Chemical engineering design project

Engineering

The cost of ethanol in the U. K Compared to biodiesel, ethanol production is perceived to be more commercially viable (Chris and Wooders 20). According to the biofuels industry survey of 2011, the rising prices in feed stocks will tend to be influential in stemming or deterring the future viability of biofuels. The production of bio-feedstock affects the sustainability and greenhouse gas savings of biofuels. In an effort to promote the production of essential feed stocks for biofuel productions, the UK offers incentives in form of subsidies and exemptions to farmers. Most of these farmers are involved in the production of energy crops for the biofuel industry (Chris and Wooders 21). There is an increase in agricultural subsidies offered to farmers under the Single Payment Scheme (SPS). Table 1shows estimates of costs incurred in the SPS for 2008/2009 and 2009/2010. It is evident there is an increase in figures for the 2008/2009 and 2009/2010 SPS(6. 3M and 9. 3M) and still further subsequent increase in 2010/2011.

Table 1 Costs incurred in the SPS program geared towards the production of feedstock’s for the biofuel industry in the UK

Biofuel producers also accrue tax exemptions. HMRC 2011 places tax per litre for biofuels, diesel and petrol to be equal. However, it is also perceived that exemptions are likely to affect government revenue earnings. Another factor that significantly influences the use of biofuels is caloric requirements required in comparison to pure petroleum. Biofuels have low caloric values and therefore a greater amount of biofuels are required to meet the energy output of petroleum products. Table 2 shows the amount of blended biofuel needed to meet the energy value of pure petroleum product (Chris and Wooders 24). Since the tax per litre is equal for both petroleum products and biofuels, then the cost for biofuels will be much higher compared to

petroleum products.

Table 2 Energetic values of biofuels against petroleum products

As in figure 2 the demand for petroleum is likely to increase in the upcoming years. There is also an increased likelihood in the demand for biofuels, figure 2.

Figure 1 Projections for Petrol and Diesel requirements

Figure 2 Projected deliveries of bioethanol and biodiesel in the U. K

In consideration of petroleum being an input in the biofuel production, this has significant implications on costs of other inputs i. e. feedstock’s and transport services, therefore, affecting production costs. Table 3 projects that in 2020 bioethanol will be 16-35 pence per litre more expensive. On the other hand, biodiesel will be 29-42 pence per litre more expensive than the petroleum product they are intended to replace (Chris and Wooders 29).

Table 3 Projected petrol and biofuel prices 2010, 2020

It is a requirement that biofuels comply with the sustainability criteria. This is an added cost to the producers (Chris and Wooders 32). GHG saving is set at 35% and from 2017 is expected to be at 50%. The introduction of sustainability criteria increases cost, and it is estimated to be at GBT 256milion.

Therefore, it is likely that the cost of ethanol is influenced in the production of bio-feed stocks, government policies in taxation and subsidies. Also, inputs associated to biofuels, availability of other fuels i. e. petroleum products and the power outputs compared to other conventional energy sources. The cost of ethanol is expected to be higher in terms of costs even with the desired advantages in the use of biofuels.

Work cited

Chris Charles and Peter Wooders. Biofuels – At What Cost? Mandating ethanol and biodiesel consumption in the United Kingdom. 2012. Print. http://www. rsc. org/images/Biofuels_tcm18-148527. pdf