

Abstract

Currently, biomass energy has been required to use in a variety of energy, such as power generation, heat, and conversion to liquid and gaseous energy. On the other hand, the biomass energy has been promoted to substitute fossil fuel in many countries including Thailand because of increasing of price of crude oil in the world market and carbon-dioxide emission in atmosphere. In Thailand, there are many kinds of biomass, such as rice husk, bagasse, and cassava residues. They are used as energy resources for electric power generation, heat production, ethanol and bio-diesel.

This research proposed the mathematical modeling of Thailand's energy demand-supply system by using bio-fuel as an energy source to evaluate the potential of carbon-dioxide emission reduction by using bio-fuel substitute to fossil fuel. The simulation result shows that biomass resources have potential to reduce the amount of carbon- dioxide emission by about 8.88% from the base case (2010).