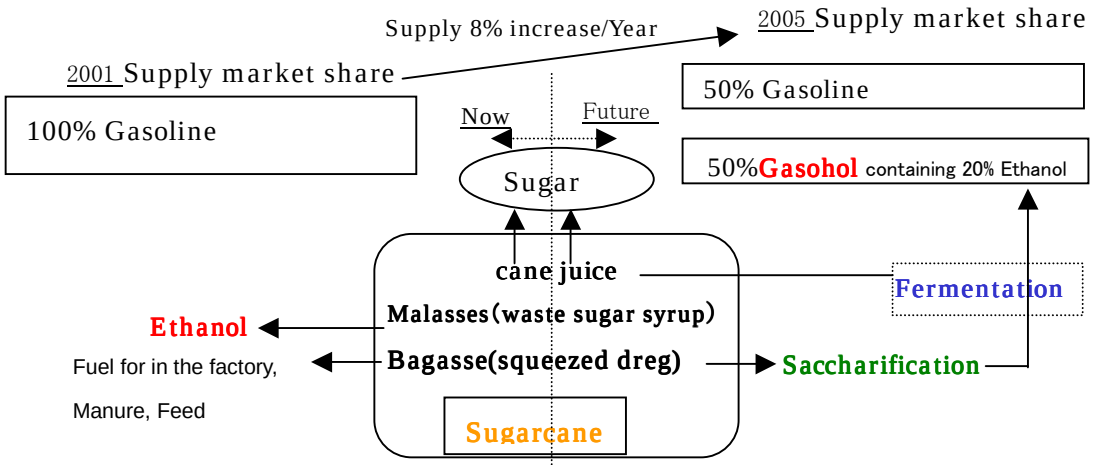
Study on production of ethanol-containing gasoline, with ethanol made from sugar cane refuse in Vietnam

An overview of field studies and plans

Using sugarcane, a major crop for which a plan to increase production has been implemented, Malasses (waste sugar syrup) and bagasse (squeezed dreg) generated during the process of sugar production are converted into ethanol by saccharification and fermentation. This ethanol is then combined with gasoline to make gasohol. The resulting CO_2 reduction can be estimated by calculating the supply of ethanol from the attainable amount of sugarcane production, locations of ethanol plants and ethanol production, and demand for gasoline.



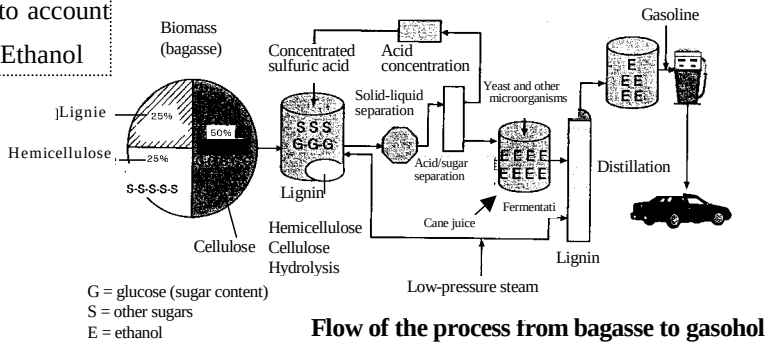
Fossil fuels used for fermentation should be taken into account

⇒CO_2 decreases by 12% by gasohol containing 20% Ethanol

Prevention of global warming

(In the case Supply market share of Gasogol 50% in Viet Nam)

- Reduction of 690,000-700,000 tons CO_2/year
- Cost-effectiveness: 1,200 yen/ton CO_2 on the assumption that the sugar is sold (9,500 yen/ton CO_2 provided that the sugar is not refined and all sugar including cane juice is used to produce ethanol)



Flow of the process from bagasse to gasohol

Other effects

- Ethanol has high octane values→reduction in use of leaded gasoline→reduction in environmental pollution from lead
- Increased job opportunities for more than ten thousand people as farmers and factory workers

Problems

- At least 20,000 ha of farmland is necessary for growing sugarcane→possible adverse effects on nearby agricultural activities
- Meteorological factors influencing sugarcane production→may affect stable supply of gasohol
- Solution for secondary residue and wastewater
- must raise additionally saccharification technology necessary for ethanol fermentation as pretreatment

- The project will be sustainable if measures are taken to ensure the stable production of sugarcane
- Sugarcane has a great potential so its adoption is expected to be widespread on tropical areas are also expected