# STC Alternative Fuels Policy

Drs David Worth & David Bennett



## STC Policies

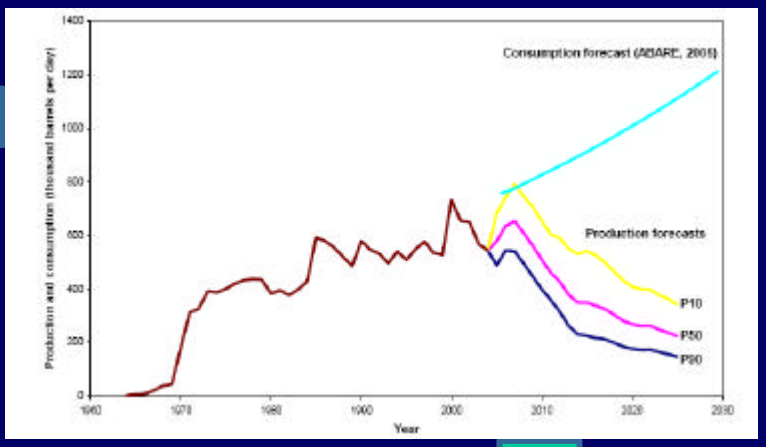
- Cycling (2003)
- Walking (2003)
- Oil: Living with Less (2004)
- Alternative Fuels (2007)

## Why investigating alternative fuels are important

- The STC believes that it is imperative that action is taken now to reduce the oil vulnerability of Australia's transport and food systems- peak oil very close

May 9th 2007

3




May 9th 2007

4

## How do we get there?

- **by demand-side initiatives:**
  promoting alternative transport to motor vehicles, by being more frugal through travelling less, through greater efficiency in fuel use
- **then later, well-researched, supply-side initiatives**

May 9th 2007

5

## The following should take fundin precedence over alternative fuels:

- Community awareness and engagement
- Increasing efficiency of fuel use
- Investing further in both rail track and rolling stock
- More extensive, frequent public transport services
- Improving and extending cycling and walking facilities

May 9th 2007

6

## Alternative fuels policy coverage

- Biofuels (ethanol & biodiesel)
- LNG, CNG, LPG
- Coal-to-liquids, gas-to-liquids
- Electricity
- Hydrogen



## Assessment Principles

- High energy efficiency ratios (energy out /energy in) need to be established
- Sustainability and quantities of feedstock against competitive uses
- Adaptability, especially to existing supply and transport uses
- Niche markets (eg. underground mining)

## Policies – 1 (Low-hanging fruit)

- Human energy for cycling and walking is a very good 'fuel' and its use is to be encouraged
- Electric gophers and electric bicycles for the handicapped, elderly and sick
- Triple bottom line "well-to-wheel analysis" – for all proposed fuels
- Give preference to fuels using existing widespread technology (like ICEs)

May 9th 2007

9

## Policies – 2 (Government intervention)

- Governments should not distort the market by subsidies, taxes, or mandates, except where social benefit can be clearly demonstrated
- Governments should not encourage the diversion of resources from food to fuel production
- Governments should encourage the use of 'true' wastes (eg. used oil, biomass and tallow)

May 9th 2007

10

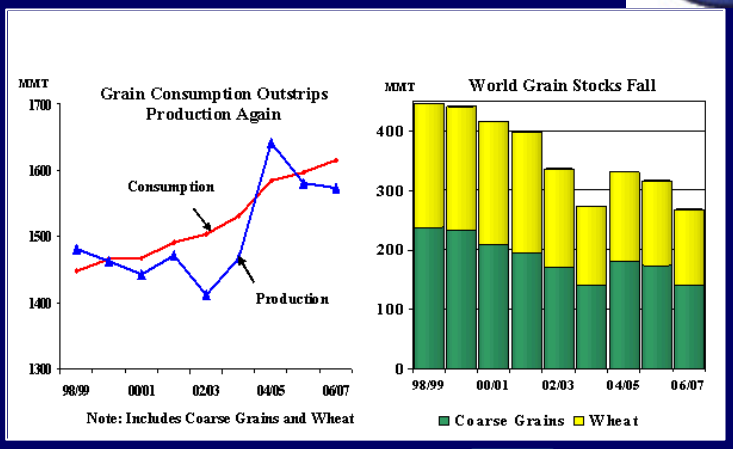
## Policies – 3 (Total picture)

- Supply chain effects need to be considered (eg. use of off-peak electricity)
- Environmental certification is needed for imported biofuels
- More research is essential in all aspects of the development of alternative fuels, before substantial investment



## Policy Examples - Biofuels

- Few triple-bottom line analyses involving 'production to use' for any biofuels
- "Waste" use in biofuel production should be encouraged
- Niche markets are available (eg. mining)
- Whereas EU and USA has surplus agricultural land, Australia has none




May 9th 2007

13

# Policy Examples - Biofuels

- Feedstock demand has already doubled corn prices in USA and caused hardship among the poor in Mexico
- Energy efficiency ratios are very low
- Very little improvement in GG production
- Government intervention (mandated mixes, excise and subsidies) not justified

May 9th 2007

14

## Policy Examples– LPG, LNG & CNG

- Non-uniform excise duties between these and conventional fuels (eg. main benefit of LPG conversion is in avoiding excise)
- Unclear air pollution effects
- Transport costs higher than conventional
- Conversion from one form to another costs energy and money

May 9th 2007

15

## Policy Examples– Coal-to-Liquids & Gas-to-Liquids

- Large environmental effects, both at the mine site and in GG emissions
- Lowered energy efficiencies
- Need long lead times to build infrastructure
- Reduces gas available for export
- Very, very expensive (US$18 billion)

May 9th 2007

16

## Policy Examples– Electricity & hydrogen

- Still sourced from fossil fuels in Aust. (increased $CO_2$ emissions)
- Normally requires an electric drive train
- High battery replacement requirements (3-6 years)
- "Mine-to-wheel" energy efficiencies low



## New Dutch proposals

**http://europe.theoildrum.com/node/2521#more**

- The balance of greenhouse gas emissions in the production chain and application of biomass needs to be positive
- Biomass production should not come at the cost of important carbon reservoirs in the vegetation and the soil
- When producing and processing biomass, soil and surface water will not be exhausted and the water quality will be maintained or enhanced

## Conclusions

- None of the current proposed options are clearly advantageous
- More research urgently required
- It is dangerous for Australia to follow US, Asian and EU leads in this field
- stcwa@bigpond.net.au
  www.stcwa.org.au

May 9th 2007

19