Biofuels

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At Gleneagles in July 2005 and in St. Petersburg in July 2006, G8 leaders called on the IEA to advise on alternative energy scenarios and strategies aimed at a clean, clever and competitive energy future. A part of this response is provided by two reports released by the IEA in 2006 – the World Energy Outlook 2006 and Energy Technology Perspectives. Both these reports include significant analysis of the economics and outlook for biofuels. Their key findings are as follows:

- Biofuels could account for 4-7% of road-fuel consumption in 2030, up from 1% today. The lower figure results from an absence of new government action and the higher from the introduction of a range of measures already under consideration.
- Bio fuel production costs vary depending on the type of feedstock, the conversion technology, biomass yields and land and labour costs. Sugar-cane ethanol produced in Brazil costs about USD 0.30 per litre of gasoline equivalent. Corn-based ethanol produced in the United States costs around USD 0.60 per litre. Current bio diesel production costs (between USD 0.70 and USD 1.2 per litre) are well above those of petroleum diesel. Bio diesel from waste oil feed stocks is almost competitive with petroleum diesel, but its production potential is limited.
- Similarly, the CO2 emissions profile of biofuels production and use depends heavily on the type of feedstock used and the production process. CO2 emissions can be reduced by as much as 90% with the use of ethanol from sugar cane. Estimates of CO2 emissions emission reduction potential from grain-based ethanol vary widely, 13% is the current "best point estimate" for US production. Conventional bio diesel could reduce CO2 emissions by 40 to 60% over conventional diesel fuel.
- Rising food demand, which competes with biofuels for existing arable and pasture land, will constrain the potential for biofuels production using current technology.
- New biofuels technologies being developed today, notably lignocellulosic ethanol, could allow biofuels to play a much bigger role than that foreseen above. But significant technological challenges still need to be overcome and costs reduced. Lignocellulosic ethanol has the potential to reduce CO2 emissions by 70% and to reduce the potential competition for the use of land.

- Trade and subsidy policies will be critical factors in determining where and with what resources and technologies biofuels will be produced in the coming decades.