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Potentials and Constraints of Biofuel Production in Ethiopia

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Abstract

The last few years have witnessed both a dramatic increase in the price of oil and an increase in the production of biofuels. Recent trends also show that interest in biofuels is expanding towards developing countries where production costs are relatively inexpensive and gives possibility for biofuel to contend with fossil fuel prices. Biofuel has several advantages over fossil fuels especially in landlocked countries like Ethiopia. However, the growing concern in Ethiopia and elsewhere is that an increase in feedstock cultivation will reduce resources available for agricultural production that jeopardises food security to the growing human and livestock population. Five of the 20 feedstock producing companies currently operating in Ethiopia are considered for this analysis. The purpose of the present study was to determine the current and future biofuel production potential and possible challenges in Ethiopia. The analysis focused mainly on nationally and internationally available statistical information.

Results show that, among the promoted feedstocks, Castor bean and *Jatropha curcas* are best suited to the growing conditions of the country. A 25% cultivation of the contracted land for *Jatropha* would cover the entire blend requirement and provide a surplus of 419.5 and 321 million litres biodiesel based on the B10 and B20 respectively. If half of the area is cultivated, it could significantly displace fossil fuel consumption in the country. Castor, with relatively small land coverage in the country and lower oil yield, even 50% cultivation can have a maximum production potential of 55.79 million liters which covers 54 and 27% of the total requirement based on B10 and B20 scenario respectively. If the total castor concession is cultivated, the maximum achievable yield would be 111.57 million liters which could cover 54% and 108% of the B20 and B10 case respectively. The projection towards 2020 showed that, if half of the overall leased areas for both crops are cultivated, a surplus of 485.4 and 308.9 million litres can be achieved.

Furthermore, the paper provides baseline data for planners and policy makers on the probable problems of continuous leasing on sustainability of pastoral livelihood and food security.

Keywords: Biodiesel, biofuel, castor, Ethiopia, *Jatropha curcas*, potential, scenario