

## Raw Material For Biogas Situation in Thailand

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Under the energy and economics crisis in Thailand, bio-fuel is now being considered as an important national policy. It was reported that in Thailand, 4,252.59 million liters of fuel oil, 305.73 million liters/day of diesel, 1,204.79 million cubic feet per day for natural gas and 15,388,095 tons of lignite was used for power generation. This staggering number represents the fuel consumption figures for only Thailand. If we try to imagine the amount of fuel consumed by the whole world, we will see the countless amount of fossil fuel being burned by the people of the world.

Burning fossil fuel for energy generation will increase the emission of polluting gases such as CO<sub>2</sub> and SO<sub>2</sub>, which have negative effects on the environment such as global warming and acid rain. The energy and environmental crisis is happening because of our inefficient management and wasteful energy utilization practices. This has forced us to pay more attention to the use of renewable energy sources such as solar energy, wind power, biomass, biogas and others. These renewable forms of energy will become alternatives to traditional sources of energy because they are cleaner and greener for consumers and friendlier for our world in the future.

### Raw Material for biogas in Thailand

Biomass is one type of renewable energy source that should be promoted in Thailand. Agricultural residues from both the agricultural and agro-industry abound and are usually treated as waste materials and not as a potential resource. Biomass is any material originating from living organisms consisting of carbon and hydrogen that can be combusted or burned. Agricultural waste such as manure and feces also is biomass and can be harnessed to generate methane gas, a useful gas that can be used for energy production.

Biogas, production from agricultural materials will be a source of energy to replace fossil fuel. There are several agricultural product can be used as the raw material for biogas.

**Table 1** Harvested area, production of major crop in Thailand, 2003

Crop	Harvested area (1,000 ha)	Production (1,000 tons)
Rice	10,309.92	27,241
Maize	1,083.84	4,178
Cassava	1,057.28	21,440
Sugarcane	1,121.44	64,974
Oil palm	287.84	4,902
Pineapple	81.42	1,899

**Table 2** Number of cattle, dairy – cow, buffaloes, swine, broiler, hen – layer and duck in Thailand, 2003

	No.
Cattle	5,084,170
Dairy – cow	392,625
Buffaloes	1,689,762
Swine	7,064,196
Broilers	136,085,756
Hen – layer	41,019,068
Duck	23,800,092

Source : Department of Livestock Development

## **Sustainable energy development in Thailand**

There are some factors that we take into consideration for sustainable energy development, some of which are unpleasant and not easy to attain over a short period of time. The first issue concerns energy consumption in Thailand. It is unavoidable that energy consumption in Thailand will increase considerably. Although we try to promote more efficient energy use and energy saving practices, the consumption of energy will nevertheless increase. Several strategies can be employed to reduce energy consumption. We have to admit that sometimes, these are not easy solutions. One strategy is to create a change in the behavior of energy consumers. However, this is easier said than done.

Another issue that we should take into consideration is that in order to foster sustainable energy development in each country we have to think about the potential and limitations in resources available in each country. It is not possible to have one model of sustainable energy technology and apply this model to all other countries. It is generally agreed that energy savings and development of sustainable energy development is important, although still very expensive to apply. We should, however, not be disheartened by the high cost of the technology and continue research and development activities that would lower sustainable energy technology costs in the future.

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