

## Lesson 1: Case studies in biofuels production

### Objectives

Students will be able to...

- Name some different types of biofuels.
- Give some of the advantages and disadvantages of these different types of biofuels, and make comparisons.
- Recall what happened when biofuel production was implemented in certain countries.
- Identify some of the ethical issues arising from biofuels.
- Begin to form some opinions on the use of biofuels taking into account the ethical dimension.

### Starter (*All students*)

Show a clip as a stimulus

- You tube cartoon 'Peak Oil - How Will You Ride the Slide?'  
<http://www.youtube.com/watch?v=Ulxe1ie-vEY&feature=related>

Prompts for discussion

- What did you think of the cartoon?
- Fuel for transport makes up almost a third of the current world energy consumption (contextualise with car/ plane use for holidays etc.).
- Imagine all the transport stopped for a day: what would happen to your city/ town/ the wider world?
- Historical examples in the UK:  
1973 oil crisis: 'Three Day week' introduced to conserve electricity  
Miners strike in 1984, major industrial action
- What does the word biofuel suggest to you?
- It has been estimated that biofuels will make up 9% of transport fuel in Europe by 2020 – what energy do we already have? Which sources are renewable and which are non-renewable? What are the alternatives for the future to energy consumption?
- We want to continue our lives as normal but how can we? Where else might fuel come from? What other sources of energy might we use?

### Task 1 (*Split class into groups of 4*)

*Resources*

- 1:1 - *Biofuels examples*
- 1:2 - *Summary worksheet*
- 1:3 - *The sales pitch*

Show Dragons Den clip as an example

- <http://www.youtube.com/watch?v=HDczbplO85g>

Biofuels examples (1:1)

- Give each group either one biofuel type to look at or a selection
- Ask each group to sum up the main information with guided questions (1:2)
  - Where is the biofuel used?
  - How does it work?

- What are the possible advantages of using this biofuel? Clues, environment, people, wildlife, money
- What are possible disadvantages of using this biofuel?
- Each group to create a one minute sales pitch Dragon's Den style on your chosen biofuel type (1:3)
- In total, groups should have roughly 15 minutes to prepare and 10 minutes to present
- Pick students to be the dragons

### Mini-plenary

As class, which type of biofuel do you think is the best option and why? Which is the worst?

### Task 2 (Pairs and then groups of 4)

#### Resources

1:4 - Diamond rank

1:5 - Case studies

1:6 & 1.7 – slides (whiteboard or PowerPoint and projector required)

Post-it notes

What do we need to consider?

- In pairs diamond rank different affected parties/ competing interests (1:4)
- What do you think might happen if we actually went ahead and produced biofuels from crops like sugar cane? - Hypothesising

Case studies / Racing game

- Ask pairs to join into groups of four
- Hand out case studies to groups (1:5)
- Show the questions on a PowerPoint projector/white board (Slide 1:6)
  - Use the question board (Slide 1:7)
  - Give each group a different colour of post-its.
  - As soon as they have the answer to one question they have a runner who comes to the board and sticks the post-it in the square.
  - The first team to have a post-it in every square wins
- Each group feeds back
  - This was our country and this is what they did
  - These were the main effects

### Mini-plenary

- From what we have learnt so far, do you think biofuels production should have gone ahead in each case?
- Class then do a 'body' vote - move to 4 corners of the room, those who think that: 1) yes they should have gone ahead, 2) no they shouldn't, 3) it depends and 4) not sure
- Once students have moved ask them to explain why they have taken that position