

# The royal seeds of a biofuel revolution

The late King laid the groundwork for Thailand's path toward energy independence. By Yuthana Praiwan

**M**any people may imagine Chitralada Palace, the residence of the late King Bhumibol, to be gorgeous, eloquently decorated and glittering with gold.

In fact, the palace was just a simple residence, albeit multifunctional, used as one of the largest R&D centres in the country for numerous royal projects for more than five decades.

Those royal projects have ranged from rice strain development to livestock, fisheries, biofuel and renewable power.

Although biofuel took longer to develop because it required more deliberate scientific research and experimentation compared with other agriculture projects, it has now become a mainstream fuel source. The late King wanted to help Thailand become more self-reliant in terms of energy.

Biofuel is one of more than 4,000 projects initiated by the late King, helping Thailand to reduce oil imports substantially and become a regional leader in alternative energy development.

The late King first warned in 1961 that the world is running out of fossil fuels, urging the switch to more reliable sources of energy that can be produced domestically, like "energy crops" used to produce biofuel.

The seeds of the biofuel and renewable power initiatives began early in the late King's reign, as he had travelled across Thailand to develop a clearer picture of people's living conditions.

The late King was made aware of the plight of the poor living in remote areas, who were lacking in the most basic amenities, including

water. That encouraged the late King to spend his life searching for reservoirs and pushing dam-building efforts to store water, both easing the plight of farmers while also producing hydropower.

Sermesakul Klaikaew, the governor of the Provincial Electricity Authority, said the late King tried to search for local resources, particularly major rivers, to be used for producing renewable power.

Related irrigation projects were similarly not just about agriculture, but also for cutting expensive oil imports, as Thailand at that time had to import 100% of its oil.

The development of major dams in Thailand by the late king also helped increase the number of Thais with access to electricity, said Mr Sermesakul.

In 1968, only 10% of Thais, or around 3 million people, were able to use electricity. Twenty years after the development of the Bhumibol dam, that ratio had increased to 50%.

The oil crisis in the Middle East during the 1970s was yet another chapter of world history that Thailand learned from, reinforcing the late King's warning from the previous decade.

The late King allocated 955,500 baht of his own money to conduct R&D for ethanol produced from molasses — a waste product from the sugar-crushing process. Ethanol-blended petrol subsequently became widely used across the country.

In 1983, the late King led efforts to conduct more R&D on biofuel made from palm oil. The project was a collaborative effort between the Prince of Songkhla University and Nikom Aoleuk Agricultural Cooperative in Krabi, one of the major palm oil plantation areas.

The research centre for that project ran integrated production processes, from upstream to downstream. In 1985, the first drop of purified biofuel was put to use in trial tests before becoming commercially available a decade later.

“What the late King taught us is to try to look at our strengths and develop further to generate more revenue from alternative sources that can help offset areas where we are lacking. In this case, the strength of Thailand is agriculture, so we should try to make use of it, such as producing power from agricultural waste,” said Twarath Sutabutr, director-general of the Energy Policy and Planning Office.

While the late King’s vision led to several developments in alternative biofuel, his biodiesel project was awarded an international innovation prize by Brussels-based Eureka in 2001.

Mr Twarath said the late King had also initiated other renewable energy projects, including biomass, biogas and waste-to-energy. All of those sources are now used to produce energy in Thailand.

He said the country’s policymakers have followed the late King’s footsteps by further developing biofuel initiatives by producing biodegradable plastic. The late King also backed the creation of pharmaceuticals using local Thai herbs.

“What we should do now is to follow in his footsteps, which will lead Thailand to prosperity,” said Mr Twarath.

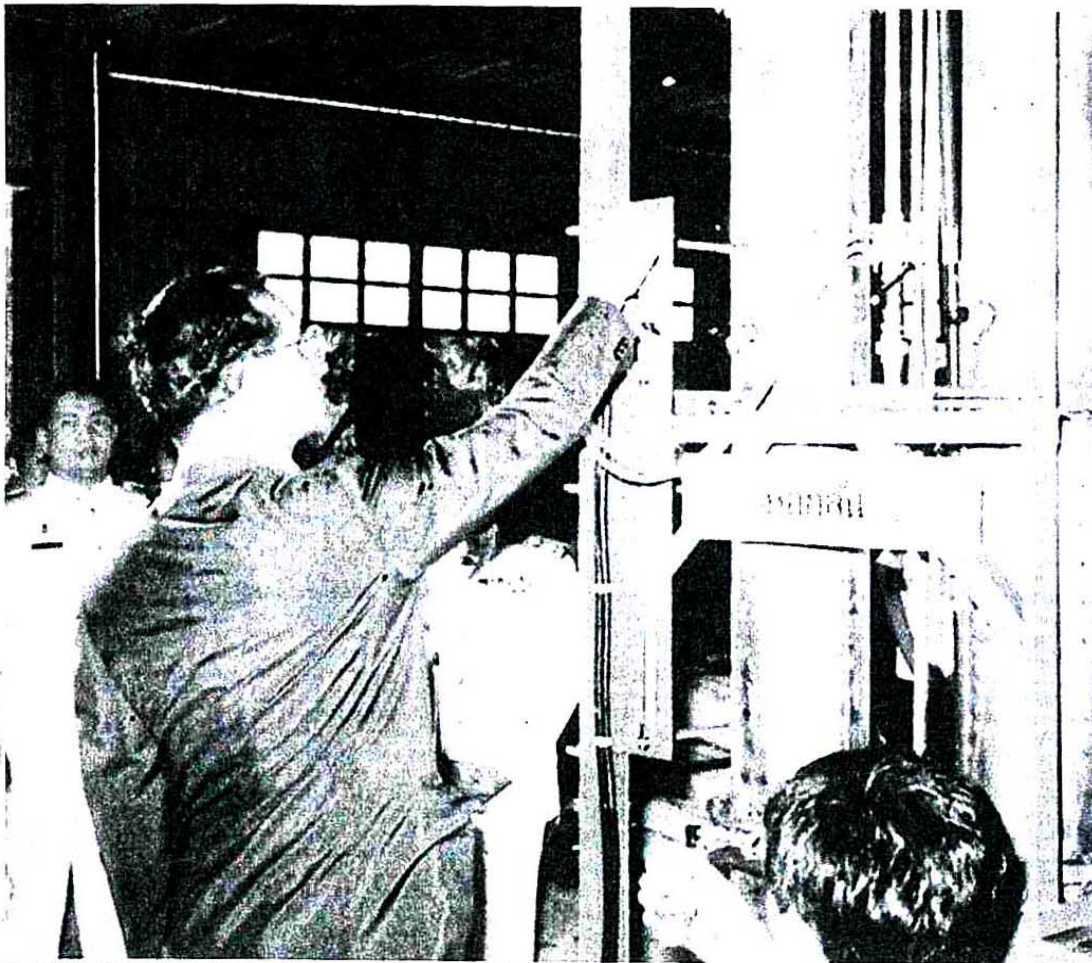


**Palm oil is a key raw material used to make alternative energy.** PONGPAT WONGYALA





A biodiesel production unit is housed at the Chitralada Palace, the unofficial permanent residence of the late King. PATTARACHAI PREECHAPANICH



The late King Bhumibol opened an alternative energy distilling unit at Chitralada Palace in 1986.