

ENERGY CROPS



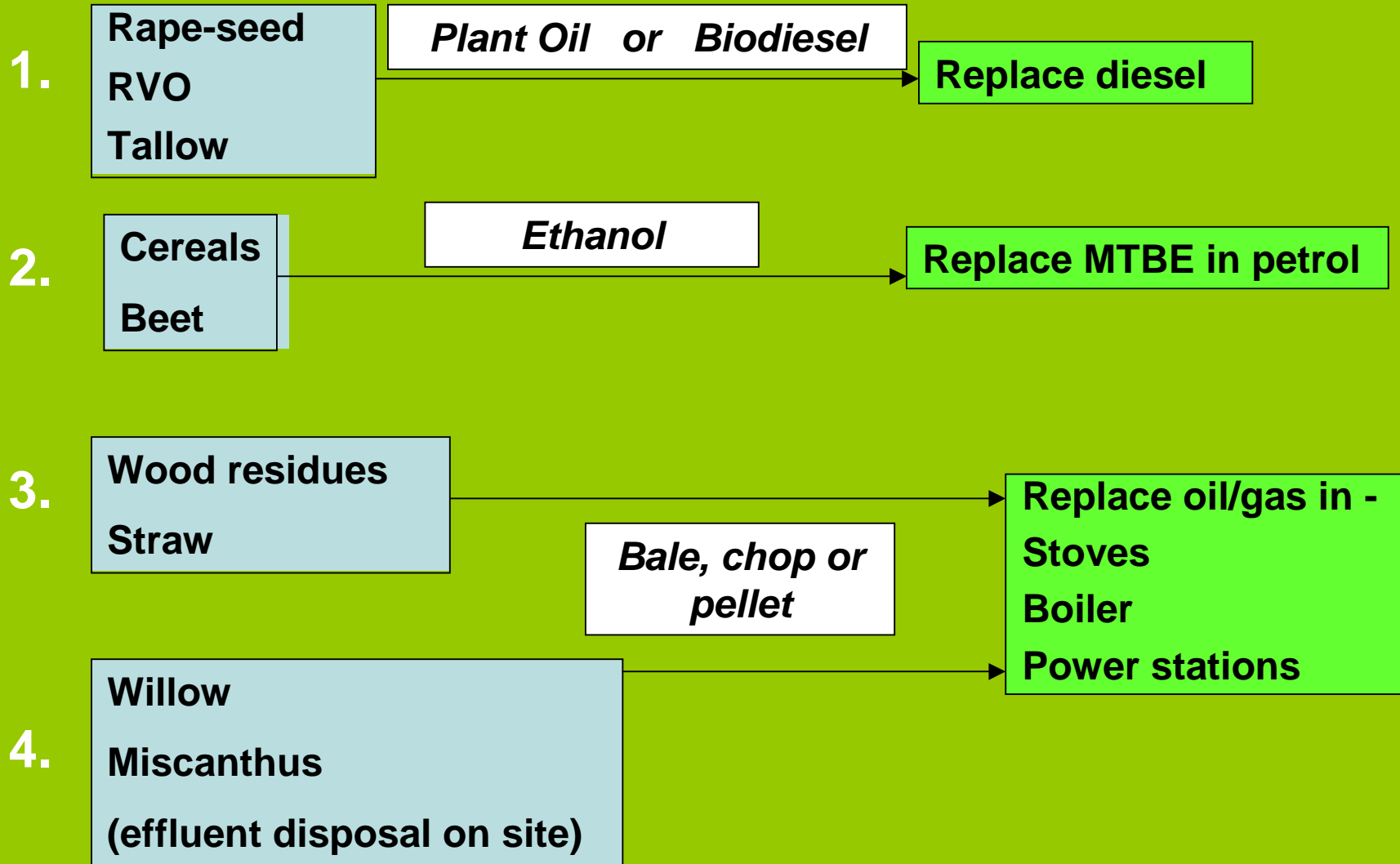
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2006 budget

- >€200M over 5 years for
 - Expanded excise relief for road biofuels
- €65M to support
 - Boilers 60kW-1MW
 - €20M for Bioheat programme
 - Residential renewable heat
 - €27M for Greener Homes Scheme
 - CHP + bioethanol capital grant
 - ~€18M, details not yet available

Short-term options



- **1. Oils and fats as diesel substitutes**



Biogreen pressing and filtration plant, Adamstown

Pure plant oil vs biodiesel

Biodiesel

Some acceptance by vehicle industry

Wider feedstock range

No engine mods needed

More expensive process

Pure plant oil

Smaller scale

Lower start-up capital

More local involvement

No acceptance by vehicle industry

Emission problems?

Profitability: still a problem

We need to:

- Maximise fuel price
 - keep quality up
 - promote green image
- Utilise by-products
 - rape straw and cake as fuels

I'm powered by

BIO DIESEL

The word 'BIO DIESEL' is rendered in a bold, blue, sans-serif font. The letters are stylized with thin white outlines. Several yellow flowers with dark blue centers and green stems are integrated into the design. One stem starts from the bottom of the 'B', goes up through the 'I', and then across the 'O'. Another stem starts from the bottom of the 'D', goes up through the 'I', and then across the 'E'. A third stem starts from the bottom of the 'S', goes up through the 'E', and then across the 'L'. There are also smaller stems and flowers interspersed between the letters.

the clean green fuel from Irish farms

2. BIO-ETHANOL

Fuel extender/octane booster for petrol engines

Current Irish options

- Produce from wheat or beet
- Add 5% to petrol (no engine mods)
- Replace MTBE or lead
(no engine modifications needed)

Ethanol from wheat, beet

For 2% substitution

15,300 ha beet

or

23,000 ha wheat

– Needs

- Large scale
- Excise relief
- Investor/promoter interest
- Feedstock supplier, oil company

3. Solid biofuels

*Wood residues, straw, cereals
etc as boiler fuels*

Fuel markets (1)

- **Boiler fuel**
 - Medium size units 50-1000 kW
 - Value of delivered heat ~€200/t of biomass
 - Several wood units installed
 - Openings for non-wood materials?

Wood chip boiler (Oak Park)



- Efficient, user-friendly
- Expensive, needs capital grant
- Suitable for wood only
- Supply chains needed

Fuel markets (2)

- Fuel in pellet form
- Stove/small boiler fuel
- High-value market
- Pellet plant in N.I.



Pellets: sawdust most suitable. Have non-wood pellets a future?

- Suitability for stove market
 - higher ash content
 - binding problems?
 - more corrosion?
 - emissions?
- What scale is needed?



4. Energy crops and waste disposal

- Crop used as boiler fuel
- Sites used for
 - sewage sludge injection
 - Rapid progress in N.I.
 - Potential for 3000 ha
 - trickle irrigation of dilute effluents
 - Several projects under way
 - Promising results to date
 - Full potential not established

Energy crops: Willow



High yield

High establishment cost

Easy to maintain

Specialist harvester needed

Drying needed

Bulky for transport

Burns very well



Energy crops: Miscanthus



High yield

High establishment cost

Easy to maintain, harvest and dry

Bulky for handling and transport

Suitable boiler needed



How much energy can agriculture provide?

<u>Demand</u>	<u>Land needed</u>
• Total national energy demand	5 Mha
• 2% of transport fuel (arable)	75 kha
• 50% of commercial heat	150 kha
• 10% of residential heat	30 kha
• 5% of electricity demand	100 kha

Targets and strategies for achievement needed

Conclusions

- Expanded support for biofuels welcome
- Several technologies at commercial stage
- Most immediate challenge:
 - improve profitability by
 - market promotion
 - (quality assurance, green image)
 - Other income streams (e.g.rape straw, effluent disposal)