Is Malaysia ready for renewable natural gas?

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PART of the answer to Peninsular Malaysia's gas shortage may lie in oil palm trees, cows and chicken.

Oil palm estates and livestock farms could generate renewable natural gas that may be used for local and foreign industries.

However, this hinges on whether there is enough renewable gas and also the price that the government will pay for renewable gas, industry executives said.

Industries in the peninsula have relied on natural gas in offshore Terengganu since the 1980s for direct fuel or indirectly as most power plants run on gas.

However, the gas is running out. Malaysian Industrial Development Authority (MIDA) director-general Datuk Jalilah Baba reportedly said from 2012 onwards, the government will look to import gas for domestic use.

In anticipation of less gas, the government has also given out licences to build more coal-fired power plants several years ago.

National utility Tenaga Nasional Bhd (TNB) is also keen on more renewable energy sources like hydro-electric plants and small plants that run on oil palm waste or biomass.

But the problem with hydro is that sizeable plants could only be built in Sarawak due to its large rivers while biomass plants are too small to make much of a difference.

Currently, biomass and biogas plants are built by plantation companies to produce electricity for their own use and also to sell to TNB.

But another idea is to sell the gas to Gas Malaysia Sdn Bhd, the national gas pipeline operator.

Palm oil mills are encouraged to capture methane gas from palm oil mill effluent to reduce air pollution.

"After the methane quality is verified, it can be compressed to the right pressure before it is injected into the national gas pipeline. But we must first ascertain whether the volume of methane from biogas plants is significant enough for sale to the gas grid," said Lipochem Sdn Bhd managing director Koh Pak Meng.

Lipochem is a process engineering company.

"Alternatively, the purified methane can be sold as compressed natural gas for industrial users like oleochemical producers or as transport fuel for taxis and express buses," he added.

With this in mind, Lipochem is currently collaborating with Green Ocean Corp Bhd to develop cost-effective ways to turn agriculture waste into much-needed natural gas and electricity.

According to the Malaysian Palm Oil Board, there are 417 palm oil mills in the country, of which 246 are in Peninsular Malaysia and another 117 in Sabah.

Another industry player, Bell Corp Sdn Bhd chief executive Datin Liana Low said one more crucial aspect to the idea is how much Gas Malaysia will pay for renewable gas.

"Right now, TNB has feed-in tariffs for 'green' electricity. Gas Malaysia, however, does not have any feed-in mechanism for renewable natural gas."

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"If the government were to discuss with Gas Malaysia to come up with a commercially viable feed-in tariff for 'green' gas, palm oil millers in Peninsular Malaysia can consider selling purified methane for injection into the country's gas pipeline," she said.

"Our rough estimate shows natural gas pipelines on a per kilometre basis cost just half as much to build as high tension power cables. Also, transmission loss via gas network is only a quarter to that of electricity via the power grid," she said.

Gas Malaysia only buys natural gas from Petroliam Nasional Bhd (Petronas) at RM15 per million metric british thermal units (mmBtu), while Petronas sells a fixed annual supply of natural gas to the manufacturing sector and the bulk, or about 60 per cent, goes to power plants.

The manufacturing sector now uses some 15 per cent of natural gas in the national pipeline, following a recent additional allocationof 100 million standard cu ft per day (mmscfd).

TNB and independent producers such as MMC Corp, Genting and YTL Power pay RM10.72 per mmBtu.

The manufacturing sector, however, pays much more. Companies using less than two mmscfd pay RM24.54 per mmBtu of gas. Those using more pay RM32.56 per mmBtu.

Low noted that natural gas users in the country will eventually pay an international price of about US$12 (RM41) per mmBtu.

"A commercially viable feed-in rate for renewable natural gas producers would be around US$6 (RM21) per mmBtu," she said.

Bell Corp operates six mills in Peninsular Malaysia, one in Sabah and two in Indonesia.

It has installed a biogas plant to its Johor mill to extract methane from mill sludge. It now generates two megawatts of electricity for sale to TNB.