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## **The impact of renewable energy policy-driven land use change in Krabi province, Thailand**

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Thai government has developed the Alternative Energy Development Plan for 25% in 10 years (2012-2021) in order to reduce the dependency and importation of oil and other energy resources. One of the targets of this plan is to promote 5.5 million rai of oil palm plantation by 2021 (DEDE, 2011) for balancing between food and biofuel demand of the country. Such driving policy is the primary cause of land requirements for growing oil palm plantation. Consequently, the monitor of land use change is the most important consideration in land resource planning and management.

The aim of the present study was to monitor oil palm plantation expansion in Krabi province, southern Thailand, before and after the policy implementation during the period of 2000-2012. The Office of Agricultural Economics of Thailand (2013) reported that Krabi had the highest yield (3.07 ton per rai) and the greatest continuous expansion of oil palm plantation.

Data on land use map in 2000, 2009 and 2012 were obtained from the Land Development Department, Ministry of Agriculture and Cooperatives of Thailand Geographic information system (GIS) was used to monitor land use change with a focus on what types of pre-existing crops had been replaced by oil palm plantation and, if any, a sign of forest encroachment.

Our results show that oil palm have been expanding gradually for the first period of 10 years, and thereafter a noticeably rapid change occurring within three years after the policy-driven land requirement for renewable energy resource. Its expansion is the replacement of pre-existing economic crops that are rubber plantation and coffee plantation. Forest areas have been conserved and thus certifying the positive impacts on environment and biodiversity for sustainable agricultural development and the global standards accepted for oil palm.

**Keywords:** renewable energy policy; government subsidy; GIS; land suitability; biodiesel