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# Bioenergy

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- Production of ethyl alcohol from vegetable products (cereals, biomass). The resulting alcohol (bioethanol) is used to manufacture the fuel additive ETBE or is blended directly with petrol or gas oil. As it is renewable energy, net CO<sub>2</sub> emissions are reduced (greenhouse effect).







## Bioenergy

The object of Abengoa's new bioenergy business segment is the production of bioethanol, an activity which began with the construction and operation of the bioethanol plant located in Cartagena (Ecocarburantes Españoles, S.A.). The segment received a big boost in 2001 with the acquisition of the US company High Plains Corporation.

Ethyl alcohol (bioethanol) is produced from vegetable matter (cereals and biomass). The bioethanol is used as an oxygenated fuel additive and to boost the octane rating of petrol. It is either directly blended with petrol or first transformed into ETBE. Bioethanol is a renewable energy source that contributes to making Spain less dependent on other countries for its energy and to reducing net CO<sub>2</sub> emissions.

### US market

High Plains is the fifth biggest bioethanol producer in the US and has three facilities in York (Nebraska), Colwich (Kansas) and Portales (New Mexico) with a total production capacity of 325 million litres. With the acquisition of High Plains, Abengoa has successfully penetrated a market that is regulated to encourage the use of biofuels. Regulations introduced to promote their use include a long-term exemption from the hydrocarbon tax and the compulsory use of oxygenated additives in urban areas where the octane booster MTBE is being phased out (California will be the first state to implement the ban on MTBE on 1 January 2003). The purchase of High Plains also brought with it the acquisition of differential expertise relating to the operation of ethanol plants and R&D, thanks to the extensive, exceptional experience of its management team.



### Spanish market

Abengoa's bioenergy operations in Spain currently include the Ecocarburantes Españoles, S.A. production facility in Cartagena with the capacity to produce 100 million litres and the Bioetanol Galicia, S.A. plant under construction in Teixeira, with the capacity to produce a further 126 million litres and scheduled to commence production in the second half of 2002. Abengoa has been granted exemption from the tax on hydrocarbons for the ethanol produced at a third facility with a production capacity of 200 million litres, which will be built in Balbifafuente in the province of Salamanca and operated by Biocarburantes de Castilla y León, S.A., a company in which Abengoa and Ebro Puleva, S.A. each have a 50% ownership interest.

