

Bioenergy: First and second generation biofuels

The National Biofuel Mission was initiated by Government of India in 2003, mandating biofuel blending programs. These programs specify blending of biofuels (5%, 10%, 20%) with fossil fuels in a time bound and phased manner across India. Subsequently the 'National Policy on Biofuels' was released in 2009. The feed stocks identified were molasses for production of ethanol and tree-borne non-edible oilseed crops like Jatropha and Pongamia for production of biodiesel from waste and marginal lands. However, in the last decade oilseeds have given much lower yields than expected, making its future bleak unless significant R&D is carried out to improve yields. Thus no cultivation of jatropha has been modeled in the tool. Currently, only sugarcane molasses is used for bioethanol production. Corn is another feedstock which can be used for the same. Lignocellulosic liquid fuels from agri-residue are not envisaged to be produced in this lever.

Level 1

In Level 1, sugarcane cultivation area is assumed to increase from current level of 987,000 ha to 1.4 mn ha whereas yield continues to decline from 70 ton/ha to 49 ton/ha. Biodiesel production from sugarcane increases from 87.5 ktOE/yr in 2015 to 121.1 ktOE/yr in 2050.

Level 2

In level 2, sugarcane cultivation area is assumed to increase to 1,973,891 ha in 2050 whereas yield remains at current levels of 70 ton/ha. Biodiesel production from sugarcane increases to 347 ktOE/yr in 2050.

Level 3

In Level 3, sugarcane cultivation area is assumed to increase to 2.77 mn ha in 2050 whereas yield increases to 99 ton/ha by 2050. Biodiesel production from sugarcane increases to 917 ktOE/yr in 2050.

Level 4

In Level 4, sugarcane cultivation area is assumed to increase to 2.77 mn ha in 2050 whereas yield increases to 140 ton/ha by 2050. Biodiesel production from sugarcane increases to 1638.5 ktOE/yr in 2050.

