

## Unit R071 – How scientific ideas have an impact on our lives

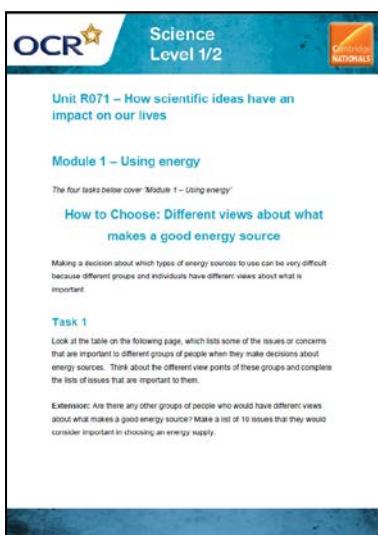
### Module 1 – Using energy

#### How to Choose: Different views about what makes a good energy source

#### Instructions and answers for teachers

These instructions should accompany the learner tasks - OCR resource "How to Choose: Different views about what makes a good energy source" which supports Cambridge Nationals in Science Level 1/2 Unit R071 – How scientific ideas have an impact on our lives.

The learner tasks cover 'Module 1 – Using energy, LO1 and LO2'



#### Associated Files:

How to Choose: Different views about what makes a good energy source – Activity  
Criteria Ranking Exercise – Excel Spreadsheet

#### Expected Duration:

Activities 1 - 4 approx 1 - 2 hours

*Making a decision about which types of energy sources to use can be very difficult because different groups and individuals have different views about what is important.*

## Activity 1

Where possible this activity could be carried out by interviewing visitors from industry, local government or representatives of other groups like business owners, members or school or college staff responsible for energy choices. Learners could also survey home owners to gather their views. Learners could also imagine that they are part of the various groups and try to consider things from their viewpoints. Learners may find it difficult to think of ten issues that would be important to each group and if so should be encouraged to consider the issues they have listed for other groups

## Activity 2

This activity involves ranking these issues in order of importance so it works well if some issues are not considered to be that important to particular groups. If time is short learners could be provided with one list of 10 issues which they could then rank in importance for each group in task 2.

## Activity 3

Activity 3, **and activity 2** can be carried out using the excel spreadsheet provided (which includes a column to record the reason for the scores given for each issue) or this can be printed off to create worksheets. Learners will find some issues easier to score than others but should be encouraged to fully research each energy source in terms of the issues listed. The following websites provide some useful information on the reliability, costs and efficiency of energy transfer from different energy sources:

- <http://www.edfenergy.com/energyfuture/the-energy-gap-reliability-of-supply>
- <http://nuclearfissionary.com/2010/04/02/comparing-energy-costs-of-nuclear-coal-gas-wind-and-solar/>
- [http://ocw.mit.edu/courses/nuclear-engineering/22-081j-introduction-to-sustainable-energy-fall-2010/lectures-and-readings/MIT22\\_081JF10\\_lec03a.pdf](http://ocw.mit.edu/courses/nuclear-engineering/22-081j-introduction-to-sustainable-energy-fall-2010/lectures-and-readings/MIT22_081JF10_lec03a.pdf) (page 17 provides data on the efficiency of energy transfers from different energy sources)

There are not necessarily 'correct answers' as such but learners should be able to justify the values they have assigned to each issue for the different energy sources. The outcomes of the activity may vary widely between different learners and it is important that learners do not get the impression that some outcomes are 'right' or 'wrong' – the activity is designed to explore how different people value different energy sources and the difficulty of creating energy solutions that suit a wide range of individuals and groups.

## Activity 4

Activity 4 aims to encourage learners to think about how reliable the data they have created are. There is a common misconception that numerical data is intrinsically more reliable than qualitative data. This lesson element provides a good opportunity to explore these ideas as the activity involves assigning numerical values to qualitative (and subjective) data. This also provides a good opportunity to draw analogies with how qualitative and quantitative assessments of risk are carried out.

Activity 4 also aims to encourage learners to think about the role of a government in serving the needs of the population as a whole and the conflict between providing solutions that benefit a group of people while disadvantaging individuals. Some learners may, for example, consider the needs of individuals to be more important than the needs of government or energy companies but should be prompted to think about the implications of making choices on the basis of individual needs