Case 2:: Land filling

Forest Benefit –	0
Ground Water –	- 50 $
Health Benefits -	-200 $
Clean Air –	- 50 $
Total benefit =	- 300 $
Waste Accumulation =	-50 $
Net Benefit =	- 250$

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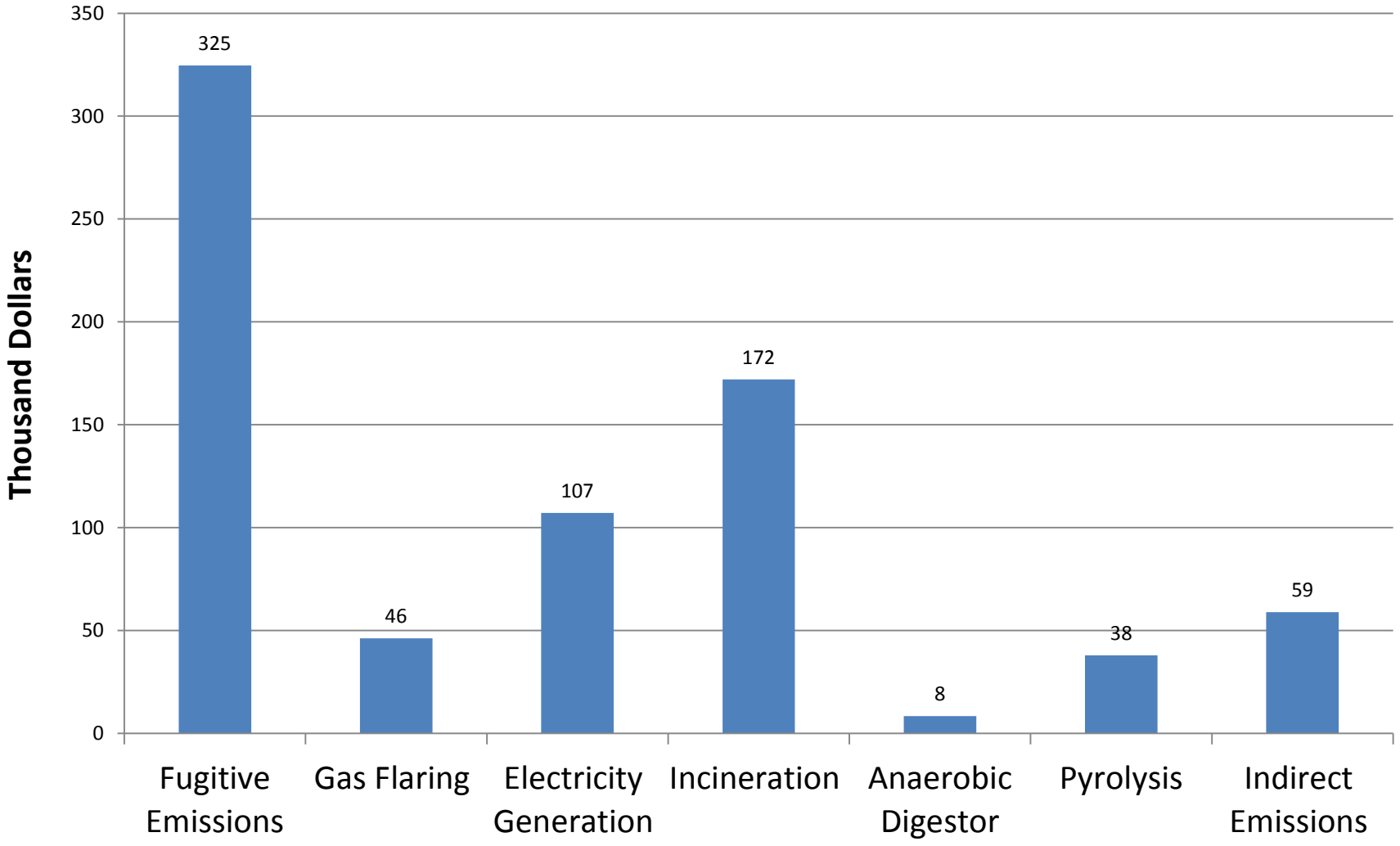
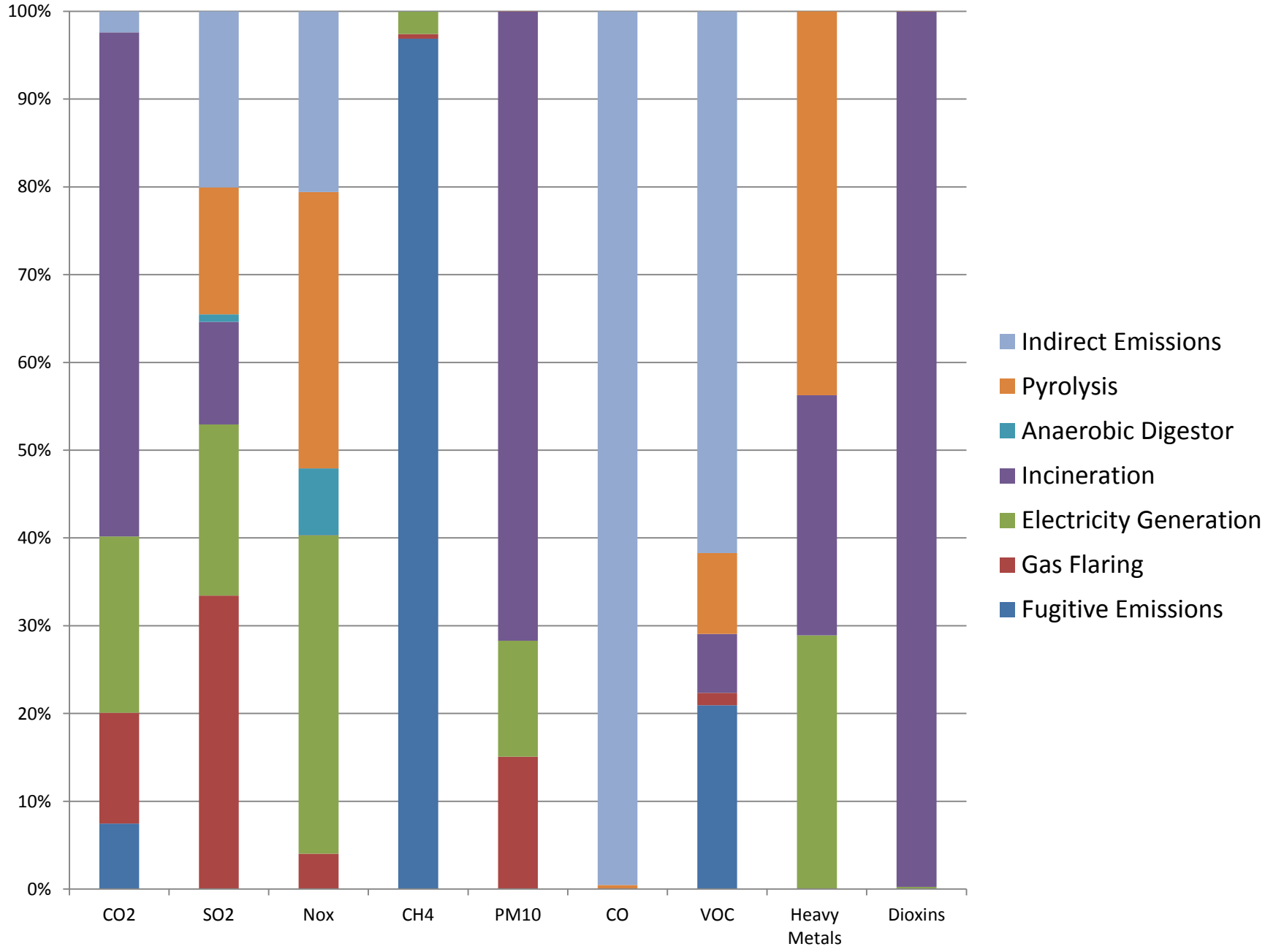
Case Study of Mumbai

Mumbai waste Generation: 6500 Tonnes/Day

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CO2
SO2
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CH4
PM10
CO
VOC
Heavy Metals
Dioxins
Indirect Emissions
Pyrolysis
Anaerobic Digestor
Incineration
Electricity Generation
Gas Flaring
Fugitive Emissions

Conclusions

1) Total Project Cost = Direct + Indirect
2) Technology Selection based on Total Project Cost/ Emission Cost
3) Development at the cost of natural capital is not justified
4) Primae facie it seems pyrolysis process has some advantage
5) Will make projects sustainable and profitable for PPP, banks, govt., society

THANKS

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