



Unit 5: Sustainable Resource Use

Teaching Point

We all use a range of resources everyday from the energy we use in our homes and the food we eat to the water, products and raw materials we consume. We need to be more sustainable in the way we use these resource by reducing the waste we generate, being more efficient in the way we use water and energy and looking at new ways to meet our needs with renewable resources.

Outcomes

Students will:

- Understand that we use a range of resources in our every day lives including energy, water and food, all of which come to us as gifts from nature.
- Understand that we could be more sustainable in our resource use by reducing, re-using and recycling more of our waste. For example we could reduce the demand for 'the latest thing', repair and reuse products, choose products with lower environmental impact that use less energy and last longer, or try home composting.
- Understand that we can choose more sustainable lifestyles.

Eco Eye Clips and Comprehensions

(NB remember to print and prepare these in advance).

Recycling – waste as a resource

In Ireland we are top of the consumer league in Europe, but here we look at what happens to all of the things we throw away and send for recycling (85% of these resources are exported for recycling, and long distance shipping of material takes energy). We need to consider how we can reduce, re-use and do more of our own recycling in Ireland.





Recycling our organic waste

This clip looks at the things we dispose of that could be recycled and focuses on organic waste like left over food and garden waste. In some areas people have brown bins for organic waste and the contents are collected and turned into compost for use in the garden. This reduces waste going to landfill, which in turn reduces the methane, odour and contaminated water given off, saves the householder money on bin charges and produces a useful product locally.

Green family holidays

We can reduce our environmental impact by holidaying in Ireland and here we see how hotels in the South East are working to make their businesses greener. By reducing waste, consumption of energy and water, hotels can earn an award from the EPA recognising their contribution to eco-tourism while also saving a lot of money, so it makes business sense to be green.

Wind energy – powering the future

The Government has set a target of producing 40% of our electricity from renewable resources by 2020. Given that we depend on fossil fuels for 93% of our energy needs this will be a challenge. In this clip Duncan explores wind energy and hears about the challenges and opportunities that exist for increasing our use of this clean, green energy.

Watch the clips (choose some or all) and complete the comprehension exercises.

Activities

Teachers please note: This section looks at waste and energy separately and includes suggested field work to look at both topics locally. The class can undertake one or both of these surveys or alternatively, complete the Sustainable Living Audit in Unit 6, which covers aspects of both.

Waste

1. Local knowledge

Ask the students to find out:





- Where is the nearest landfill?
- Where is the nearest recycling centre and what items can be recycled?
- What type of bins are provided to householders by the local authority and what types of waste can be put in them (e.g. black for disposal, green for recyclable and brown for compostable).
- What are the charges for waste disposal per household?
- What are the charges if you bring material to the landfill yourself?
- What kinds of materials are accepted at the landfill if brought by an individual?

2. Group work

Divide the class into groups and ask each group to focus on alternative strategies to prevent or reduce waste. Students should attempt to identify all possible alternatives to landfill. Encourage students to think in terms of reducing and re-using before recycling as prevention of waste is preferable to recycling. If necessary guide students towards these possibilities:

- Reduce the amount of waste created e.g. repair rather than replace products, pass on useable products to others, try not to accumulate so much “stuff”. Each group should think of examples. Enquire about the National Waste prevention programme (see www.nwpp.ie)
- Provide opportunities for re-use of waste (see www.dublinwaste.ie)
- Sorting and composting
- Improved recycling strategies, find examples of Irish recycling businesses
- Inducements to householders to reduce the amount of waste produced, such as Increased bin charges based on weight or free composting bins.
- Other forms of waste disposal (incineration, dumping). Students should critically assess the environmental impacts of incineration and dumping at sea. Each group should report





on their findings and strategy. The teacher and other groups should comment on the reality and sustainability of the proposals.

Students should examine the waste management strategy of the Local Authority. Firstly look for details the strategy on the Local Authority website or from the Environment Officer, there is a listing of contacts on www.askaboutireland.ie. Make copies of the key elements and divide the class into groups. Ask the groups to:

- Briefly outline current practice and relate this to the strategies outlined in the plan.
- Comment on the reality and sustainability of the plan.
- Suggest alternatives based on the film clips and group discussions.

3. Investigation - fieldwork

Waste management - practice and attitudes: A local survey

Remember the steps!

Step 1: Identify key aims or formulate a hypothesis.

Step 2: Identify and get the background material required.

Step 3: Identify the main methods of gathering your information.

Step 4: Identify the main results and draw a conclusion.

Step 5: Identify some achievable actions, which may help the situation.

Step 1: Identify key aims or formulate a hypothesis

Aims

- To survey current practice in waste prevention, recycling and disposal among residents of the community.
- To examine awareness of the process and its environmental implications.





- To look at recycling habits.
- To survey attitudes towards waste prevention and management.

Step 2: Background information

- Use the findings of activities 1 and 2.

Step 3: Data gathering

- Examine and extract the key strategies from the Local Authority waste management strategy.
- Construct your questionnaire. (See sample questionnaire)
- Each class member should interview at least 10 different households (students can work in pairs).

Step 4: Results and conclusions

- Total the number of returned questionnaires and divide them into four groups.
- Assign a number of students to analyse each group of questionnaires. They should work out the basic statistics for each of the answers. The results which show significant variations should then be related to the variables of age, gender, marital status, car ownership and distance from the site.
- In drawing conclusions try to answer the aims.

Step 5: Action

- Make a display of your results and exhibit them in school or in a public building like the local library.
- Send your results to the Local Authority with your suggestions for change.
- Write a report for the local newspaper highlighting your findings and recommendations.
- Invite a local representative to your class to discuss the issue.





Energy

1. Brainstorm

Reducing demand is the first step toward sustainable energy use. Students brainstorm in small groups things we can do to save energy at home and when we travel e.g. energy saving appliances, insulation, behaviour changes like walking or cycling to school. It is important to establish with the group that the availability of renewable resources is a positive thing for the environment but we can use more energy than we need by having energy wasting habits.

2. Internet search

Students are asked to do an internet search for information on new and alternative renewable or green energy sources e.g. wind, hydro, wave, solar, biomass, geothermal (start at www.seai.ie). The students should search for fact and opinion on each of the issues and look for countries that are actively developing these technologies. Students should be advised to be discerning in relation to the sources of the opinions and materials that are presented in relation to the issues. The results of the search should then be used as focus materials for the group work and debate.

3. Group work

Divide the class into groups and ask the groups to consider three different issues.

- Look at the current situation in relation to energy usage in Ireland.
- Select one of the greener alternatives and discuss the issues surrounding the introduction and usage of this source. Each group should discuss a different alternative energy source as outlined in activity 2.
- Try to make a connection between the group's chosen alternative energy source and how it might impact upon climate change, a national and global environmental issue.
- After adequate preparation time each group must present their findings in the form of a debate. Each group must debate the motion "Ireland's energy future is in crisis. What is our best alternative?" Each group should be given up to five minutes to present.





4. Map work

Students are asked to focus on the choice of locations for a wind farm and a waste to energy plant. Select an OS Map extract (you can use online maps such as Scoilnet maps <http://maps.scoilnet.ie/> or EPA maps <http://maps.epa.ie>), which contains both a range of settlement types and rural areas. Students are then asked to focus on the following.

The site of a proposed incinerator: Students should address the following issue. As a Geography class you are asked to select three possible sites for a waste to energy plant in the map area. Students must select the sites using grid references and then justify why they chose each of the particular sites. They must also look at possible reasons why local people might object to the sites. The emphasis is on the site and not the environmental impact of the activity on a national or global scale.

The site of a proposed wind farm: Now repeat the same activity and consider the location of a wind farm. Ideally students should focus on the OS Map of their own community. Students should individually write their responses to the map work activities.

5. Investigation - fieldwork

Energy use and awareness in the local community

Students are asked to conduct an audit of their local community to examine the patterns of energy usage and knowledge of the possible green energy alternatives.

Remember the steps!

Step 1: Identify key aims or formulate a hypothesis.

Step 2: Identify and get the background material required.

Step 3: Identify the main methods of gathering your information.

Step 4: Identify the main results and draw a conclusion.

Step 5: Identify some achievable actions which may help the situation.





Energy use and awareness in the local community

Step 1: Identify key aims or formulate a hypothesis

Aims:

- To survey current patterns in energy use among residents of the community.
- To examine awareness of the environmental implications of these patterns.
- To examine awareness of the possible green alternative energy sources available.

Step 2: Background information

- Use the findings of the internet search and group work in activities 2 and 3.

Step 3: Data gathering

- Construct your questionnaire. (See sample questionnaire attached)
- Each class member should interview at least 10 different households (students can work in pairs).

Step 4: Results and conclusions

- Total the number of returned questionnaires and divide them into four groups.
- Assign a number of students to analyse each group of questionnaires. They should work out the basic statistics for each of the answers. The results which show significant variations should then be related to the variables of age, gender, marital status, car ownership and distance from the site.
- In drawing conclusions try to answer the aims.

Step 5: Action

- Make a display of your results and exhibit them in school or in a public building.
- Write a report for the local newspaper highlighting your findings and recommendations.
- Invite a local representative to your class to discuss the issue.





WASTE PREVENTION AND MANAGEMENT SURVEY

Our Transition Year class is doing a project on Waste Prevention and Management in our local area. I am interviewing 10 households in this area. I wonder would you take 5 minutes to answer some questions please?

1. Do you take any of the following measures to prevent waste?

Repair and reuse of products Y ☐ or N ☐

Accept or pass on clothes and goods for re-use by others Y ☐ or N ☐

Choose products which use less energy and last longer Y ☐ or N ☐

Other (specify):

2. How do you dispose of your household rubbish?

Recycle ☐

Disposal ☐

Burning ☐

Other (specify):

3. If collected can you tell me where your rubbish is taken after collection?

4. How much is the annual/weekly/monthly service charge for waste disposal?

5. Do you recycle any of your waste?





Glass Y ☐ or N ☐

Plastic Y ☐ or N ☐

Paper Y ☐ or N ☐

Waste food Y ☐ or N ☐

Other (specify):

6. Which bring site do you use?

List of local bring sites:

7. Is this the nearest site?

Y ☐ or N ☐ Don't Know ☐

8. Can you list the items which can be recycled at this site?

- Glass
- Plastic
- Paper
- Waste food/garden waste
- Batteries
- Clothes





- Other (specify):

9. Do you compost organic waste, e.g., raw vegetable and garden waste?

Y ☐ or N ☐

10. Are you aware of the Local Authority Waste Management Strategy? Do you know what is planned for the future?

11. Do you think that waste management is in crisis in this area?

Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree ☐ No Opinion ☐

12. If you agree how would you suggest solving the problem?

Can I finish by asking you a few questions about yourself?

13. Into what age bracket do you fall?

Under 20 ☐ 20 to 34 ☐ 35 to 49 ☐ 50 to 64 ☐ over 65 ☐

14. Gender? Male ☐ Female ☐





15. What is your marital status? Married ☐ Single ☐ Other ☐

16. Does your household have a car(s)? Y ☐ or N ☐ If yes how many in the household? _____

Thank you for your help.





ENERGY USE AND AWARENESS SURVEY

Our Transition Year class is doing a project on Energy Use and Awareness in the community. I am interviewing 10 households in this area. I wonder would you take 5 minutes to answer these questions please?

1. What energy source(s) is used to heat your house?

2. Who supplies electricity to your home?

3. Do you own a car? If yes, what fuel does it use?

4. Could you roughly calculate how much you spend in a week on

Electricity _____ Petrol or Diesel _____ Home Heating _____

5. Could you name any of the environmental problems associated with using these types of energy?





6. Can you name any of the alternative green energy sources, which could be used to replace these?

- ☐ Wind
- ☐ Wave
- ☐ Biomass
- ☐ Solar
- ☐ Hydro
- ☐ Geothermal
- ☐ Other (specify)

7. Would you agree with producing more electricity using wind power?

Y ☐ or N ☐

If yes, do you see any difficulties associated with this change?

8. Would you agree with producing electricity from burning domestic waste in a Municipal Incinerator?

Y ☐ or N ☐

If not, what are the issues which would concern you?

9. Are you aware of any alternative energy sources, which could be used to heat your home, which are environmentally friendly? If yes please explain briefly what you know.





10. Are you aware of any alternative energy sources which could be used to power your car, which are environmentally friendly? If yes please explain briefly what you know.

Can I finish by asking you a few questions about yourself?

11. Into what age bracket do you fall?

Under 20 ☐ 20 to 34 ☐ 35 to 49 ☐ 50 to 64 ☐ over 64 ☐

12. Gender? Male ☐ Female ☐

13. What is your marital status? Married ☐ Single ☐ Other ☐

Thank you for your help.

