

Tapping renewable energy

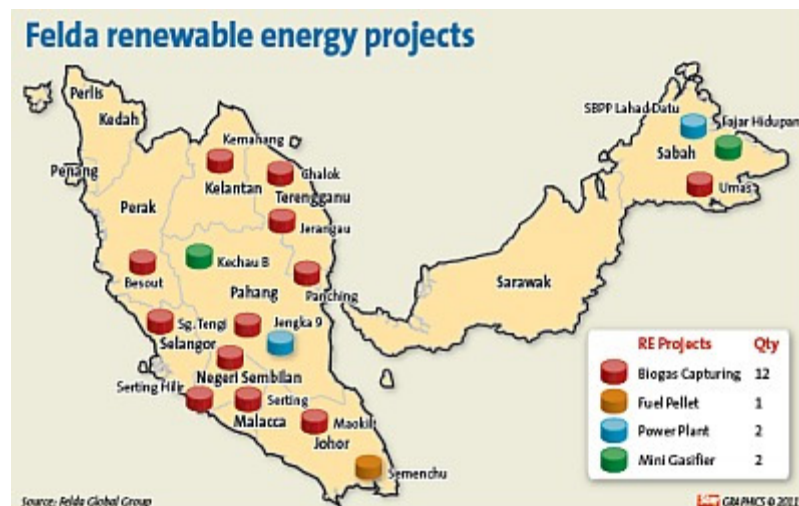
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PALM biomass waste previously is often perceived as a bane to many oil palm mill operators.

Every year, millers had to incur huge costs to transport and dispose empty fruit bunches (EFB), palm shells and mesocarp fibre after the process of crushing and extraction of palm oil and palm kernel oil from the fresh fruit bunches (FFB).

This situation, however, will no longer persist as many oil palm plantation owners with mills in Malaysia are now actively looking at palm biomass waste as feedstock for them to set up “green” renewable energy projects; thus creating an additional lucrative income for the operators.

One such company in the forefront of utilising palm biomass waste to generate renewable energy and power projects is [Felda Global Group](#), which is also the world's largest plantation group.



Of the Group's 15.3 million tonnes FFB which goes into its mills annually, 3.36 million tonnes of EFB, 1.83 million tonne of mesocarp and 760,000 tonnes of palm shells are accumulated. Some 6.1 million tonnes of old palm trunks are also derived from harvesting and 3,000 tonnes from replanting activities.

In addition, its mills have palm oil mill effluent ponds which could also be used to capture methane gases to generate biogas.

It is said that Felda could easily generate an additional income of RM500,000 per mill by just selling the biomass waste like palm shells and mesocarp fibre alone.

Given Felda's abundant biomass resources and capability to convert them into renewable energy and power initiatives, it is inevitable for the group to venture into such good prospect and sustainable energy ventures, says [Felda Holdings Bhd](#) head of biomass Ahmad Nor Azman Jamin.



A Felda waste collection site for renewable power near Jengka 8, Pahang.

To date, the group has 56 biogas plants, two power plants, six compost plants, two mini gasifier plants and one fuel pellet plant all utilising biomass waste as the feedstocks.

Sahabat biomass power plant in Lahad Datu, Sabah, set up in 2001, is Felda's first EFB-based clean development mechanism (CDM) project in Malaysia and also the first in the world.

(CDM is a United Nations sponsored agreement under the Kyoto Protocol whereby industrialised countries finance the reduction of global greenhouse gas (GHG) emissions in developing nations and can also purchase certified emission reduction (CER) or carbon credit.)

“Many rural sites in Sabah have no connections to the national electricity grid. Our rationale is replace the diesel usage with EFP-resources to generate 7.2 MW electricity and also 16 tonnes of steam for Felda mills there,” says Nor Azman.



Nor Azman ... 'Many rural sites in Sabah have no connections to the national electricity grid.'

Biomass power plant

In fact, Sahabat biomass power plant, which produces 25,000 tonnes of CER per year, has started selling them to a European buyer since 2006.

Meanwhile, under the Government's Entry Point Project 5 (for biogas), Felda is also planning for 49 of its 71 mills to have biogas capturing plants.

Of the 49 biogas plants, 35 have been designated to supply electricity and are hooked to the national grid, adds Nor Azman.

He says; "Currently, we are segregating 12 existing biogas plants with one in Serting Hilir already hooked to the grid."

Another exciting development is Felda Global Group and [Tenaga Nasional Bhd](#)'s joint-venture company, [FTJ Bio Power Sdn Bhd](#), which will set up a RM120mil bio oil plant in Jengka, Pahang to generate 12.5 million watts of electricity using purely EFB.

The EFB feedstock is accumulated from seven out of the eight palm oil mills owned by Felda Global Group in Jengka. The plant is scheduled to be operational by December 2012.

Another important venture is the Sahabat Bio Oil project in Sabah via a joint-venture with [Premium Renewable Energy Group](#). This will see four Felda palm oil mills having biogas facility with 2 MW electricity generation each via the utilisation of EFB.

"These mills will then supply the treated EFB and excess electricity about 6 MW to the bio oil plant." The potential take-off of the bio oil product include fuel for stationary engine in power plant, speciality chemicals extraction and export market as green fuel," says Nor Azman.

Currently, the Felda Global Group is pursuing several projects to fully utilise EFB produced by its mills. About 70 other projects are in progress or in the pipeline, including composting, pellet production and combined heat and power projects. By 2013, EFB produced by all 71 mills in the Felda Global Group will be fully consumed.

Going forward, Nor Azman says Felda will likely be seeking partnerships in the area of renewable energy.

"It has the capability to lead government-to-government collaboration on drawing up the regional renewable energy road map and implementation, for example, with Indonesia, which is also a major producer of palm oil."

Challenges in the sector include the biomass conversion technology which is still not mature, high transportation cost for bulky materials with high moisture content, lack of human capital competency and the **pricing of renewable-energy based electricity due to feed-in tariff.** (is FiT seen a challenge and not an incentive?)