• Autogas has higher octane number & produces 20% less CO₂ per mile than petrol/
• Releases less CO – higher ratio C:H
• Fewer un-burnt hydrocarbons & NOₓ than petrol
• Road tax is less for user
• LPG filling stations still relatively rare
• Liquid Natural Gas (LNG) – mainly methane and comes from oil and natural gas fields
• Methane cannot be liquid by pressure alone, it has to be cooled below -160°C.
• LNG most suitable for larger vehicles in modified diesel engines
• High C:H ratio so less CO & NOₓ

○ Biofuels
• Ethanol added to petrol
• From fermenting cane sugar juice
• Produces less CO, SO₂ & NOₓ
• Large amount of energy & land needed to grow crop
• Queries about overall energy efficiency.

○ Biodiesel
• Ordinary engines can use
• Fuel made from vegetable oil or animal fat
• Made through transesterification
• Converts veg oil/animal fat into esterified oil – can be used as diesel or mixed with diesel.

○ Hydrogen?
• Water is plentiful source of hydrogen – extracted
• Hydrogen can be stored
• Lots less emissions
• Can be used in internal combustion engine
• How generate energy needed for hydrolysis?
  ▪ burning fossil fuels – no point – no problems solved
  ▪ Biofuels – not worth it
  ▪ Nuclear – high risk
  ▪ ‘alternative energy’ – windmills, solar thermal energy, wave, HEP etc. must all be exploited as much as possible.
• Piping hydrogen – cheaper than transmitting electricity (way more dangerous)
• Hydrogen fuel cells in new cars – storage of hydrogen – large volume needed to get millage equivalent to petrol/diesel.