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# **MALAYSIA'S NEXT WAVE OF WASTE-TO-ENERGY PROJECTS: MARKET OUTLOOK AND STRATEGIC CONSIDERATIONS**

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## BACKGROUND

Malaysia's waste-to-energy (WTE) sector is gaining momentum as the country moves to align waste management with broader energy transition and circular economy objectives. Government statements, ministry briefings, and recent corporate disclosures suggest a clearer pipeline of activity, even if much of the programme remains at the early or pre-award stage.

The Ministry of Housing and Local Government ("KPKT") has publicly outlined its target to develop 18 waste-to-energy ("WTE") plants across Peninsular Malaysia by 2050, as part of the country's broader renewable energy and circular-economy agenda. KPKT has indicated that the programme could generate as much as 600 MW of renewable energy, powering around half a million homes and supporting the nation's target of reaching 70% renewable energy capacity by 2050<sup>1</sup>.

For developers, investors, and municipal authorities, the opportunities in the country's WTE sector are significant, but so too is the need for careful legal and commercial structuring. In this context, a clear understanding of the evolving policy direction and the practical risks affecting project bankability will be critical to establishing a strong and sustainable position in this emerging market.

<sup>1</sup> "KPKT targets 18 waste-to-energy plants by 2050", *Sarawak Tribune*, 19 August 2025, <https://www.sarawaktribune.com/kpkt-targets-18-waste-to-energy-plants-by-2050/>.



**Figure 1: Indicative Sites of the 18 WTE Plants in Peninsular Malaysia<sup>2</sup>**

## COMMERCIAL THEMES SHAPING PROJECT BANKABILITY

### 1. Feedstock certainty

Long-term access to municipal solid waste ("MSW"), including defined obligations on the volume, delivery, and quality of the MSW, is central to the concessionaire's ability to sustain the operations of the WTE facility and service debt.

### 2. Revenue structure

Gate fees combined with electricity sales based on renewable energy power purchase agreements ("REPPA") are the typical revenue model. The predictability and security of these revenue streams, through adjustment clauses, payment mechanisms, and government support, are more important than headline tariffs.

### 3. Capital and financing structure

The capital-intensive nature of WTE projects makes robust financing structures a critical determinant of bankability. Concessionaires must secure debt and equity arrangements that align with their projected cash flows, revenue certainty, and construction timelines.

<sup>2</sup> "18 possible sites for waste-to-energy plants identified", *The Star*, 2 July 2024, <https://www.thestar.com.my/news/nation/2024/07/02/18-possible-sites-for-waste-to-energy-plants-identified>.

#### **4. Technology and performance**

Selection of proven technology with credible performance guarantees remains critical. Availability commitments, operation and maintenance ("O&M") capability, and contractor pedigree significantly influence project risk profiles and investor confidence.

#### **5. Staged procurement**

Most Malaysian WTE projects are structured across multiple contracts — land access, feedstock, engineering, procurement and construction ("EPC"), interconnection, and O&M. Managing interfaces and ensuring clear allocation of responsibilities mitigates knock-on delays and reduces exposure to disputes.

### **NAVIGATING LEGAL AND OPERATIONAL CHALLENGES**

#### **1. Managing land and site access risks**

Delays in the completion of land acquisition or the formal handover of project site access can significantly compress the construction timeline of a WTE facility, potentially affecting milestone achievement, budget, and overall project viability. These delays may arise from administrative processes, environmental approvals, land disputes, or in some instances, coordination with federal or state authorities responsible for land transfers. The concession agreement should therefore contain a clear responsibility matrix and appropriate apportionment of delay risks between the parties best placed to manage them.

#### **2. Managing revenue shortfall**

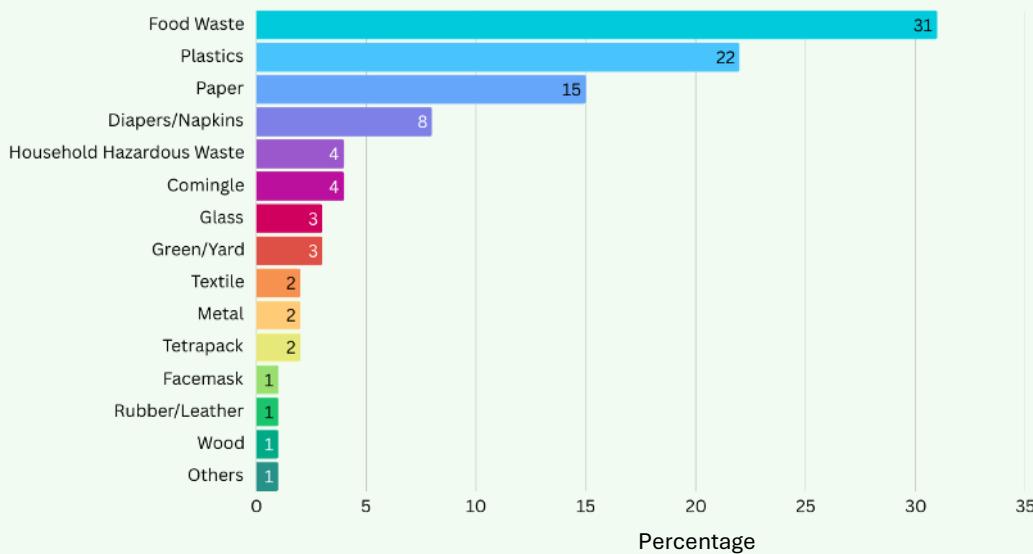
Where the concession agreement typically sets a minimum daily tonnage of MSW to be delivered, any shortfall exposes the concessionaire to reduced gate fee revenue and lower electricity generation. The concession agreement should therefore address whether the concessionaire is entitled to compensation for such shortfalls—either through an adjustment to the gate fee or by reference to the corresponding loss of energy production under the REPPA. Consideration should also be given to the possibility of sourcing substitute waste from alternative suppliers to mitigate shortfall risks.

#### **3. Managing downtime and waste diversion**

During periods of planned or unplanned maintenance, WTE facilities typically continue to receive MSW. In most concession structures, the gate fees cover the management, handling, and safe disposal of waste received while the WTE plant is offline. However, if waste cannot be processed by the WTE facility and must instead be diverted to landfill, this may trigger diversion deductions or negatively impact the key performance indicators (KPIs) that measure the concessionaire's operational performance. Consideration should be given to contingency arrangements to source alternative processing or disposal solutions, where feasible, to minimize operational and reputational risks.

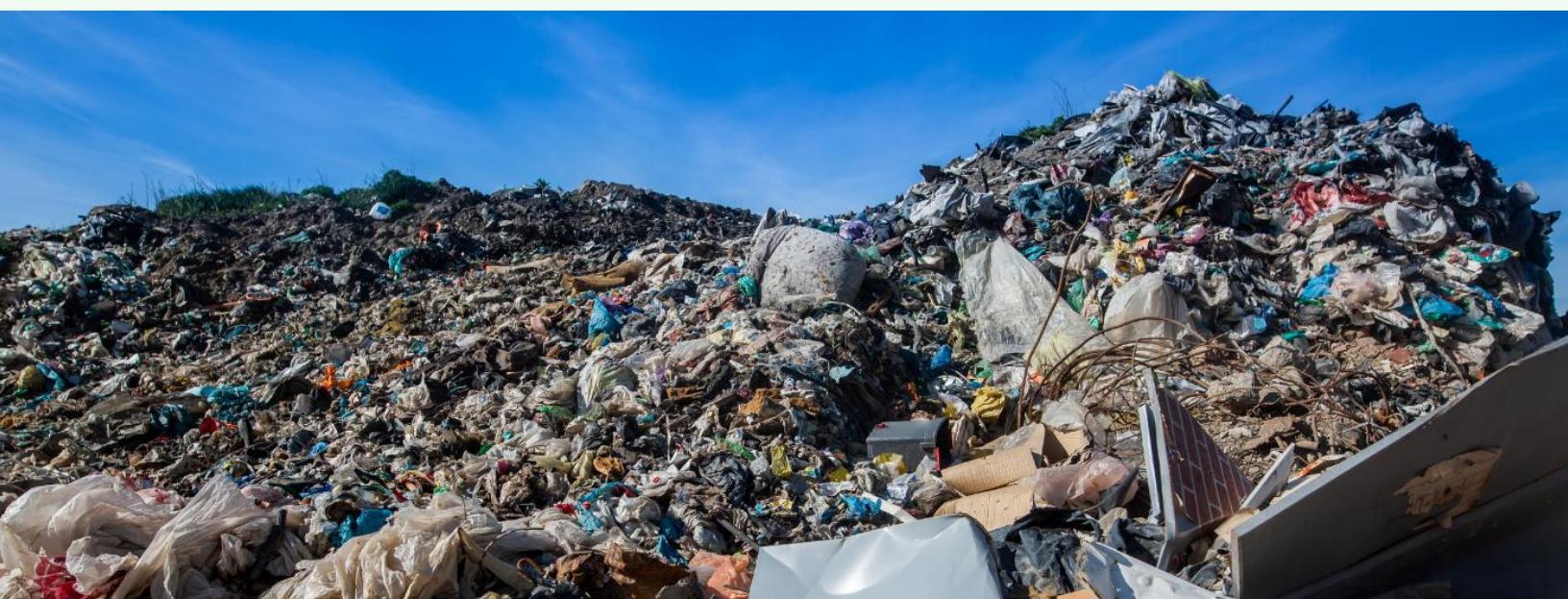
#### 4. Managing fluctuations in waste composition

Neither the federal nor state government provides assurances on the composition or calorific value of the MSW delivered to the WTE facility. Variability in these parameters can lead to reduced energy output, lower plant availability, and challenges in meeting the minimum declared annual availability commitments under the REPPA. This may expose the concessionaire to liquidated damages or claims under performance guarantees, with potential financial and reputational consequences. Careful negotiation of technical and contractual elements is critical to protecting revenue, limiting exposure to performance penalties, and maintaining overall project bankability.



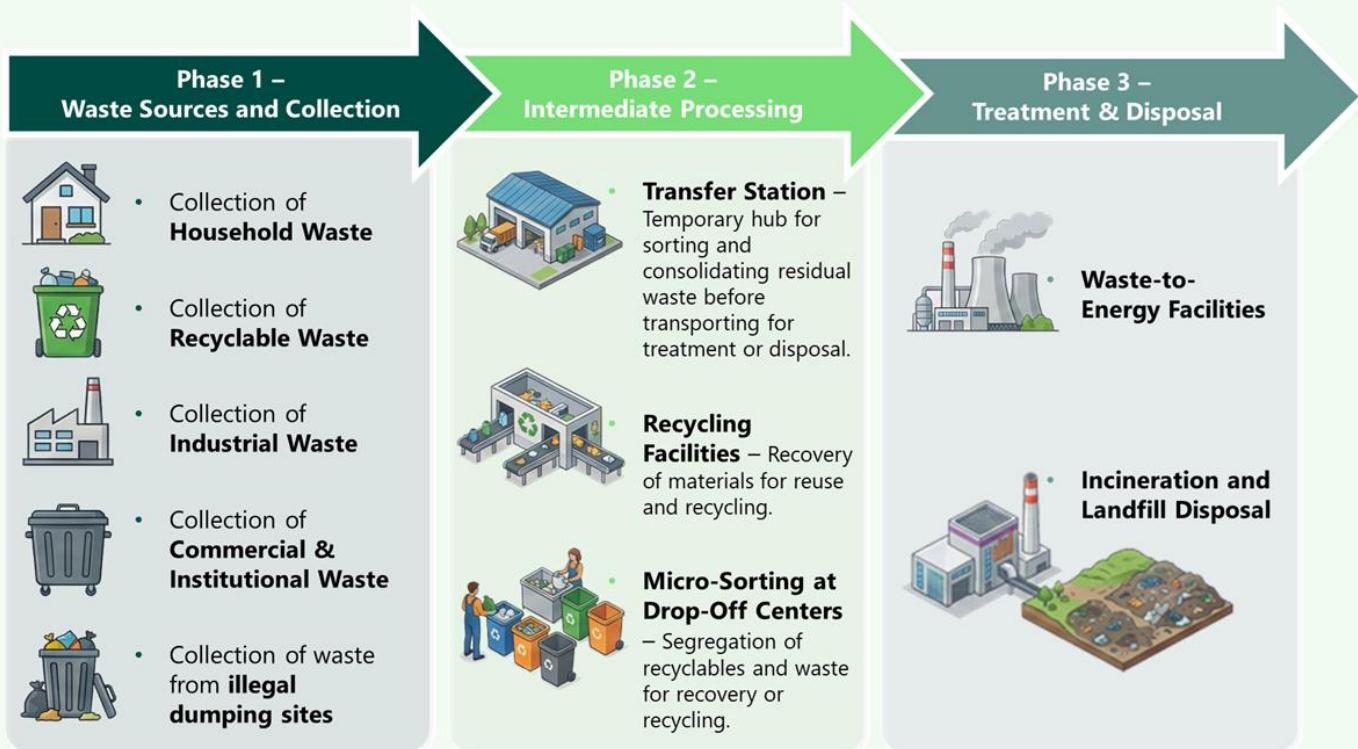
**Figure 2:** Composition of Municipal Solid Waste Streams in Malaysia<sup>3</sup>

<sup>3</sup> SWCorp Malaysia, Annual Report 2022, pp. 36–37. SWCorp has conducted a composition study of household waste (as disposal) across 7 states implementing Act 672, covering 26 disposal sites. The data provide an indicative breakdown of household municipal solid waste streams, illustrating the relative proportions of different waste types.



## 5. Managing interfacing with co-located assets

Where a WTE facility is co-located with a sanitary landfill, the concessionaire must actively manage interface risks between both assets during construction and operation phases. Effective coordination is essential to ensure the safe and efficient integration of both assets and avoid operational disruptions. Coordination will be required on matters such as aligning landfill operation schedules, designating separate or shared waste reception areas, ensuring safe truck routing and logistics, and complying with environmental, health and safety protocols.



**Figure 3:** Tracing the Lifecycle of Municipal Solid Waste

## LOOKING AHEAD

Malaysia's WTE sector is at a formative yet pivotal stage. The Government's 18-site roadmap provides a clear long-term signal of policy direction, while the inherent technical and contractual complexity of WTE infrastructure highlights the critical importance of disciplined due diligence and well-crafted contractual frameworks.

Looking ahead, the WTE sector in Malaysia is expected to evolve steadily, with opportunities initially concentrated in states that offer reliable waste streams, supportive regulatory frameworks, and accessible grid connections.

Success will depend on a practical approach to risk management, disciplined contractual arrangements, and proactive stakeholder engagement. As the market matures, market participants who build flexible and resilient project structures will be well-positioned to capture opportunities and translate policy momentum into bankable, long-term assets, and contribute to the country's broader renewable energy and circular economy objectives.



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