

# Study Guide for the Australian Collaboration Fact and Issue Sheet

## ENERGY ISSUES IN AUSTRALIA

### FOR REVIEW

#### 1. Patterns of energy consumption in Australia

- 1a. Do you know what “fossil fuels” are? If not, look the term up in the encyclopaedia.
- 1b. What is Australia’s main fuel source?
- 1c. Look at Table 1 on page two of the Fact and Issue sheet. Rank the sectors from highest to lowest according to energy consumption.

#### 2. What are the problems that we face?

- 2a. Describe the three crucial problems relating to energy in your own words.
- 2b. Read the list of energy sources available in Australia, found in the second column of page one. Draw a cross-section diagram showing geo-thermal energy as the layer deepest within the earth and solar energy as the source furthest away from the earth. Where do all the other energy sources fit in this diagram?

#### 3. What is Australia currently doing?

- 3a. What new department did Prime Minister Kevin Rudd establish and who is its minister?
- 3b. What is MRET and what does it aim to achieve by 2020?
- 3c. How does the Government’s target for greenhouse gas emission reduction compare to the target suggested by Professor Garnaut?

#### 4. What should Australia be doing?

- 4a. Why is it important to reduce demand for energy?
- 4b. How can energy reduction be achieved?
- 4c. Explain the general principle underlying market mechanisms in your own words.
- 4d. Both emissions trading schemes and carbon taxes attach a price to greenhouse gas emissions. Explain the differences in the way they do this. Which mechanism is more effective in your view?

- 4e. What is the aim of COAL21?
- 4f. Which three renewable energy sources are growing most quickly around the world?
- 4g. What makes hydro and nuclear energy less attractive options?

### FOR DISCUSSION

#### 1. Question for class discussion:

As mentioned in the Fact and Issue sheet, the transport sector is the third highest consumer of energy. What is the transport profile of your class?

- i) Individually: How did you get to school today? What source of energy was involved in your means of transport?
- ii) As a class: Work out the transport statistics for your class. For example, what percentage of students travel on a bus powered by natural gas? What percentage are driven in a car using petrol? What is the energy source for those who travel on trams or trains? What percentage of students were “emissions free”, eg walking or riding a bike?

#### 2. Topic for a think/pair/share activity:

- i) Make a list containing specific examples of ways to reduce energy demand. Which ones are most important to you? Arrange your top six examples using a diamond ranking strategy.
- ii) Discuss your examples with a partner, explaining the reasons for the rankings you assigned. How is your partner’s diamond different to yours?
- iii) Share your findings with the class and see if you can make a list of class priorities for reducing energy demand.

#### 3. Question for class discussion:

Should the Australian Government put more money into developing non-polluting renewable energy supplies or into reducing the emissions from existing sources such as coal? Provide reasons for your viewpoint.

## FOR RESEARCH

### 1. For younger students:

Ask your grandparents or an older relative about new technologies they have seen develop in their lifetime. Have they seen new energy sources emerge? Have they seen others disappear? Do they think new technology has always been progressive? What do you think?

### 2. For intermediate students:

Do some research on the relationship between energy and industry in your area. What industries have figured strongly in the history of your town, city or local area? Using local sources of historical information – town hall, local historians, old newspapers – find out what energy sources were used in these industries in the past. What about now? Have the sources of energy changed? Or have the industries changed? What are the main industries in your area now? What energy sources drive them? Your local council might be able to help you here.

### 3. For advanced students:

Wave, or tidal, energy is one of the least discussed sources of renewable energy. Find out where research on this source of energy is being done. Are there any commercial scale applications of tidal energy? What obstacles does this energy source face? You can start your research here:

<http://www.environment.gov.au/settlements/renewable/recp/wave/two.html>

<http://www.wavegen.co.uk/>

<http://www.energy.ca.gov/development/oceanenergy/>