

30 SEP, 2023

WtE space heats up

The Star, Malaysia



ENERGY

By GURMEET KAUR  
gurmeet@thestar.com.my

WASTE-to-energy (WtE) is the latest in the renewable energy (RE) space that is getting a lot of attention.

YTL Power International Bhd announced recently that it is partnering with KDEB Waste Management Sdn Bhd to develop a 58 megawatt (MW) WtE plant on a 245-acre site in Rawang, Selangor. The proposed RM4.5bil plant will use municipal waste from six areas to generate electricity.

Last week, the country's largest power generation plant using landfill gas began operations at Bukit Tagar Enviro Park (BTEP), Hulu Selangor.

The plant, which will convert methane gas from solid waste into RE, is connected to the national grid and has the capacity to generate 12 MW of energy.

This is enough to power 4,000 domestic homes, Housing and Local Government Development minister Nga Kor Ming said during the launch of BTEP.

Nga said government plans to install a WtE energy plant in every state in line with Malaysia's aim to be a RE powerhouse by 2035.

Quoting data from the Statistics Department, the minister said the country generates more than 40,000 tonnes of waste daily, which can be turned into RE and sold. Currently two big concessions to build WtE are in the offing – at Bukit Payong, Batu Pahat, Johor and Sungai Udang, Melaka.

According to reports both plants are required to have a minimum capacity of treating and processing 800 tonnes of municipal solid waste (MSW) per day.

Market talk is that independent power producer Malakoff Corp Bhd has won the contract for the development of the Sungai Udang plant, which was put out to tender in Feb 2021. However, this is not confirmed yet.

Malakoff has a presence in waste management via Alam Flora Sdn Bhd, which it acquired from sister company DRB-Hicom Bhd in 2019.

This business complemented its operations and is the catalyst for its entry into the WtE space.

Speaking to *StarBizWeek* recently, Malakoff's managing director and CEO Anwar Syahrin Abdul Ajib said WtE is one area of its focus under RE and it plans to participate in upcoming WtE projects. This comes as the group's expands its RE growth to meet its own sustainability targets of achieving an RE capacity of 1,400 MW by 2031 and a recycling rate of 15% to 20% from the waste collected by Alam Flora in about two years time.

Dual role

With the shift towards a circular economy, WtE plants play a dual role, says Nirinder Singh Johl, founder and CEO of Asia Carbonx Change Pte.

"Unlike the traditional linear economy, which follows a take-make-dispose model, a circular economy aims to reduce, reuse, and recycle resources, thus minimising waste and maximising resource efficiency.

"By converting solid waste into clean, renewable energy, these projects contribute not only to waste reduction but also to Malaysia's efforts to transition to a low-carbon energy sector," Nirinder, who was formerly the managing director of Tenaga Nasional Bhd (TNB)'s subsidiary, TNBX, adds.

Citing YTL Power's proposed 58 MW capacity WtE plant as an example, Nirinder said it is expected to contribute to over 250,000 tonnes of carbon dioxide equivalent yearly.

One listed company big into WtE is Cypark Resources Bhd. The company boasts the first up and running WtE plant, although it did take some time to put it up, and seemingly at a cost higher than what was first envisaged. The company had received a 25-year concession agreement in 2015 to build and operate the 20 MW

# WtE space heats up

## More companies vying for a piece of the action

**"What we need is strong policies and enforcement. For example, homes, industries and food and beverage outlets need to be forced to separate their trash and even be charged a fee based on the weight of rubbish they dispose of."**

Amarjit Kaur

Ladang Tanah Merah plant in Negri Sembilan, which began operations on Dec 14 last year.

Although the WtE segment recorded a revenue of RM9.2mil in the quarter ended June 30, (6Q23 as Cypark changed its financial year end from Oct 31, 2022 to April 30, 2023), it is still loss-making due to impairments made in relation to the WtE plant.

In its stock exchange filing, Cypark says the revenue "was lower from expectation during its initial stage of operation and we targets to get the optimal capacity soon".

It expects various recurring and secured inflows from this project to "contribute positively in the long run and the margin will improve once the plant has stabilised".

Meanwhile, other listed players such as Citaglobal Bhd and reNIKOLA Holdings Bhd are vying for a piece of the action.

In the case of Citaglobal, it is partnering with Shanghai-based SUS Environment Co Ltd, a developer and operator of WtE plants to explore the potential and feasibility of developing such power plants in Malaysia.

Towards this end, Citaglobal's executive chairman and president, Tan Sri Dr Mohamad Norza Zakaria says SUS has agreed to commit RM15bil for the Malaysian market.

"SUS is the largest WtE company in the world, and together with its technology partner Hitachi Zosen, it has successfully delivered more than 1400 projects globally using state-of-the-art incinerator technology.

"We are currently engaging all stakeholders and the relevant authorities to ensure that the RM15bil commitment by SUS will be channelled to the Malaysian market," he says.

With its track record, Mohamad Norza says SUS is confident it can fast-track the development of Malaysia's WtE industry on its own.

"In fact, it already has a plan on how to develop the WtE industry in a market like Malaysia," he adds.

Shedding some light, Mohamad Norza says the company's plan is to divert all waste from unsustainable landfills to WtE plants. On how it intends to get access to these landfills, this will be via public tenders or unsolicited bids, he adds.

According to him, the local WtE industry is still "very much in the infancy stage" although it has been ten years since the government first planned the implementation of such plants.

"It's worth highlighting that right now, we need to use 150 acres of land every year to store our rubbish. And in just 10 short years, we have already buried 1,500 acres of waste, which our next generation will have to deal with," he says, adding that dumping waste into a landfill is an outdated and unsustainable practice.

Meanwhile, Andy Cheng, head of operations of reNIKOLA group of companies says their interest is to explore the anaerobic digestion (AD) option for food waste and source-separated organic (SSO) waste.

He explains that most WtE projects in the pipeline are using mass-burn combustion

technology, which involves the direct incineration of unprocessed or minimally processed waste materials to generate heat and electricity.

But this is not the only WtE technology available as the spectrum also include AD, gasification and pyrolysis, among others.

"AD is a biological process that breaks down organic materials in the absence of oxygen. It generates biogas, primarily methane, and a nutrient-rich digestate.

"The biogas captured from the AD process is a known RE source that can be used for electricity generation, heat production, or even further purified into green natural gas, commonly known as biomethane.

Compared to incineration, AD results in lower emissions of air pollutants and does not generate any ash, which can be challenging to manage and dispose of safely," Cheng says.

But to ensure supply of feedstock, he adds WtE players will need to partner with MSW collectors.

Currently, he says there are three main concession companies dealing with MSW, including Alam Flora that manages Kuala Lumpur, Putrajaya and Pahang.

SWM Environment Sdn Bhd manages the southern region (Negri Sembilan, Melaka, Johor), while E-Idaman Sdn Bhd covers the northern region of Kedah and Perlis. As for the other states, MSW is operated under a state-owned company or by the municipality itself.

According to Cheng, WtE is not a new concept as some traditional industries have their own WtE facilities to handle their waste disposal.

For example, palm oil mills have their biomass boiler to burn their waste, while petrochemical plants burn their off gasses for power.

However, he says WtE projects for MSW management is entirely a different ball game. He believes the recycling rate for MSW could also be very low as domestic segregation of recyclables is still not a common practice despite recycling campaigns.

Apart from these two companies, Ranhill Utilities Bhd is also reportedly eyeing to expand into the WtE space.

Where unlisted companies go, Worldwide Holdings Bhd is undertaking the development of the Jeram WtE Project in Selangor.

According to a recent press release from the company, this project will collectively process an impressive 3,000 tonnes per day of solid waste and generate about 50 MW of clean energy.

### Gaining traction

WtE is widely in use in developed countries like Japan, South Korea and northern Europe.

The concept is making inroads in South-East Asia with Thailand planning to build 79 WtE plants in the coming years, while at least 17 such plants are being proposed for Indonesia, a recent report notes.

However, concerns about environmental and public health impacts have led to protests and project delays.

Moreover, it is debatable if WtE is actually a RE.

"Going by the definition of the United Nations, RE is defined as energy derived from natural sources that are replenished at a higher rate than they are consumed. Sunlight and wind, for example, are such sources that are constantly being replenished. Renewable energy sources are plentiful and all around us.

Waste clearly does not fall within that category of natural sources for RE," points out Amarjit Kaur, a director and consultant of Shemsi Sdn Bhd.

She believes WtE should not be painted as a miracle solution to the country's waste management problems.

"If it was, then you would have the odd situation of having to keep generating more and more waste in order to keep the energy generators going.

"That would be missing the forest for the trees and may disincentivise efforts to actually reduce, reuse, recycle, which go against the principles of circularity," Amarjit says.

She says it is noteworthy that the Malaysian government is establishing a National Circular Economy Council.

"What we need is strong policies and enforcement. For example, homes, industries and food and beverage outlets need to be forced to separate their trash and even be charged a fee based on the weight of rubbish they dispose of.

This will automatically give life to the old mantra of reduce, reuse and recycle."

But with the waste problem unavoidable in the short to medium term, WtE plants are increasingly being pushed as a solution although the financials are yet to be tested.

For a WtE project to be successful, Amarjit says the system must be one which is effectively 'closed'.

"What that means is that it must ensure minimal greenhouse gas emissions and prevent other environmental releases, to help mitigate climate change and prevent pollution."

Citaglobal's Mohamad Norza says a clear roadmap is needed on how to close existing landfills so that new waste treatment solutions can be implemented.

"If we are able to provide a better and more cost-effective solution than what is happening with our landfills right now, then surely the authorities will be open to ensuring that all waste is diverted to WtE plants and not landfills.

"But for a huge undertaking like this, we will need the commitment of the authorities.

"What we need is proper regulation, and for the government to encourage or incentivise the development of this segment, similar to what is being done for the RE sector now. For example, WtE could be part of the equation to achieve net-zero carbon by 2050."

reNIKOLA's Cheng says WtE projects face several challenges. One is funding given the high capital and operating expenditures. Considering unfavourable public perception, finding a suitable project site could pose a problem.

Towards this end, he says private investors will need government commitment and support during the initial phase of WtE implementation.

"Premium RE tariff combined with guaranteed MSW supply at reasonably buffered tipping fee structure would enhance the success rate of WtE implementation in Malaysia," Cheng adds.

Nirinder believes a multi-faceted approach is needed to drive the industry and shed the not-in-my-backyard mentality when it comes to WtE.

This includes clear long-term policy, education, investing in technology and community involvement.