**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.

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| **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?
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| **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=HDczbpIO85g>

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
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| **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
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