3.2 Alternative Cars

As a result of the 1973 fuel crisis, there was the initiation of a trend towards the building of more fuel efficient and enviromentally friendly vehicles. Apart from the escalating cost and continuing depletion of fossil fuels, the fuels themselves are a major source of pollution, especially within large cities, and are recognised as one of the principle contributors to the greenhouse effect. The average family car can produce twice its weight in carbon dioxide each year, among a host of other damaging gases, which are pumped directly into the atmosphere. With mounting public sensitivity to these issues coupled with the strengthening of legislation to protect the environment, motor manufacturers are now investing heavily in new types of vehicles which do not solely rely on either petrol or diesel engines for their propulsion. Along with the development of alternative renewable fuels for internal combustion engines, there has been investment in new propulsion technologies using, for example, electricity, compressed gases and hybrid systems incorporating both combustable fuels and an electrical energy source. Your team has been assembled by a major car manufacturer to research the range of alternative fuel technologies currently being developed world-wide, and to advise on the most promising options, and their implications for a new range of car designs. You should:

- Produce a framework to judge the respective advantages and disadvantages of the alternative technologies. As well as environmental issues, you should consider the conflicting performance demands of driving cars in cities and on motorways.
- Assess the practicality, reliability and safety of each technology.
- Consider the implications of providing a safe and practical refueling network to replace petrol stations.
- Make a realistic prediction of the propects for each technology being adopted in the next 15-20 years.

Supervisors : D.R. Allan, F. Muheim