Objective

To develop a project that will consider the implications of competition for ground between food crops and energy crops

FIG Objective
“….how surveyors should be developing a response to Social, Economic, Technological, and Environmental change..”
Background

• In December 2007 FAO reported that world food prices had risen by approx 40% in the previous 12 months
• In July 2008, World Bank Policy Research Working paper concluded “.large increase in biofuels production in the US and Europe main reason behind steep rise in food prices”
• Egypt banned rice exports
• China price fixing on grain, meat, milk, eggs to maintain stability in the market
• Indonesia soya bean shortages
• Pakistan wheat shortages

Global Growth Bioethanol

![Global Growth Bioethanol Chart](chart.png)
Factors to Consider

1. Energy Balance
2. Technology
3. Cost Effectiveness
4. Policy
5. Need
6. Water Resource
7. Sustainability

Energy Balance

[Bar chart showing Greenhouse Gas Emissions per Unit of Energy Output]
Technology

Cost Effectiveness

• Cost of producing the crop/making the fuel
• Cost at which sell the fuel/crop
• Cost of carbon saving
Policy

- Tangibles
  1. Climate change mitigation
  2. Energy Security
  3. Research and Development Options
- Intangibles
  1. Public Perception
  2. Ethics

Need

- Poorer countries suffer disproportionately when price of oil goes up
- Balance food demand versus higher value market
- Agriculture is entering a new phase where there is unlimited demand for produce
- Europe exporting environmental problem by creating demand for liquid biofuels
Water Resource

• Takes 1700 litres water to make 1 litre ethanol

Sustainability

• Feedstock Production
• Land Use Land Diversification
• Biodiversity
• Balanced Eco systems
• Whole Life Costing (not just fuel)
• Environmental Pollution
• Social Aspects
• Economic Aspects