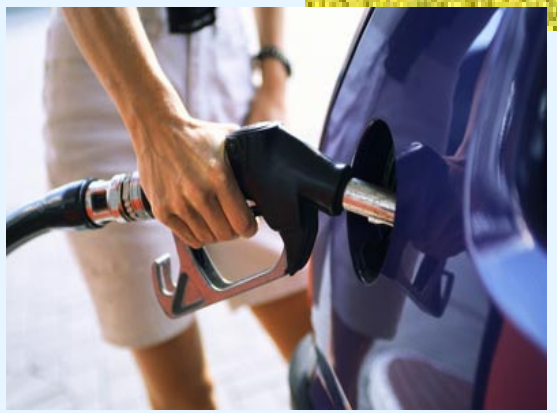
# Customer perception of biodiesel



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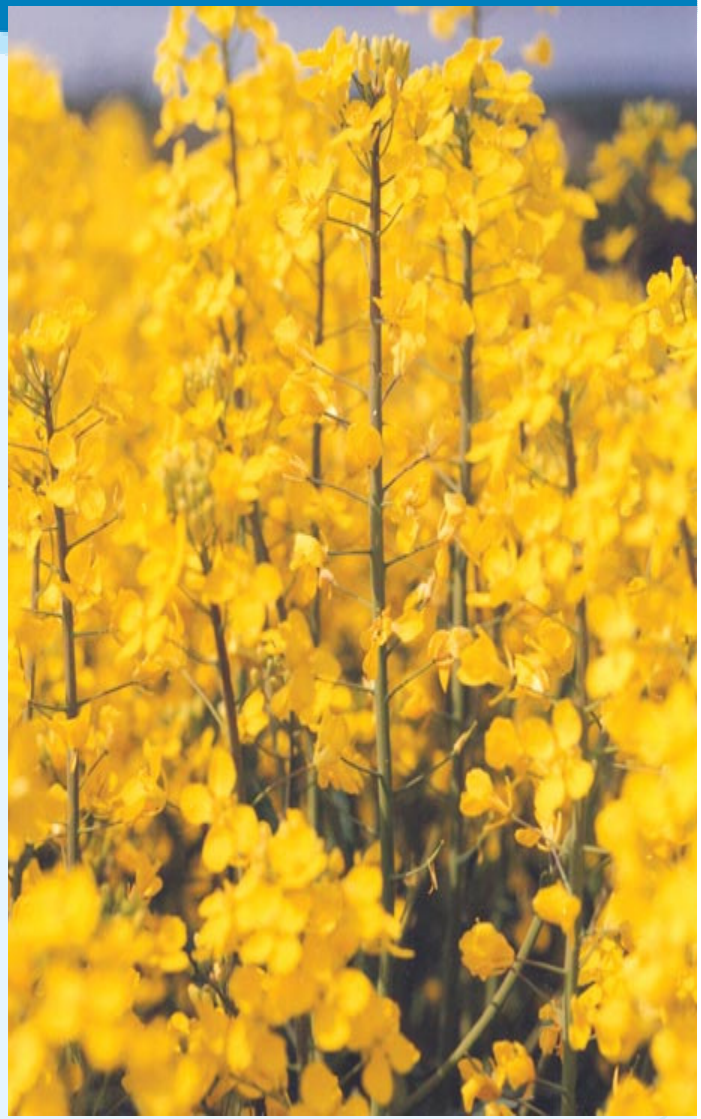


# Background to biofuel options in Scotland

- Oilseed rape production in Scotland has the advantage of high yields and oil content
- However, currently - no crusher
- Plans for large scale biodiesel plant to produce 100 million litres biodiesel – a portion from Scottish rapeseed
- Improve viability of plant through:
  - Joint venture co-op with producers/processors/end users
  - Development of market for diesel blends with high biodiesel rate

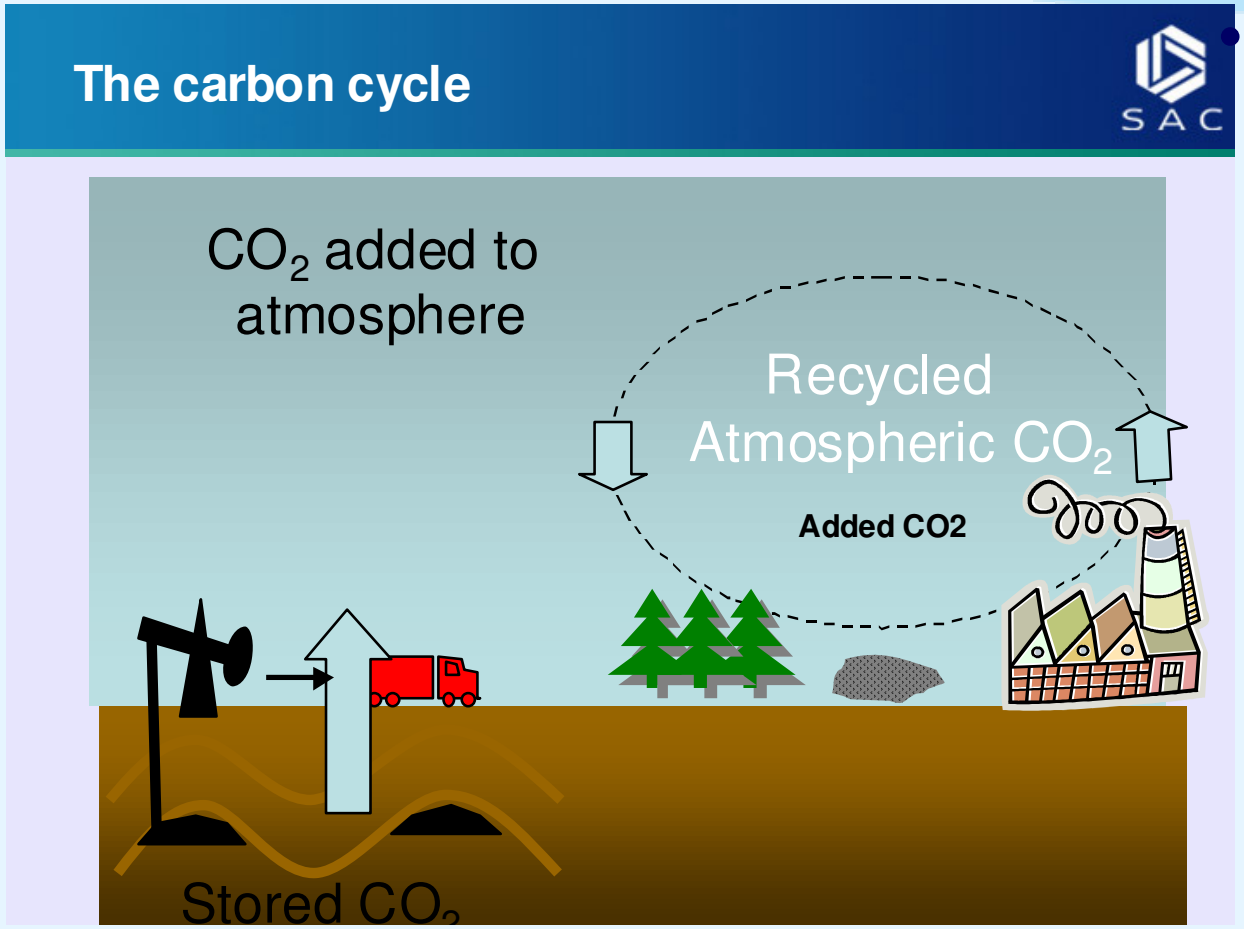
# Biofuel uptake in Scotland – pros and cons

- Positive
  - Green issues a driver for some large fuel users eg local government, environmental companies
  - Renewable Transport Fuel Obligation (RTFO) in UK demands growing share of biofuels
- Negative
  - Biofuels in general – alarming press reports on poor sustainability
- Objectives of work
  - Describe environmental features and benefits of biodiesel from Scottish rapeseed
  - Investigate perception of biodiesel from Scottish rapeseed by large customers
  - Determine potential barriers to uptake and solutions

# Method

- Environmental aspects of biodiesel from Scottish rapeseed investigated
- Large scale fuel customers with particular environmental interests identified and surveyed
  - local government, government agencies, fuel distributors, waste companies (45 in total)
- Those with clear interest in sustainable biofuels interviewed (10 selected)

# Environmental aspects: GHG emission savings




- Biodiesel from osr grown in the UK reduces greenhouse gas emissions by 53% compared to fossil fuel alternatives

# Environmental aspects: energy balances

| Fuel | Feedstock | Fossil energy balance | Comments |
|---|---|---|---|
| Bioethanol | Sugar cane (Brazil) | ~8 | C4 crop – higher yield, few inputs, use by-product in processing. |
| Bioethanol | Wheat (EU) | 1 - 2 | Higher crop inputs. Distillation requires a high energy input. |
| Biodiesel | Oilseed rape (EU) | 2 - 3 | Better balance than temperate cereals, despite lower crop yield. |

# Environmental aspects: effects of feedstock production

Tropical oils

- Controversial if their cultivation causes deforestation. Effect on vulnerable environments, biodiversity and soil erosion?
- Traceability issues

Oilseed rape grown in Scotland

- From established rotations - little impact on biodiversity
- Quality assurance system in place (Scottish Quality Cereals) enables traceability

# Factors affecting fuel choice

- Fuel Suppliers – many local authorities use single supplier contracts limiting individual choice
- Fleets – large and diverse in terms of vehicle type (car, bus, lorry) and ownership (owned, hired and contract)
- Fuel efficiency – both cost and environment drivers
- Renewables and carbon management
  - Desire to use renewables backed by policy (65% respondents)
  - 90% believed use of renewable fuels was important in reducing C footprint
  - 60% of local governments have incorporated renewables in fuel supply (many have used LPG, with some negative effects on repair costs and availability)

# Fuel choice: biodiesel features

- Cost
  - While many see biodiesel as part of environmental responsible approach, few are willing to pay a premium
  - Perception that there are additional maintenance costs and lower fuel efficiency
- Origin
  - Provenance important to over 70% respondents, due to range of reasons from product quality to impact on food supply
  - Scottish provenance of interest to 76%, providing supply was consistent and reliable
- Share in co-op
  - 33% willing to consider
  - Only 5% had real appreciation of how this might operate

# Scottish biodiesel – concerns cited by potential customers

**In order of importance:**

1. Compliance with manufacturers warranty requirements (77%)
2. Availability of supply (63%) - *linked with past experience with LPG?*
3. Consistency of supply quality
4. Cost of fuel and maintaining vehicles using the fuel
5. Damage and repair problems (50%) - *reflecting manufacturers warranty rather than experience*
6. Initial conversion costs
7. Food substitution issues

# Implications for development of Scottish biodiesel

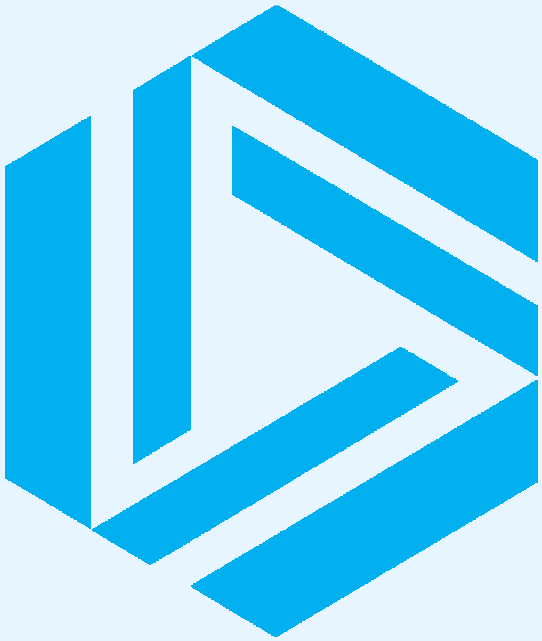
- Local government tenders increasingly require renewable fuel use – may favour biodiesel
- Potential customers recognised sustainability benefits of Scottish biodiesel
- Experience with renewables not always encouraging for further uptake
- Warranties are key and with wide range of vehicles lowest blends permitted will dictate blend for fleet
- Premium price unlikely
- Infrastructure a big issue – need for separate bunkers if biodiesel is additional to standard fuel
- Supply chain needs attention – network of fuel supply for fleet on the road, route to market

# Conclusions

- Green issues – perceived as having growing importance.  May insist contracted out services use biofuels in future
- Customers willing to differentiate between environmental aspects of different biofuels
- Receptive to idea of sustainable Scottish biodiesel, despite negative publicity for biofuels in general
- Most important limiting issues – engine warranty for mixed fleets
- Further issues
  - Additional running costs
  - Infrastructure - availability of separate storage

# Recommendations

- Measures to enable uptake of higher biodiesel blends
  - Standardise and relax warranty requirements allowing higher blends of biodiesel
  - Target high blend levels to situations valuing lower emissions
  - Consider optimum supply route for biodiesel in the supply chain
- Investigate if trading RTFO certificates can give option for large customers
- Targeted government support measures to encourage uptake
  - Award a further tax rebate for use of biofuels in HGVs
  - Offer a grant for biodiesel infrastructure



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