Disclaimer

Synthesis of Pilot Projects

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Alternative Transport Fuels

Fuels presently available for widespread use with established technology for vehicle operation and supply infrastructure:

- Alcohols: methanol and ethanol
- Biodiesel esters
- Gaseous fuels: CNG and LPG
- *Not* low level blends in conventional fuels, for example gasohol nor developing fuels such as hydrogen.

Status of Alternative Fuels Development

Alcohols:

- Brazilian Proalcool Programme produced 500,000 cars per year during 1980's to operate on hydrous ethanol. Impending deregulation in 1990's saw these numbers fall to near zero
- 40,000 light vehicles in US as a result of clean air legislation, about 45% M85 and 55% E85. Ethanol numbers inceasing, methanol static
- No significant alcohol programmes in Asia
- Ethanol programmes subsidised.

Status of Alternative Fuels Development

Natural Gas:

- NGV programmes in over 40 countries, for fuel substitution or clean air objectives
- Largest programmes in Argentina and Italy are based on light spark ignition vehicles
- Use in heavy vehicles slower to develop: high cost of diesel conversions/OEM gas vehicles
- Predominantly CNG, about 2,000 LNG heavy vehicles in the US
- Pakistan, India and China leaders in Asia.

Status of Alternative Fuels Development

Biodiesel:

- About 250,000 tonnes of vegetable oil ester used in over 100,000 vehicles in Europe
- Similar quantities blended with diesel in Europe
- No significant use in Americas or Asia
- High production cost of ester compared to diesel.

Status of Alternative Fuels Development

LPG:

- Established transport fuel in many countries, produced from natural gas and oil refining
- Used predominantly in light spark ignition vehicles: taxis, tuks-tuks, rickshaws
- Although most common alternative fuel, LPG vehicles typically less than 1% of vehicle fleet
- LPG transport market grew rapidly in 1970's/ early 1980's but stagnated with lower oil prices
- Well established equipment supply industry.

Challenges to Introducing Alternative Transport Fuels

A wide range of issues are involved in developing a successful alternative fuels programme. Critical success factors include:

- Vehicle technology
- Perceptions of alternative fuels programmes
- Institutional leadership
- Financial environment
- Supply and service infrastructure
- Comparison with conventional fuels.

Vehicle Technology

Technical and financial performance expectations may not be met because of poor selection of vehicles or equipment. Common failures include:

- Technology not matching program objectives
- Unsuitable vehicle operational characteristics
- Poor condition of vehicles converted
- Inconsistent fuel quality
- Unsuitable equipment or installation techniques resulting in poor vehicle performance.

Perceptions of Alternative Fuels

Misconceptions and poor publicity can constrain fuels programmes, which require good management of information. Common perceptions include:

- Alternative fuels are second rate, only suitable for old and low technology vehicles
- Government support for alternative fuels programmes will not be sustained
- Poorly funded and managed demonstration programmes will lead to negative perceptions.

Institutional Leadership

Coordination and leadership of participants is essential for the implementation of a successful programme. Particular needs are:

- Clear programme rationale and objectives
- Clear endorsement from government
- Central planning/coordination body
- Initial programme seeding, often by government
- Technical, safety and environmental standards.

Financial Environment

Adequate incentives for participants must be built into the fuel and equipment price structures. Points to note:

- Subsidies and financial support must be reviewed regularly to reduce market distortions
- Incentives usually constrained by existing fuel price and taxation policy
- Considerable variation in economics of different vehicle types: prioritisation of targets important
- Incentives to match local conditions.

Supply and Service Infrastructure

A balance between demand and supply of fuel and services is essential. Important supply side features:

- Adequate supplies of suitably priced fuel
- CNG will not usually underwrite gas network, high utilisation of compression plant necessary
- Quality of conversions, safety, training of staff
- Potential for local manufacture of equipment
- OEM vehicles will improve economics
- Importance of private capital.

Comparison with Conventional Fuels

Alternative fuels are but one means of reducing emissions. Other options must be compared:

- Conventional technology is improving and may be cheaper although rate of uptake can be slow
- Traffic conditions and road network are major factors determining emissions and may provide more cost effective opportunities. Fuel and vehicle type indicate emissions capability only
- Take a broad view of options to identify the most effective applications of alternative fuels.

Conditions to Ensure Success of Initiatives

- Centre of leadership and institutional support
- Positive public perceptions
- Understanding of the potential market
- Supply infrastructure adequate for demand
- Pricing structure benefiting all participants
- Quality and safe products for consumers
- Project structured to local circumstances.