UNIT 2 Environmental Management

Recommended Prior Knowledge:
Not essential, but candidates who have studied IGCSE Geography, Natural Economy or a Science subject should have some knowledge of the basics of energy and power supplies.

Context:
There will be some linkage to the material studied in the AS physical core, regarding the human impact on the environment (unit 2.4 on the AS, referring to urban effects on climate, particularly pollution). In *The management of a degraded environment*, AS Human Core unit 2 section 2.3 *Urban trends and issues of urbanisation* may also have looked at the difficulties of upgrading sections of urban areas, in terms of dealing with pollution, etc. This unit will take the topic further by looking at and evaluating the success of possible solutions to the problems.

Outline:
This unit will examine the patterns of supply and demand for different energy resources, and the factors that encourage or limit their development/exploitation. It will examine both renewable and non-renewable resources, and the environmental impacts resulting from their exploitation. Case studies of the development of different energy sources will illustrate the issues raised. The distribution of power sources is geographically uneven, necessitating the formulation of energy strategies by local and national governments to ensure the best possible exploitation/procurement of their energy needs, with the least harmful impact on the physical environment. Exploitation of other natural resources may contribute to the economic well being of an area, but may also produce undesirable environmental consequences. There is a need for the development of strategies to combat the effects of over-exploitation of natural resources in rural areas, and the effects of industrial and urban growth in urban areas. The solutions are not always successful.

	Content	Objectives	Terminology	Suggested Teaching Activities	Online Resources	Other resources
2.1	**Sustainable energy supplies**	To understand the differences between renewable and non-renewable resources	Sustainability Renewable energy Non-renewable energy Fossil fuels Hydro-electric power(HEP) Solar energy Biogas Nuclear power Tidal power Wind power	Classification of resources Facts and figures for energy use can be taken from an atlas or from one of the references given here. Analysis of trends in use of energy should be a starting point	http://www.uic.com.au/education.htm This includes several items on nuclear energy and the greenhouse effect.	Nagle & Spencer (Diagrams) 118 – 119 Waugh ch 18 488 – 501 Guinness and Nagle 63 – 66 Bowen & Pallister 236 Waugh ch 18 492-498 Geothermal Energy (Geo Factsheet 76 Sept 1999)

				Study of the energy resources of the home country should be used to provide specific case study material. This could be supplemented by additional case study material such as: North America: energy alternatives for the future Wind farms in the UK – this is a topical issue which may be followed by use of web pages from newspapers like the Times and the Guardian		
		To understand why levels of supply and demand for energy resources vary at the national level	Resource endowment Technology	Maps and statistics can be studied to show that the main producers are not necessarily the main consumers Case Study – changes in the UK's coal mining industry		Bowen & Pallister 238-241 Nagle (Development & Underdevelopment) 111-114 Nagle & Spencer (Diagrams) 115 (dated, but can be used for comparison purposes)
		To examine trends in the patterns of energy consumption in LEDCs and MEDCs		Waugh 489- 491 graphs and figures - a good starting point. Relate to changes in technology		Guinness & Nagle 56 – 62 Waugh 489-91

		To understand the environmental impact of energy production, transport and usage at local scales		Fuel extraction and electricity production creates industrial waste, spills of crude oil, etc, which have great effects on the physical environment. This can be demonstrated by use of case studies. Where examples relative to the home country exist, these should be made use of.	http://www.iclei.org/EFACTS/GLBWFIG1.GIF (diagram) http://www.iclei.org/EFACTS/GLOBWARM.HTM (global warming) Other links on this site explore alternative energy sources and their effects	Nagle (D & U) 111 Cook, Hordern et al 119-20 is very good on this
		To understand the environmental impact of energy production, transport and usage at global scales	Natural environment Pollution Conservation	Figures for Carbon Dioxide emissions and levels of Deforestation can be analysed. "Carbon sinks" are a link to Tropical Environments in Physical option 1. Nuclear energy is "clean" but has other possible dangers	http://www.uic.com.au/education.htm deals with Australian Uranium	Cook, Hordern et al 125, 129 Waugh 495 Geo Factsheet 38 Environmental Implications of Renewable Energy
2.2	**The management of energy supply**	To examine and evaluate the energy strategy of **one** country. If possible, the home country should be used, but it is useful to have knowledge of energy policies in other areas with which to compare it.		Whenever practicable, the energy strategy of the home country should be considered. One of the following case studies could be used as an alternative, if required:		

				India Japan UK		Geo Factsheet 23 1997 The Energy Mix in India Geo Factsheet 13 1997 Energy Resources in Japan Geo Factsheet 47 1998 Energy policy in the UK Nagle (D & U) 111-114s UK Energy – Update (Geo Factsheet 95, April 2000
2.3	**Environmental degradation**	To understand the nature and causes of the many types of pollution	Definition of environmental degradation – there are several Geo factsheets available on this theme. Air pollution Water pollution Land pollution	Many industries including extractive industries, can pollute air and water There should be some discussion of the types, causes and classification of pollution		Cook, Hordern et al, 114-123 Geo Factsheet 56 1998 The pollution of lakes and reservoirs
	Rural Environments	To analyse the factors which have led to degradation of rural environments Causes and consequences of the over-use of rural land	Soil erosion Land degradation Deforestation Desertification Effects of intensive farming	Degradation of rural environments occurs in both MEDCs and LEDCs – Case Study material based on the home country could be supplemented by: Environmental Issues and agriculture in the UK		Nagle (D & U) 66-67 Hart et al 133-136

	To examine and evaluate policies designed to upgrade degraded rural environments	Reclamation Land reform Soil conservation Afforestation Reforestation Environmentally Sensitive Areas (ESAs)	Use material from the home country to illustrate this wherever possible. Sources of additional material: Basilicata, Italy, is a very good, up-to-date case study to supplement local materials		Hill (Advanced Geography Case Studies) 54-60
Urban Environments	To understand why selected urban environments have become degraded	Urbanisation Urban decay Zones of assimilation and discard Inner cities Informal settlements Cultural enclaves	A useful strategy could be to study one MEDC City and one LEDC City. The urban problems of Rome Cairo: Africa's greatest metropolis Rapid urban growth- e.g. London American Cities The quality of life in Cities		Flint and Flint chapters 5 and 6 provide excellent case study material from both LEDC and MEDC cities. Hill 89-95 Hill 96 –105 Guinness & Nagle 70 – 74 Guinness & Nagle 89-94 on American cities Guinness & Nagle 95-105

		To understand the success or otherwise of policies designed to counter urban environmental degradation	Urban regeneration Urban redevelopment	Urban redevelopment in Glasgow Urban Development Corporations – Merseyside Inner cities Sao Paulo	http://www.foei.0rg/media/index.html	Nagle & Spencer (Diagrams) 94, an older project but still useful Cook, Hordern et al 92-94 Guinness & Nagle 109–113, 114 –119 Geo Factsheet 39 1998 Urban regeneration case studies
				London Docklands Rio de Janeiro		Waugh 402-3 Waugh 408 Urban Problems in Rio de Janeiro (Geo Factsheet 121, January 2002)
		Knowledge of environmental protection policies and their impact		Study of the Earth summits of Rio de Janeiro 1996 and Kyoto could be included here		

2.4	**The management of a degraded environment**	To acquire in-depth knowledge of **one** degraded environment, focusing on: • Its location – use of sketch maps • The nature of the degradation • the strategies employed to reclaim it • the relative success of those strategies (i.e. positive and negative aspects)		This section may be covered by reference to any of the above case studies. Strategies vary according to the environment and the candidates' home areas may provide useful and relevant examples. The strategies employed depend on the context – the degradation could be physical or human in nature or a combination of both. Different agencies involved include Governments, NGOs or even local self-help associations. A possible link to the Physical units could be in study of the Sahel area, with problems of desertification. Other contexts could include urban renewal or redevelopment projects.		Geo Factsheet 118 Coral Reefs – ecosystem in Crisis? Geo Factsheet 28 1997 Desertification – Causes and Control Cardiff Bay Redevelopment (Geo Factsheet 91, April 2000