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 450,000 ha to 637,000 ha whereas yield continues to decline from 81 ton/ha to 57 ton/ha. Biodiesel production from sugarcane increases from 45.8 ktoe/yr in 2015 to 63.2 ktoe/yr in 2050.

Level 2

In level 2, sugarcane cultivation area is assumed to increase to 900,000 ha in 2050 whereas yield remains at current levels of 81 ton/ha. Biodiesel production from sugarcane increases to 181.7 ktoe/yr in 2050.

Level 3

In Level 3, sugarcane cultivation area is assumed to increase to 1.27 mn ha in 2050 whereas yield increases to 114 ton/ha by 2050. Biodiesel production from sugarcane increases to 480.6 ktoe/yr in 2050.

Level 4

In Level 4, sugarcane cultivation area is assumed to increase to 1.27 mn ha in 2050 whereas yield increases to 161 ton/ha by 2050. Biodiesel production from sugarcane increases to 859.1 ktoe/yr in 2050.