**NCOB logo (med res).jpgLesson 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? |
| **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 |
| **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 |