

A well-to-wheel analysis of biodiesel production from algae

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Since 2002, biodiesel was first supplied as BD20 under the permission of Korean government. The annual production capacity is currently 0.12 million ton which is only 1% of annual diesel consumption compared to 5.75% (2010) of annual diesel consumption on EU (European Union) countries.

In this situation, Korean government aimed to 3% in 2012. However, to satisfy this condition, it is important to produce by ourselves. Considering the geographical situation in Korea, one of the alternative materials is microalgae. On the market, algae regards as the potential material for the following reasons: higher biomass production per unit area, faster growth than the lignocellulosic materials, high photosynthetic efficiency, simple cell structure cause to easy manufacturing process, usage for bio-fixation of carbon dioxide.

In this study, we report the well-to-wheel analysis using Life Cycle Assessment (LCA) of algae biodiesel with appropriate assumption to expect the amount of carbon dioxide and environmental impacts and suggest the effectiveness of whole production process of algae.