

Waste Management Projects – Development and Financing Issues

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Infrastructure Development Corporation (Karnataka) Ltd.

Role of iDeCK

- Advise GoK/ GoK agencies in developing sector strategies
- Assistance in project development - selection, preparation, procurement and implementation
- Project and Financial Structuring
- Deployment of funds - project development and project investment

Garbage Out...

- On an estimate, about 6 lakh tpa of HW and 300 lakhs tpa of MSW in urban India is generated in the country
 - Increasing with rate of population and industrialization



Accelerating Development?

- Many Indian Cities/ States are targeting new generation development
 - IT/ ITES, BioTech
 - SEZs, Financial Hubs
 - Rocketry, Supercomputers, Nuclear Power...
- But almost no MSW & Hazardous Waste management facilities

Judicial Intervention

- Courts and (sometimes) Pollution Control Boards are acting on Public Interest Litigation(s), and directing local government(s) to set in place appropriate frameworks for dealing with MSW & Hazardous Waste (HW)
- Timelines have elapsed...



What, me worry?



Regulatory Framework

- MOEF is responsible for framing waste legislations under the Environment Protection Act (EPA), 1986. CPCB is responsible for communicating them to the State Pollution Control Boards (SPCBs). It's the SPCBs which implement them in their respective States.
- State Pollution Control Boards authorize generation, storage, handling, and management of waste under MSW (M & H) Rules 2000, and HW (M&H) Amendment Rules 2000 and 2003 under the EPA, and monitor the compliance pertaining to identification and notification of disposal sites.

Activities

- The civic, social and political aspects of waste (NIMBY) have ensured that the collection and transportation systems has attempted to be reasonably efficient
- Treatment & Disposal continues to be the weakest link
 - Out of sight, out of mind
 - Dump (Clandestinely) and forget
 - Unclear objectives
 - Dispose at minimum cost, choose technically superior but possibly more expensive options, or make money in disposal?
 - Unclear technology
 - Incinerate, landfill?
 - & finally, NIMBY again!

Waste Management

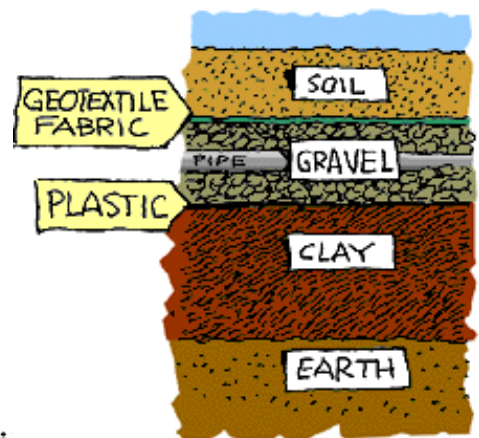
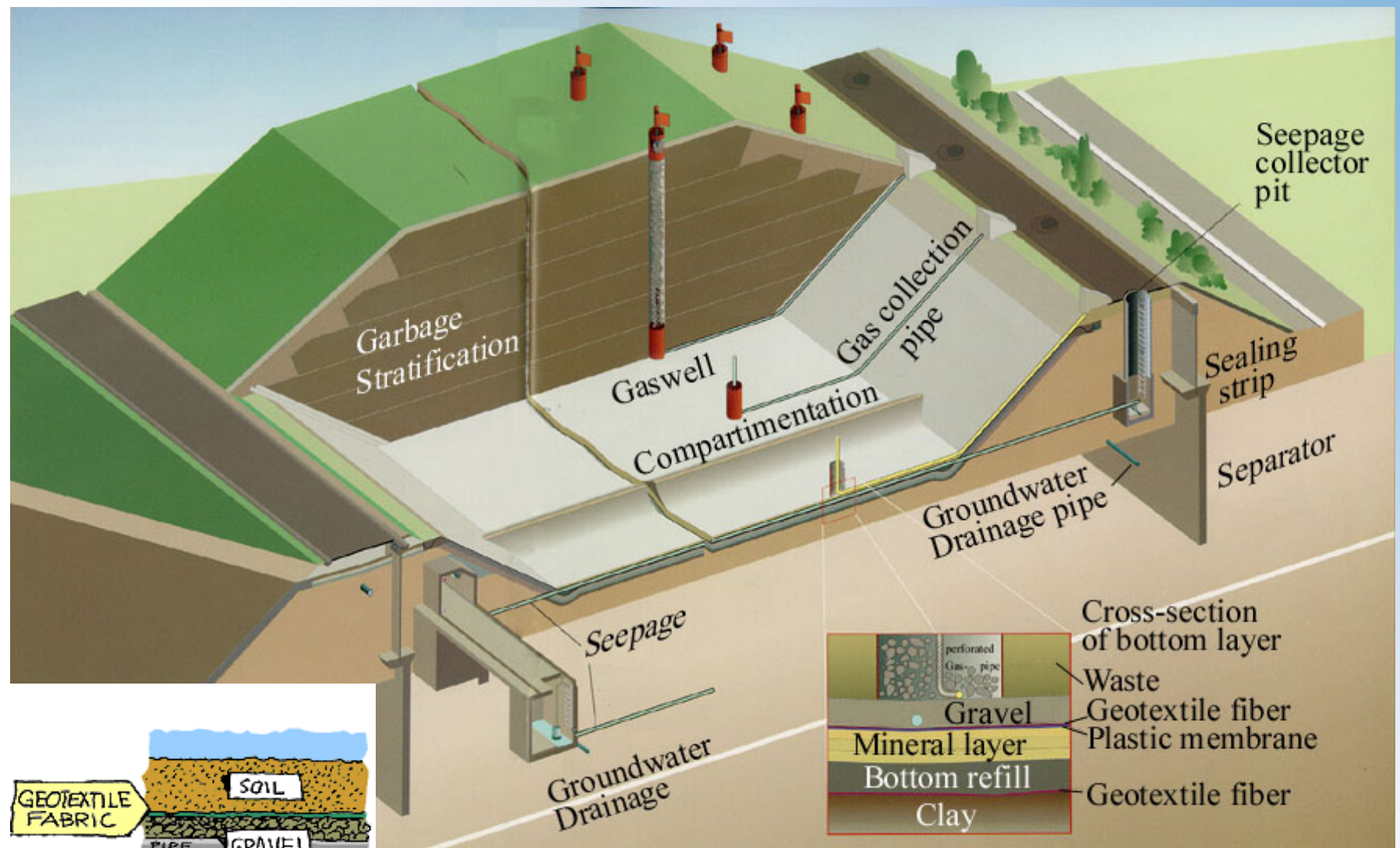
- Hierarchy for efficiency
 - Reduce
 - Recycle/ Reuse
 - Treat and Dispose
- Requirements for the balance
 - Management
 - Technology
 - Financing

Stabilization

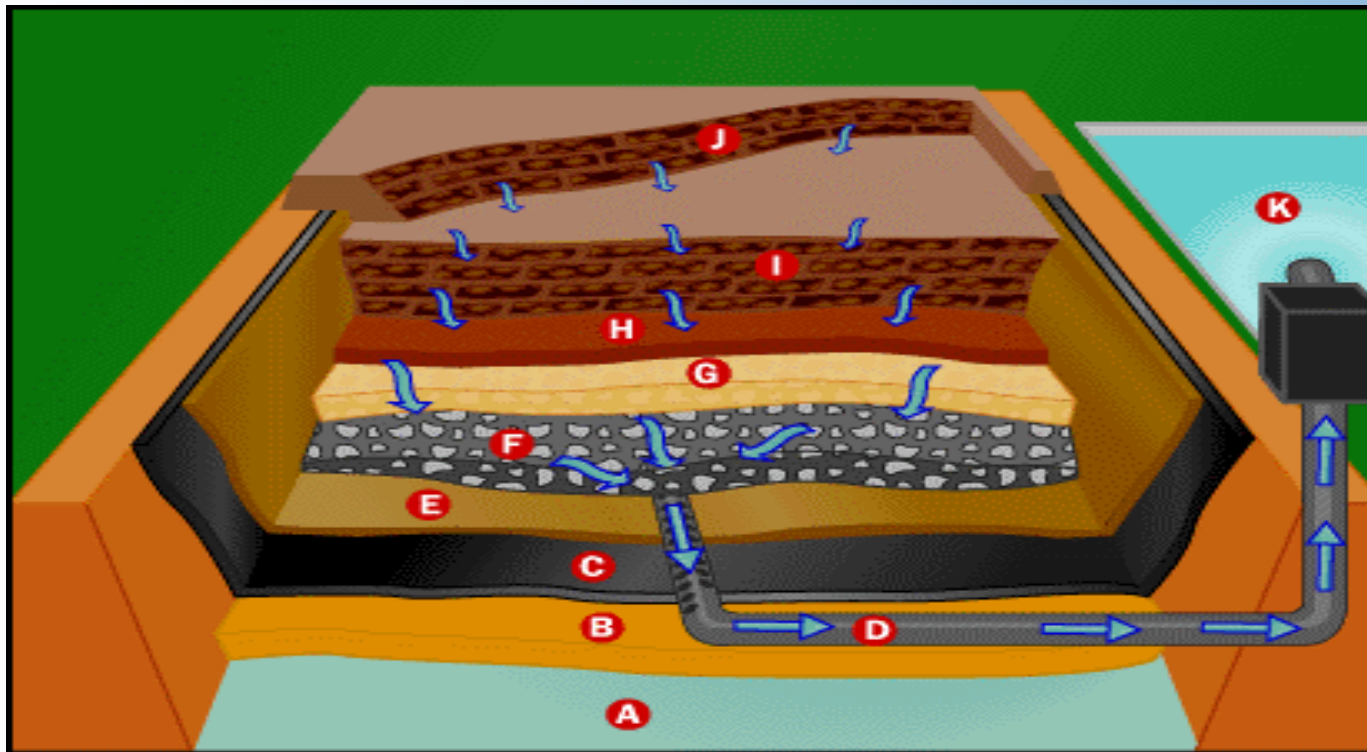
- MSW Rules do not permit direct landfilling; treatment essential – composting/ waste to energy/ bio-methanisation
- Not all HW types can be directly land-filled
 - Chemical stabilization (mixing with some chemicals to make the HW inert) is one option with limited applicability
 - Generally, incineration is a preferred method
 - Expense
 - Proper equipment needed to avoid releasing air-borne toxins

Landfills

- Acceptable solution
 - But for some classes of HW
 - Otherwise need to stabilise the HW
- Problem of land requirement
 - NIMBY again
- Long closure and maintenance periods after the facility is completed



Landfill Components



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- | | |
|-----------------------------------|-------------------------|
| A Ground Water | G Drainage Layer |
| B Compacted Clay | H Soil Layer |
| C Plastic Liner | I Old Cells |
| D Leachate Collection Pipe | J New Cells |
| E Geotextile Mat | K Leachate Pond |
| F Gravel | |

Landfill - Post Closure



[North Wake County Landfill](#) in Raleigh, North Carolina

Landfill Project Features

- Continuous operations throughout the project life (20-25 years)
- Post-closure maintenance
- Need to adhere to strict environmental standards
- No salable product output
- Limited precedents till date

Some Key Issues...

- Huge task ahead
 - Massive investments, potential technology
- Projects would definitely need to be subsidised
 - Unlikely to be stand-alone viable
 - Unless user willingness to pay is “persuaded” by tough regulatory measures
- Grants/ Support Loans: soft start up loans on extended duration
 - Non-compete facility guarantee
 - Land Rights: ‘Soft’ Lease of land
- Various technologies to be studied, ‘piloted’
 - Improbable that ‘one size fits all’
- Suitable PPP structures to be evolved

Key Concerns

- **Industries**
 - Additional cost, but statutorily required – socially benign organizations have better commercial benefits?
- **Regulators**
 - Enforcement issues
- **Public/ end consumer**
 - NIMBY syndrome
- **Developer**
 - Uncertainty of revenues
 - Waste characterization

Commercial Funding

- Commercial funds (Banks/ FI) can come in only if the cost – repayment structure is clear
 - Likely to be sustainable on own revenues
 - If users start paying up and delivering waste
 - Regulatory/ enforcement mechanism is strengthened

THANK YOU