

ENSURING BANKABILITY IN SWM & WTE PROJECTS IN INDIA

PREPARED FOR 3RD INTERNATIONAL WORKSHOP ON “SUSTAINABLE MUNICIPAL SWM IN INDIA”

ORGANIZED BY – WASTE TO ENERGY RESEARCH & TECHNOLOGY COUNCIL

Presentation Outline

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Indian Waste Scenario

Indian SWM Industry

MSW Value Chain

Project Size Considerations

Structuring Projects & Example Business Models

SWM/WTE Project Development Challenges

The Consortium SPV Structure Advantages

Additional Financing Considerations

PM Narendra Modi's Mission Swachh Bharat / Clean India

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National level campaign covering 4041 statutory towns to clean streets, roads and infra; involving industry, government, media, entertainers, and overall population

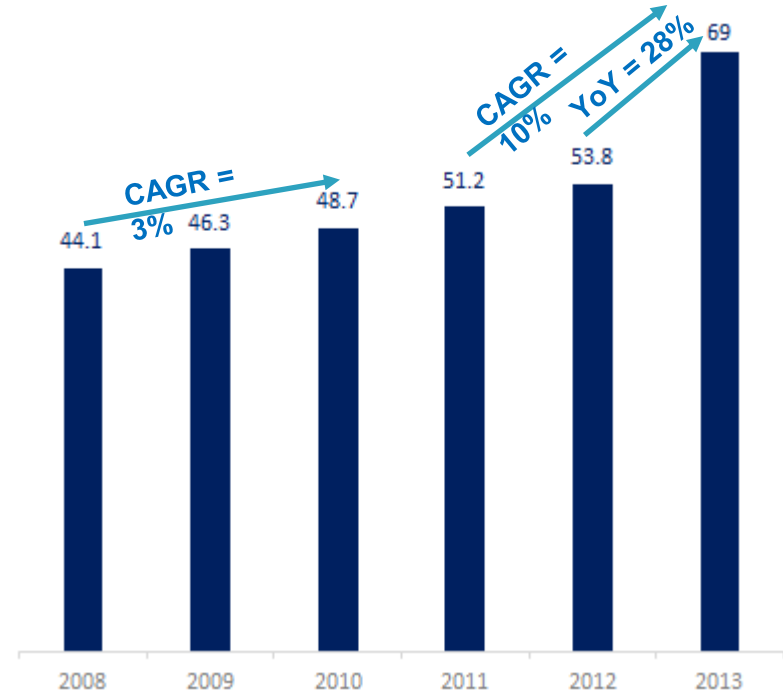


Indian Waste Scenario – Favorable Climate

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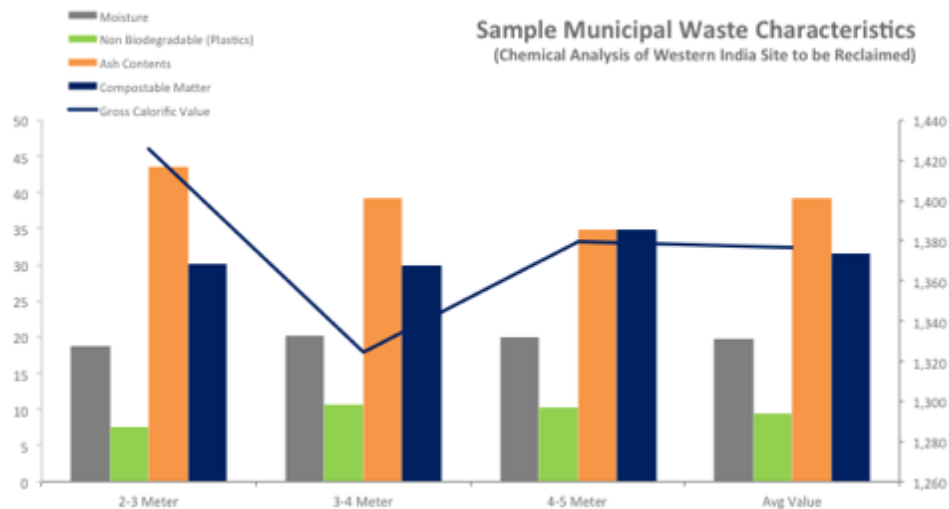
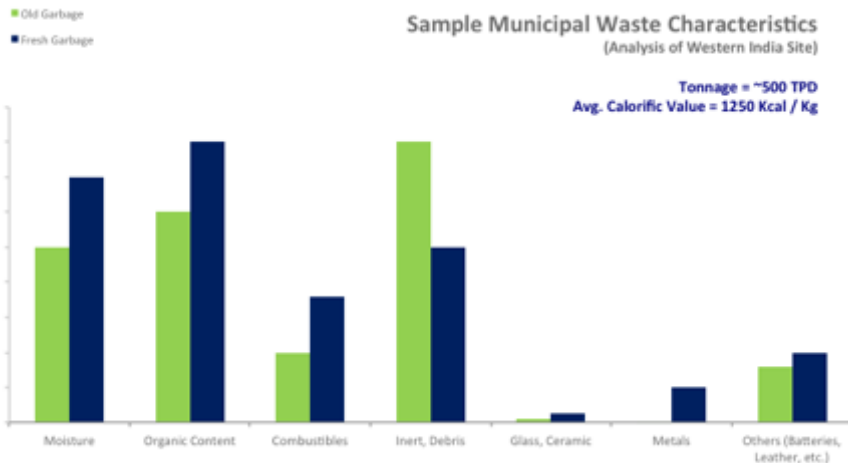
- ✓ India's annual generation of urban waste is ~69M tons
- ✓ Expected to increase to 137M tons annually by 2025
- ✓ 63.7% of MSW is not collected
- ✓ Large potential and under-penetrated
- ✓ PPP emerging as new model for SWM
- ✓ Current spending on waste management by municipalities is principally on collection and transportation
- ✓ Potential of about 1700 MW from urban waste (1500 from MSW and 225 MW from sewage) and about 1300 MW from industrial waste exists in India
- ✓ Indian municipal solid waste to energy market could be growing at a compound annual growth rate of 9.7% by 2013

MSW Generation in India (Million Tons)



Sample Waste Characteristics

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Indian Waste Scenario – Key Factors

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Key Drivers

Increasing Population → Increasing Waste

- ❑ Burgeoning population is ensuring India is generating waste in epic proportions that is overstressing the already overburdened municipal infrastructure

Reducing Space of Landfills

- ❑ Increasing gravitation of population to metro and tier II cities has dramatically reduced space available for landfills
- ❑ Existing mismanaged landfills are overflowing

Landfill Mismanagement → Health Issues

- ❑ Improper SWM is deteriorating public health, causing environmental pollution & climate change and greatly impacting the quality of life of citizens

Accelerated Government Initiatives

- ❑ Many government schemes are being provided for infrastructure development in small and medium sized towns

Key Challenges

Inefficient Storage / Segregation System

- ❑ Source storage and segregation of waste based on degradability and hazards is almost not done in India
- ❑ Proper planning and specific benchmarks for street sweeping do not exist

High Reliance on Age-old Technologies

- ❑ Absence of scientific landfills encourages open dumping of wastes which are highly polluting to nearby aquifers, water bodies and settlements

Lack of Financial Closures and a Fragile Regulatory Framework

- ❑ There is lack of bankable and financially sustainable projects considering the opportunities and risks involved
- ❑ An ambitious waste management strategy without considering project development realities is resulting in stalled projects

Indian SWM Industry – Quick Snapshot

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- Household level coverage of waste C&T in metro and Tier I cities is 100%
- For example BMC⁽¹⁾ spends ~Rs. 1160/ton (\$25/ton) on C&T and disposal of MSW
- C&T constitutes ~80% of the total cost of a project
- In India, the average municipal expenditure on solid waste management is `500 to `1500/ton (\$10 to \$32/ton)

Collection &
Transportation

- Segregation is an emerging practice at the household level with awareness increasing slowly but steadily
- Rag pickers pick up recyclables from bins and sell them in the market
- Due to this informal segregation, volume reduction is achieved, but it ignores economic, environmental and health aspects

Segregation

- In India, MSW is disposed of in an unregulated and unscientific manner in open dumpsites
- Most dumps lack systems for leachate collection, landfill gas collection or monitoring, nor do they use inert materials to cover the waste
- This results in ground and surface water contamination from runoff and lack of covering, air pollution caused by fires resulting in severe health

Processing

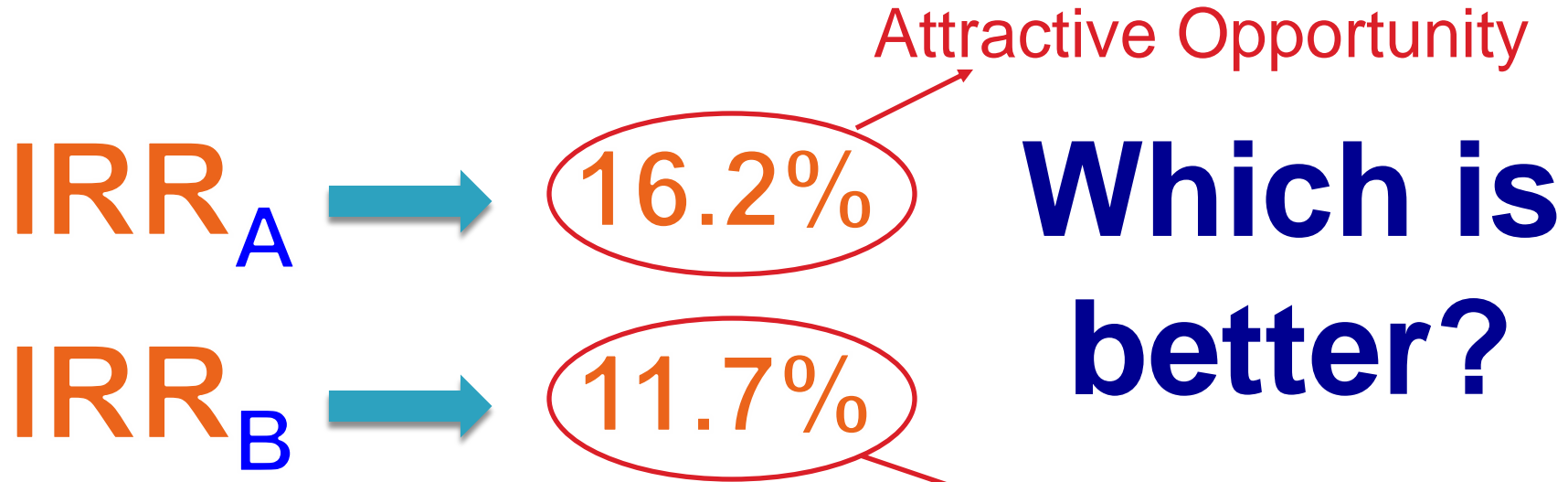
- Recent WtE projects have not yielded positive results since technologies were deployed without considering the local waste characteristics
- Based on the composition of Mumbai MSW, processing the waste in a WtE facility would reduce its volume significantly, thus freeing up land that would otherwise have been used for landfills
- With space in urban areas at a premium WtE

WtE

SWM Waste Processes

What about Investor Returns?

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Same project ... but ...

Quantifies penalties and uncertainties

Example of Risk-adjusted Returns

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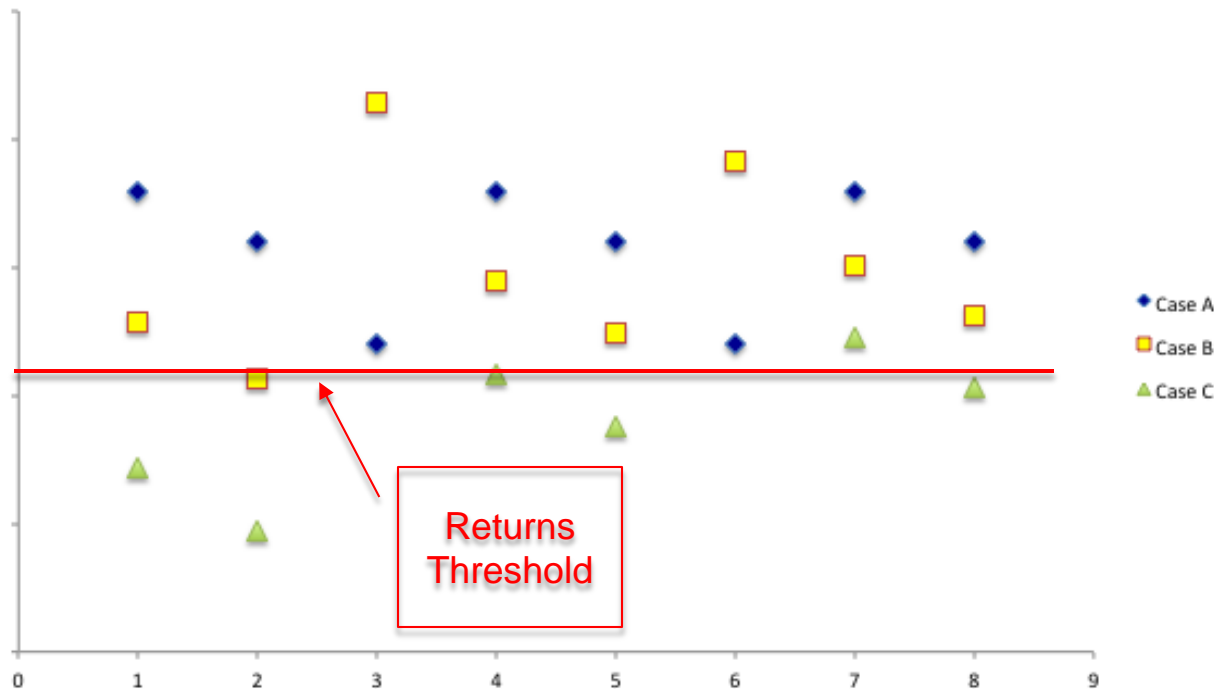
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**Tariff Selection
based on Evaluation
of Impact of Risk on
Returns**

**3 cases for Penalty /
Uncertainty Evaluation**

3 Concession Periods

Several Tariff Models



REST OF THE SLIDES ELABORATE ON

VARIOUS ASPECTS OF

INSURING BANKABILITY ...
MITIGATING RISKS

Ensuring Bankability Requires ...

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Contractual Considerations

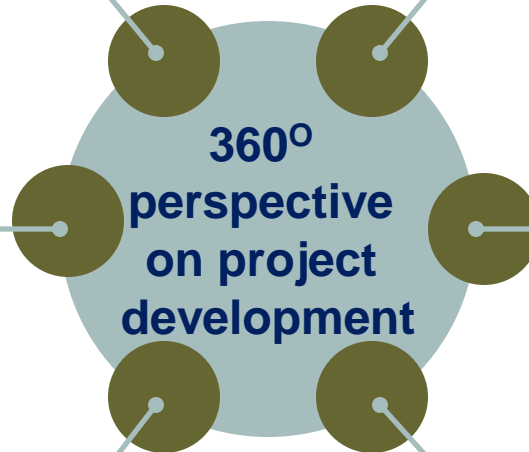
Project Size & Type

Governance & Permitting

Technology Selection

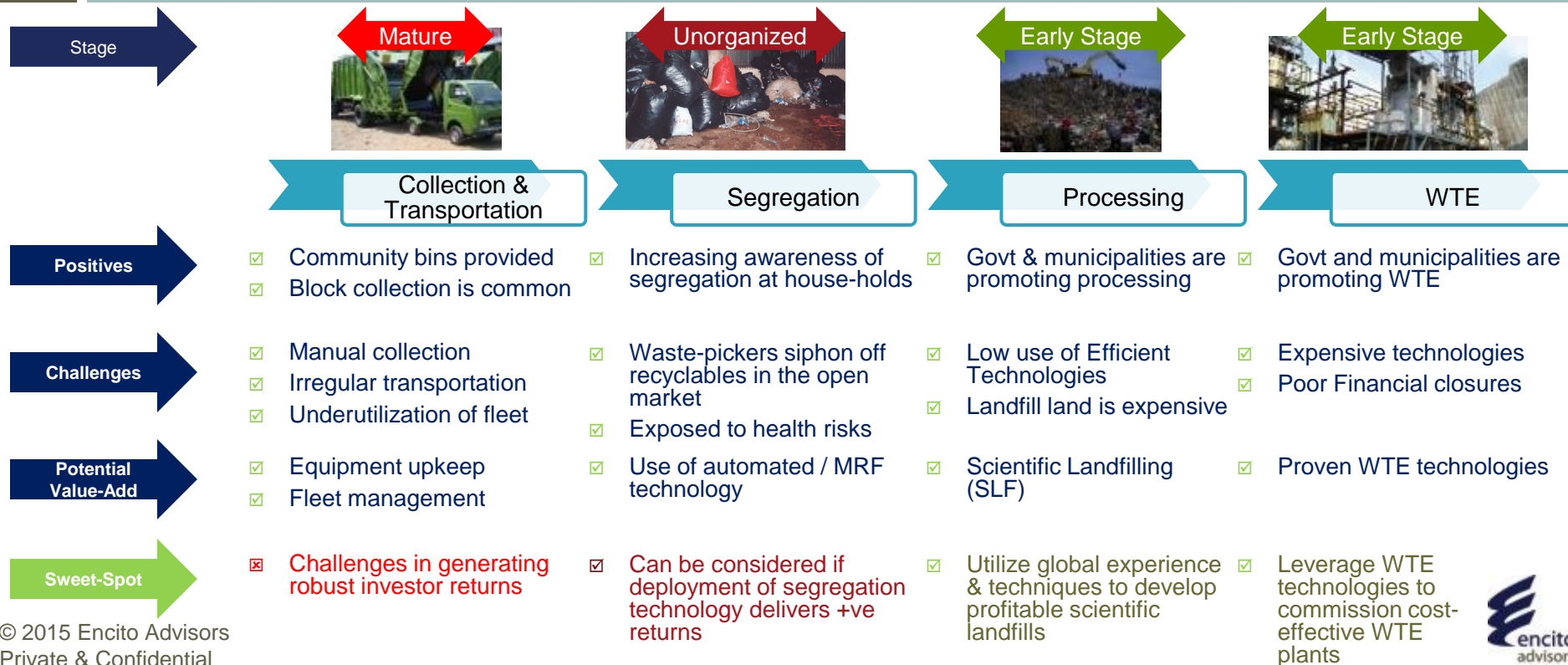
Revenue Model & Returns

Project Structure Design



MSW Value Chain & Recommendation

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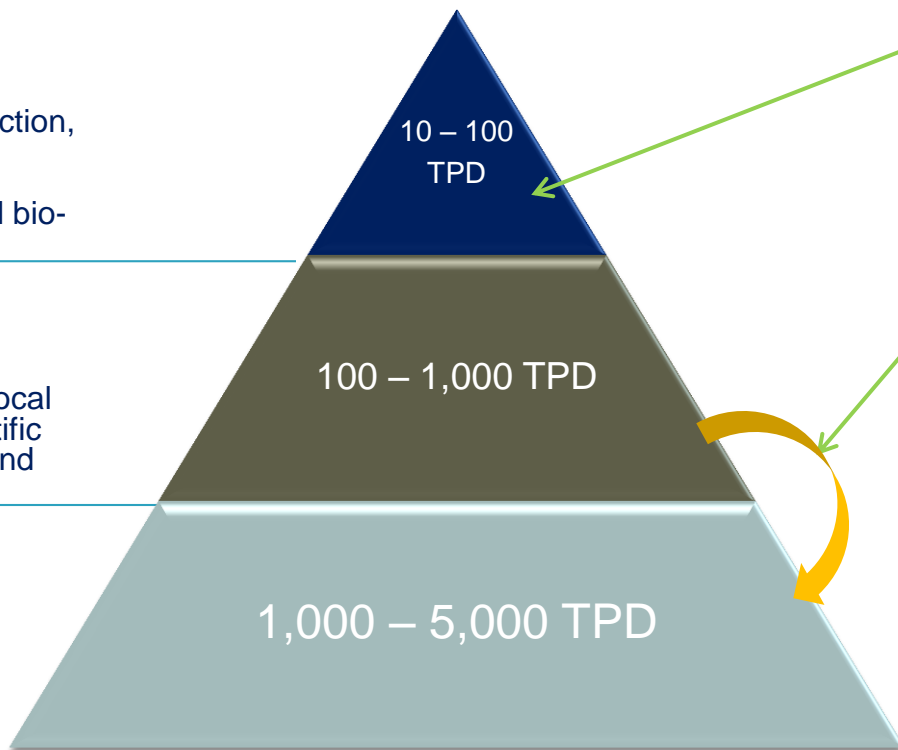
Project Size Considerations

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- ✓ Rural and small towns
- ✓ Activities include waste collection, transportation to local dumpyards, limited segregation, prospects of composting and bi-methanation

- ✓ Tier II cities and regions in metros
- ✓ Activities include waste collection, transportation to local landfill, tenders out for scientific landfills, composting, RDF, and waste to energy

- ✓ Metropolitan cities
- ✓ Activities include integrated waste processing landfill facilities, waste to energy facilities and landfill gas to energy facilities



- ✓ Ideal for C&T and Processing
- ✓ WTE is expensive

- ✓ Processing & WTE in this segment is the suggested sweet-spot
- ✓ Leverage efforts in the 1,000 TPD segment and replicate projects for sustained success

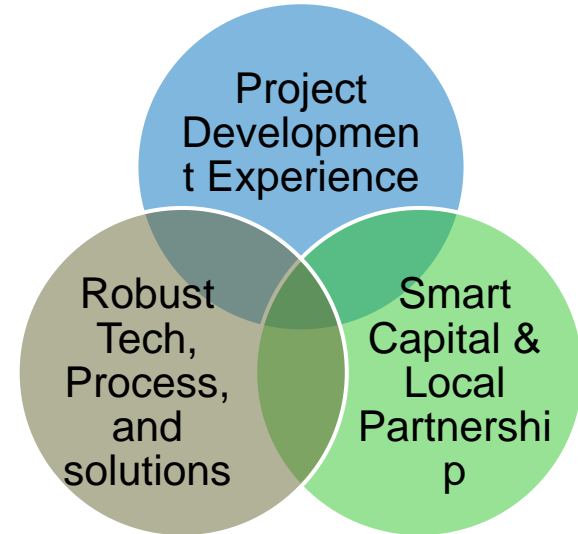
Partnering for Successful Mid-to-Large Projects

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Goals

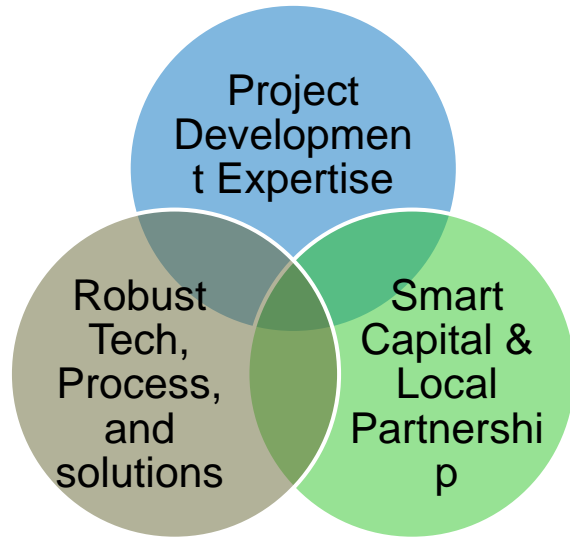
- 1 Focus on Processing & WtE
- 2 Quantify risks and educate investors / lenders
- 2 Ensure robust project returns
- 3 Deploy cost-effective solutions
- 4 Work with synergistic partners
- 5 Ensure successful project execution & long term ownership

Met By



The Winning Partnership Formula for Processing & WTE Projects

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Global Expertise

PQ's, Design, Financing and O&M

Global
Tech
Partner

Project Lead

Local Partner

Procurement, Execution & Commissioning

Local
Partner

Project Partner

Smart Capital

Investors with deep SWM/WTE understanding
Lenders aware of risks

Investors &
Lenders

Financial Closure

The Ideal SWM/WTE Project Structure

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Building a Foundation for a Long Term Win-Win Relationship

Strategic Investor

Majority Equity Owner
O&M (supported by Local Partner)

Local Partner

Main EPC Contractor,
minority stake, on the
ground activities

Others

- Technology providers
- Subcontractors
- Lenders

SPV

- Designs,
Finances,
Builds, Owns
and Operates
Plant &
Machinery
- Handles
permitting

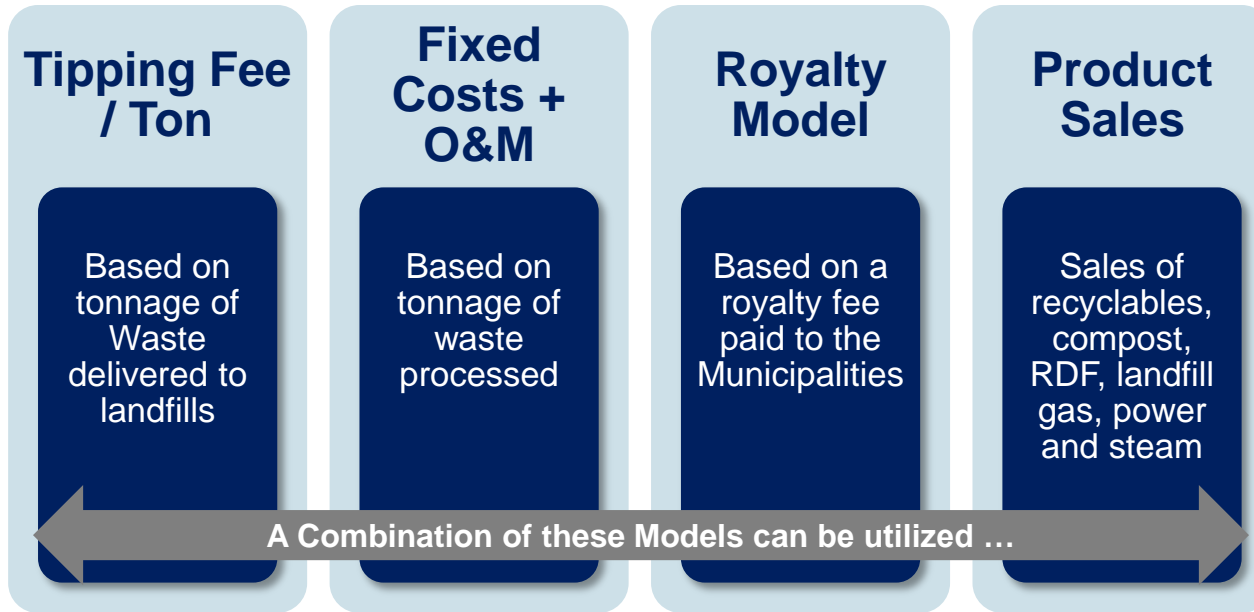


Municipalities / Industrial Clients

- Provides
- Land lease
 - MSW
 - Statutory permits

Example SWM/WTE Business Models

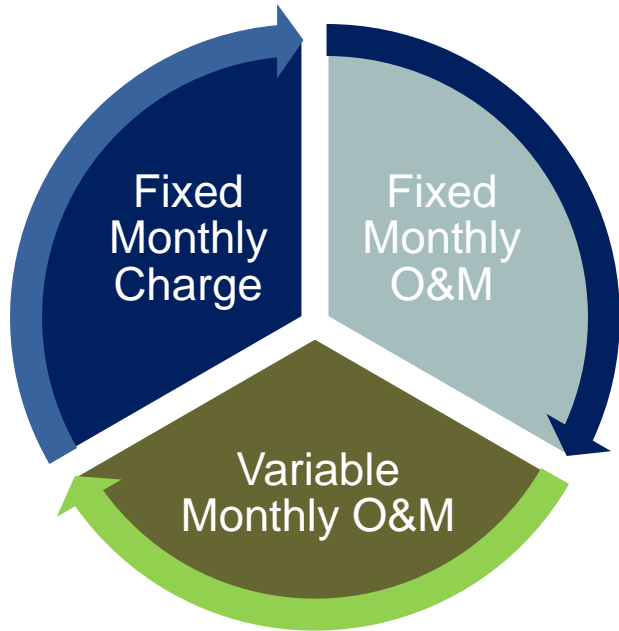
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A Well-Defined Structure and Business Model is Key to Profitability and Bankability of the Project

A Example BOOT SWM/WTE Business Model

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Fixed Monthly Charge

Covers project capital expenditures

Monthly Fixed O&M

Covers fixed monthly costs

Variable O&M

Based on tonnage of waste

Contractual Considerations

- Type: BOO, BOOT, BOT etc
- Minimum off-take
- MSW calorific values
- Plant outages / shutdowns
- Equity structures & exit scenarios
- Termination and take over
- Delays, liabilities & damages
- Force Majeure & Indemnity
- Jurisdiction & arbitration
- Others

SWM/WTE Project Development Considerations

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- Ensuring timely payments from Government bodies and clients
- Financial status of ULB's

Revenue Assurance



- Understand municipal processes
- Progress monitoring
- Intervention

Governance



- Contractual terms such as min offtake, first charge, default, termination etc.
- Financial health of

Bankability



- Partnering with technically and commercially capable comp.
- Ensure similar corporate culture

Partner Qual



- Tariff and business model consideration
- Winning project award in L1 regime

Cost Competitiveness



- Rag pickers
- Infrastructure
- Employment of local labor
- Incumbents

Local Issues



- Land availability & acquisition
- Power infrastructure
- RoU / RoW
- Inundated records

Land & Infra Issues



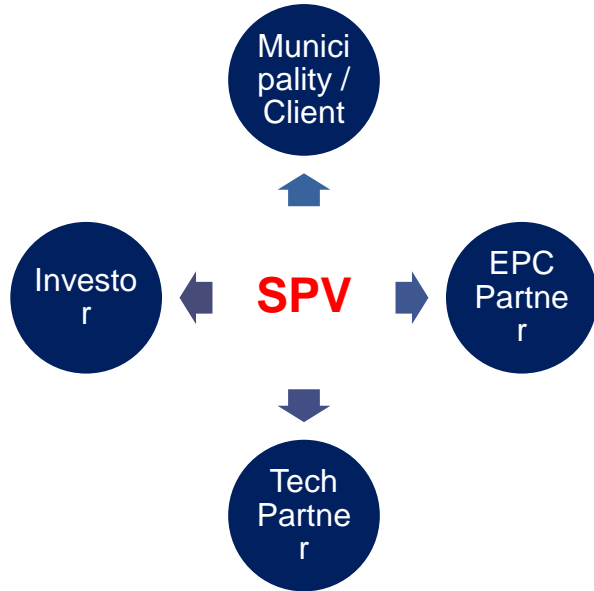
- Nodal clearances
- Permit issuance delays
- Multi-nodal system

Permitting



The Consortium SPV Structure Advantages

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The goal of the consortium is to build effective long-term partnerships delivering robust project returns

Additional Financing Considerations ...

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**Methods of bid
evaluation (e.g.
NPV, Payback,
etc.)**



**Favorably
managing forex
impacts**



**Bankability of the
project**



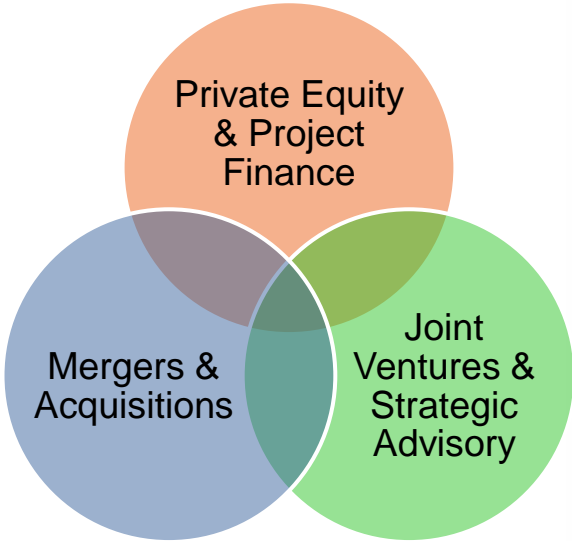
**Harnessing
incentives from
Global initiatives**

**These factors need to be carefully evaluated to ensure success in the SWM
Projects**

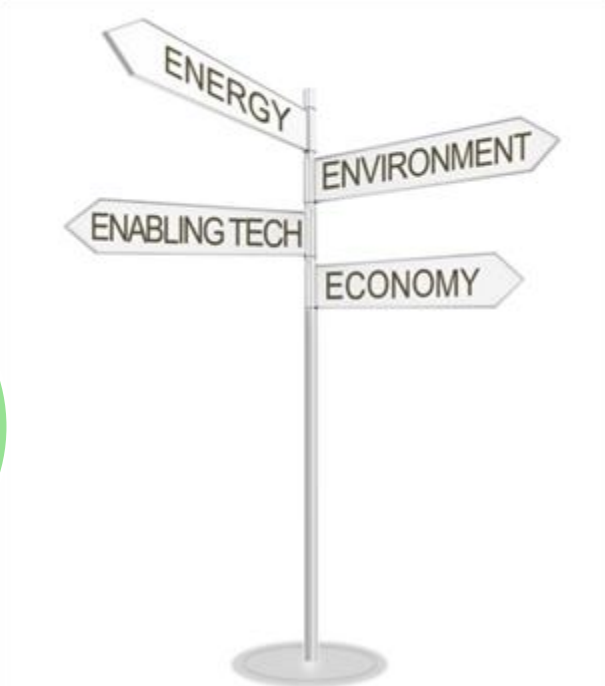
Encito Advisors

Strategic & Financial Advisory Services


Services



Focus



Expertise

	Cross Border Deals	
	Water	 Waste
	Solar	 Wind
	Hydro	 Biomass /Biofuels
	Oil & Gas	 Energy Efficiency

Thank you ...



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