

## The Coal Mine Project

*Contents:* Role-play simulation concerning the case for and against opening a coal mine.

*Time:* A minimum of 2 periods plus homework if Part 1 is omitted. The project could be extended to 4 periods if Part 1 is used.

*Intended use:* GCSE Chemistry and Integrated Science. Links with work on coal and carbon compounds.

*Aims:*

- To complement work on coal and carbon compounds
- To show some of the economic and other advantages of developing a coal mine
- To show some of the environmental and other problems involved in developing a coal mine
- To provide opportunities to practise skills in the preparation, presentation and criticism of an argument.

*Requirements:* Students' worksheets No. 502.

*For Part 1 (optional):* Copies of a map of the school district, or the local area that has been chosen for the site of the mine.

*For Part 2*

- General Briefing (one for each student in the class).
- Role Cards (one for each member of Groups A and B). The role notes are printed on A4 size masters, with three roles per sheet. These masters can be reproduced on paper or card, which can then be cut up into individual role cards.
- Opinion Grid (one for each member of group C).
- Chairperson's Briefing sheet (one only, for the Chairperson).

This unit is intended to introduce students to the many competing factors associated with the opening of a coal mine. The details of the mine on the General Briefing sheet are based partly on plans for the development of the major coalfield in the Vale of Belvoir.

For the purpose of this simulation it is assumed that the National Coal Board, after sinking bore-holes, have confirmed the existence of a commercial coal field in the locality of the school.

The unit is in two parts.

*Part 1 (optional)* Development of the site.

*Part 2* The public meeting.

### Location of the mine

It would be best if an imaginary location for the mine could be invented in the vicinity of the school. However, for schools in urban areas this may be impractical, since in reality a mine could not be developed on an urban site, and in any case several of the arguments in the role-play hinge around the impact of the mine on a rural or partly rural environment. For these reasons, teachers in urban schools may prefer to select a more rural site, but preferably one nearby and known to the students. Teachers in areas where coal-mining is already established may also wish to adapt the approach.

Once the site has been selected, it can be developed in Part 1. If Part 1 is to be omitted, students can simply be told the site in Part 2.

### Part 1 (optional): Development of the site

The teacher will need to provide a map of the local district.

The class should be split into small groups of 4 or 5 and, using the General Briefing sheet, each group has to produce the best possible ideas about how the site should be developed.

Access roads will be needed for the construction and later a railway line will be needed to transport most of the coal to the nearest coal-fired power station (the teacher may need to say where this is!).

After a short discussion about each group's proposals, the class could quickly decide on the best arrangements for developing the site.

### Part 2: The public meeting

#### Procedure

- 1 The class should be divided into three groups:

*Group A* The members of this group are in favour of the development. There are six main speakers, corresponding to the six Group A Role Cards. Each will be able to speak for up to two minutes at the meeting.

*Group B* The members of this group are against the development. There are six main speakers corresponding to the six Group B Role Cards. Each will be able to speak for up to two minutes at the meeting.

*Group C* This group (the remainder of the class) are undecided about the development, and have come along to hear the arguments and to ask questions about the issues, which may affect them personally.

Some roles could be omitted if inappropriate to local conditions. In this case, to maintain balance a Group A *and* a Group B role should be omitted.

A Chairperson should also be chosen to run the public meeting. Obviously the student chosen for this role needs to have appropriate qualities.

- 2 Students should prepare for the meeting by studying the General Briefing and, where appropriate, their Role Card. This could conveniently be done in homework time prior to the lesson in which the meeting is to be held. If Part 1 of the unit has been omitted, the teacher would need to give details of the local site being developed.

Members of Groups A and B should be encouraged to prepare their speeches carefully and to work on their roles. Suitable 'props' could be used.

Group C should think of questions to ask at the meeting.

- 3 For the public meeting, the groups should be suitably arranged in three blocks, with Groups A and B either side of the Chairperson, who should introduce the meeting by outlining the procedure indicated on the Chairperson's Briefing.

The Chairperson should be left in charge of organizing the meeting, and his or her overall authority should be emphasized.

- 4 A follow-up discussion is valuable. Did students feel the debate was fair? Did it favour one side or the other? Did they 'believe' in the case they were arguing? Did the vote go the way they expected beforehand? This procedure for making the decision is time-consuming; is it all worthwhile? (The Vale of Belvoir Inquiry cost over £2 million and the main opposition parties had to raise £130 000 to fight their case. The meeting simulated here is only one component in an extensive process of consultation leading to a Public Inquiry and finally to a decision by the Secretary of State for the Environment.)

**Further resources**

Films and further information on the coal-mining industry are available from: Schools Service, National Coal Board, Hobart House, Grosvenor Place, London SW1X 7AE.

A useful film about coal and its future potential is *Coal — the Bridge*, produced by BP. It lasts 25 minutes and is available on free loan from: BP Film Library, 15 Beaconsfield Road, London NW10 2LE.

Fuller details on how a coal mine might be located can be found in the *Schools Council Geography 16—19 Project* (Longman).

*Acknowledgement* Figure 1 supplied by the National Coal Board.

# THE COAL MINE PROJECT

## General Briefing

Imagine a new coal mine is to be opened in your district. The project could cause quite a lot of argument. Some people would be in favour, because of employment and local development. Others might be against it, perhaps for environmental reasons.

In this unit you will be taking part in an exercise which simulates this kind of situation. First, read the information below.

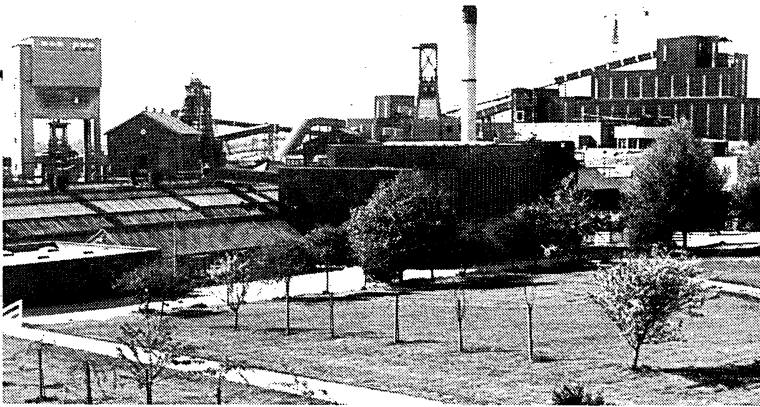


Figure 1 The surface buildings at a coal mine

## Details of the proposed mine

- 1 *Site* At the start of the project, one mine shaft would be sunk. You will be told where the site of the shaft is. Later, another two or three shafts may be sunk elsewhere in the area.
- 2 *Site area* About a tenth of a square mile of land would be needed for the mine buildings, the rail yard and the coal storage area. A further square mile would be needed for spoil tips. The shaft towers are likely to be 50m high.
- 3 *Production of coal* 3 million tonnes of coal are to be mined each year.
- 4 *Spoil (waste rock, etc.)* 1.5 million tonnes of spoil will need to be disposed of on tips every year. The tips would be gently sloped and would be gradually restored for agricultural use. The total land required for tipping would be about a square mile, but only a fraction of this would be used at any one time. If there are suitable holes nearby, these could be filled with spoil.
- 5 *Workforce* About 1000 mineworkers will eventually be employed, together with 100 managerial and clerical staff.
- 6 *Subsidence (collapse of land above mines)* Subsidence will be less than in other coalfields because the coal is very deep. The ground is likely to subside by about a metre. The coal will not be extracted from below large towns or large factories, and probably not below railways. The Coal Board will make good any damage caused by subsidence.
- 7 *Transport* Coal would have to be transported to nearby power stations. This would require a rail link so that the large amounts of coal could be transported by train.

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**Group A role card****Local Job Centre Manager**

In your speech you should explain that you are worried about unemployed people in the area, especially young people leaving school. You cannot find even short-term work at the moment for people who are desperate to get a job.

Some people have asked you if they should move away from this area in order to find a job. You are also worried about other local industries cutting back on their workforce. Explain how many jobs will be created by this coal mine and what a big difference it will make to the employment situation.

Think about some of the problems that face unemployed people. Do people objecting to this scheme have any idea what it is like to be unemployed?

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**Group A role card****Secretary, Society for a Nuclear Free Future**

In your speech you should first state why you are so strongly against nuclear energy, listing some of its dangers. You think that it is far safer to have coal-fired power stations in Britain. You therefore believe that we must be prepared to use our massive reserves of coal. As well as being economical it will also provide plenty of employment. If areas like this won't allow their coal to be mined, then the government may go ahead and build more nuclear power stations. You believe that alternative sources of energy will unfortunately not be practical for a long time to come.

Think of some other reasons why you prefer coal to be used to make electricity instead of nuclear power.

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**Group A role card****Representative of the National Union of Mineworkers**

If the mining industry is to survive, then the country must be prepared to dig up its coal. In your speech you should explain that people in this area must be more realistic and less sentimental in their thinking. Explain that you feel the rest of the country will suffer if the mine is not opened. Work would be provided for skilled mineworkers from pits that have closed. If Britain does not develop its coal industry, which country will supply the coal instead? What are the dangers of becoming dependent on another country for our sources of energy?

Try to think of the advantages of burning coal in the home and in power stations. Explain that modern mines are safe places to work.

**Group A role card****Director, chemical manufacturing firm**

In your speech you should explain the industrial importance of coal. It can be used as a source of chemicals, and to make coke for steelmaking. It is also used as a fuel in industry.

At the moment industry depends on oil even more than coal. But in future, oil supplies will run out. Coal can be turned to liquid fuel to replace oil. At present your firm makes most of its chemicals from oil. But in the future you will need to use coal instead.

It is very important to make sure there will be plenty of coal to make these chemicals and fuels in the future.

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**Group A role card****Owner of a large local building firm**

In your speech you should explain how this development is desperately needed by local building firms. It will create many more jobs and prosperity for the community. Try to think of all the areas where new jobs would be created while the mine was being built. This will include the construction of the mine buildings, and also new roads and houses. There will be new jobs in quarries and brickworks, and many manufacturing industries which provide supplies.

Explain that the proposed mine buildings would be well laid out so that they would blend with the surroundings, and that there would be a tree-planting scheme.

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**Group A role card****Area Planning Manager, National Coal Board**

In your speech you should explain to the audience how concerned they should be about Britain's energy supplies. Oil reserves are limited. Many people think oil is too precious to burn as a heating fuel, because it is a valuable source of chemicals. Coal is at present used to meet about one-third of our energy requirements. We are lucky enough in Britain to have 300 years of coal supplies left.

It is very important that workable coalfields are developed now. Modern mines need to be opened in plenty of time so that the older mines can be slowly closed down as their coal becomes too difficult to get out. This site is in an ideal situation, providing high quality coal.

Think of other reasons why this coal should be dug up and not left under the ground.

**Group B role card**

**President, local Conservation Society**

You are keen on local conservation. In your speech you must explain the different ways this development will affect the environment and the local wild life. You must mention why this particular area is worth conserving. Say why you believe the impact of the mine on wild life and the environment would be disastrous.

Think of the effect on beauty spots and rare species of plants and animals. You are particularly concerned about waste tips.

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**Group B role card**

**Senior teacher at the local school**

This development is likely seriously to affect the school. You are concerned that the dirt and dust from the mine will be a nuisance. It may also be a health hazard to the school's students. The increase in traffic in the area is likely to be a disturbance and a danger to the children.

Try to include in your speech all the effects you think the development will have on the school.

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**Group B role card**

**Local farmer**

You are likely to lose land through this development. Land for the mine would be taken from you by compulsory purchase. Your buildings are likely to suffer from subsidence. Dust will be blown onto your pasture, making the grass less suitable for grazing. The waste tips are likely to take up valuable agricultural land in the area.

You should also mention in your speech that you are very worried about the effects of subsidence on drainage in the area. A drop in the land level would mean that the area was more liable to flooding. It might become waterlogged.

**Group B role card****Chairperson, local Residents' Association**

This development will make this a less attractive place to live. It will lower house prices in the area. Subsidence may also affect the houses, particularly large, old houses. The Coal Board has guaranteed to pay for any repairs that are needed, but residents are still very worried about undetected effects on the foundations of their homes.

You might mention the housing problems caused by workers moving into the area. Noise, dust and traffic will be a nuisance. The pit head and waste tips are likely to be visible from a number of houses. The roads are already heavily congested and local communities will suffer from heavy lorry traffic.

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**Group B role card****Member of the Area Health Authority**

In your speech you should outline how concerned you are about the effect of coal mining on the health of the local community.

Try to include:

- The health of the miners digging the coal
- The effect of dust on others living in the area
- Increased stress caused to residents by noise, traffic, etc.

You are worried about the community health bill that will result if this project goes ahead.

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**Group B role card****Secretary, local branch of Friends of the Earth**

You are worried about the effect of air pollution caused by burning coal. Sulphur in the coal may cause acid rain when the coal is burnt. Digging more coal out of the earth is wasting Britain's natural resources. Instead we should be cutting down our energy demands and developing new types of alternative energy. With careful energy saving we would not need the extra coal.

Your speech should try to explain why this type of development is unnecessary. You could also mention the effect of the increase in traffic on the environment.



### Group C Opinion grid

This grid is designed to help you follow the debate and reach your decision. Copy out the grid and put a tick in one of the boxes after each of the speeches.

|                   | <i>strongly against</i> | <i>against</i> | <i>neutral</i> | <i>in favour</i> | <i>strongly in favour</i> |
|-------------------|-------------------------|----------------|----------------|------------------|---------------------------|
| Before the debate |                         |                |                |                  |                           |
| After speaker 1   |                         |                |                |                  |                           |
| After speaker 2   |                         |                |                |                  |                           |
| After speaker 3   |                         |                |                |                  |                           |
| After speaker 4   |                         |                |                |                  |                           |
| After speaker 5   |                         |                |                |                  |                           |
| After speaker 6   |                         |                |                |                  |                           |
| After speaker 7   |                         |                |                |                  |                           |
| After speaker 8   |                         |                |                |                  |                           |
| After speaker 9   |                         |                |                |                  |                           |
| After speaker 10  |                         |                |                |                  |                           |
| After speaker 11  |                         |                |                |                  |                           |
| After speaker 12  |                         |                |                |                  |                           |
| After summing up  |                         |                |                |                  |                           |
| FINAL DECISION    |                         |                |                |                  |                           |

**Try to ask the different speakers searching questions after they have spoken.** Use the General Briefing sheet to help you with the facts. Be ready to ask your question when the speaker has finished.

## Chairperson's Briefing

You are in charge of organizing the debate and keeping order. Much of the success of this exercise depends on you! During the speeches no one should be allowed to interrupt. Each speech should not last longer than two minutes.

### Speakers

**Group A**, in favour of the development:

- 1 Area Planning Manager, National Coal Board
- 2 Secretary, Society for a Nuclear Free Future
- 3 Owner of a large local building firm
- 4 Representative of the National Union of Mineworkers
- 5 Director, chemical manufacturing firm
- 6 Local Job Centre Manager

**Group B**, against the development:

- 1 President, local Conservation Society
- 2 Chairperson, local Residents' Association
- 3 Secretary, local branch of Friends of the Earth
- 4 Senior teacher at the local school
- 5 Local farmer
- 6 Member of the Area Health Authority

The best way of organizing the debate is to start with a speaker from Group A, and then follow with a speaker from Group B. Continue with speakers from Group A and Group B alternately.

After each speech you should invite questions from the floor. Do not allow anyone to talk too much.

If time allows, a more general discussion could take place towards the end, but you would need to chair this part of the meeting carefully. Before the vote, allow a speaker from each Group to sum up their case in not more than two minutes.

Finally allow Group C, the 'public' who have attended this public meeting to vote. Remind them that they should have considered all the arguments they have heard. They should vote 'For' or 'Against' the proposal to open a mine.