J Fundam Renewable Energy Appl 2017, 7:7 (Suppl)
DOI: 10.4172/2090-4541-C1-039

Perspectives of biofuel based economy resulting from modeling of energetic efficiency of biofuel production systems

Andrzej Leonard Wasiak
Bialystok University of Technology, Poland

Production of fuels based on biological resources became an object of considerations and suggested as the remedy for various threats. Two main dangers are usually indicated: the exhaust of fossil fuels and resulting from the use of fossil fuels, emission of carbon dioxide (and other pollutants as well). An increase of CO_2 concentration in the atmosphere is widely considered as a factor, which might seriously contribute to global warming. Consequently, a reduction of fossil fuels consumption would be helpful for mitigation of this phenomenon. Biological energetic resources, in turn, are considered as not contributing to an increase of atmospheric CO_2 concentration because the emission is compensated by absorption by growing plants. It is usually neglected that time shift between both those processes should be taken into account. The other type of danger, also discussed in several publications, consists in competition between other biomass applications, e.g., food or materials production. The additional factor, although not negligible, is the consumption of energy needed to realize subsequent processes agricultural and technological, necessary for cultivation, as well as for conversion of biomass into biofuel. The author has contributed to the development of mathematical model creating the tool for computation of EROEI for particular processes occurring in the biofuel production systems, as well as the resultant value of EROEI, combining the individual contributions. In the present paper, the values of energetic efficiency are computed for various plants and various production technologies indicating the possibility of choosing optimal technology for biofuel production.

andrzej.wasiak@gmail.com