

THE CHALLENGE OF NATURAL HAZARDS	
Topic	Crucial Knowledge
Natural Hazards	Natural hazards pose major risks to people and property
	The probability of people being affected by a hazard is influenced by a populations vulnerability, capacity to cope and the nature of the natural hazard. HIC countries usually have greater capacity to cope.
	Natural hazards have primary effects such as deaths and buildings being destroyed. They can also lead to secondary impacts such as food shortages and disease.
	Some effects have to be dealt with immediatly to stop further loss. Others are dealt with over a longer period of time.
	Natural hazards become natural disasters when they actual impact human lives
Tectonic Hazards	The earths surface is made of constantly moving floating tectonic plates. Oceanic plates are thinner and more dense. Continental plates are thicker but less dense.
	Plate boundaries are where plates meet. There are three types: destructive (moving towards eachother), constructive (moving apart), conservative (moving in the same direction but at different speeds)
	Volcanoes and earthquakes occur at these plate boundaries
	The effects and responses to tectonic hazards can vary depending on a countries wealth. High income countries like Chile have a greater capacity to cope than low-income countries like Nepal. Nepals response to the 2015 earthquake was slower and less effective than Chile's response to their own earthquake in 2010. Nepal also had a much higher population density
	Lots of people live in areas of risk. Some people cannot afford to move. Others choose to live there for social/economic reasons.
Management strategies such monitoring, prediction, protection and planning can reduce the impacts of tectonic hazards.	
Weather Hazards	Global atmospheric circulation is the transfer of heat from the equator to the poles by the movement of air. Air moves from high pressure areas to low pressure ares
	Tropical storms are low pressure weather systems that develop between 5 and 30 degrees north and south of the equator, with a sea temperature of 27 degrees and when there is small difference bewteen wind speeds in higher and lower parts of the atmosphere. The rotation of the earth on its axis causes the storms to spin.
	Tropical storms are circular in shape. The centre is called the eye. This is surrounded by spiraling rising air called the eye wall.
	Typhoon Haiyan hit the Philippines in 2013, having devastaing primary and secondary effects (over 8000 deaths, 5.6 million lost jobs). The Philippines and wider world responded quickly though (800,000 were evacuated, \$300 million raised to rebuild)
	Climate change could lead to more intense storms. As sea surface temperatures increase, so might the distiribution of tropical storms
	Predicting storms, monitoring their formations and paths, planning for when they do happen and desiging buildings and defences can reduce the effects of tropical storms
	The UK experiences lots of different weather hazards such as strong winds, storms, flooding, droughts.
	Weather in the UK is becoming more extreme with temperatures and rainfall increasing.
	Somerset experienced severe flooding in 2013/14 caused by heavy rain, high tides and a failure to remove sediment reducing the rivers capacity.
In Somerset warning systems gave people chance to prepare. A flood action plan was introduced which included; development of permanent water pumps, regular river dredging, building a tidal barage, raising road heights.	
Climate Change	The earths climate is constantly changing . Over the last 150 years, global temperatures have increased rapidly.
	Ice cores, pollen analysis, tree rings all evidence climate change
	Variations in the earths orbit around the sun affect how much solar radiation the earth recieves. More radiation means higher temperatures. The shape of the orbit, the earths tilt on its axis and the wobble of the earth on its axis all affect the ammount of radiation.
	Volcanic activity can result in short term changes to the climate as material forced into the air can block solar radiation.
	The amount of energy produced by the sun isnt constant. Greater solar output can result in a warmer climate.
	Burning fossil fuels, agriculture and deforestation all increase the amount of greenhouse gases in the environment, enhancing the greenhouse effect and contributing to global warming.
	Global warming and climate change has led to shrinking ice caps, rising sea levels, loss of animal species, changing precipitation patterns. It has also lead to a loss of crops and loss of lives
	Mitigation strategies such as capturing carbon, replanting trees, using alternative energy and establishing international agreements can be used to reducie the severity, seriousness, or painfulness of climate change.
	Adaptation strategies such as changing agriculture practices, managing water supplies and building defences against rising sea levels can be used to ajust to the effects of climate change

PHYSICAL LANDSCAPES OF THE UK	
Topic	Crucial Knowledge
UK Coastal Landscapes	The UK has large upland and lowland areas, as well as important rivers
	Weathering is the breakdown of rock in situ (where they are). Mechanical weathering is the breakdown of rock without changing its chemical composition. Chemical weathering is the breakdown of rock by changing its chemical composition such as carbonation weathering.
	Mass movement occurs when materials fall down the slope. This can be through slides, slumps or falls.
	Destructive waves erode the coast
	Constructive waves deposit material along the coast.
	Erosion is when rocks are broken down and carried away. Erosion of the coast occurs through hydraulic action (air compressed in cracks creating pressure), abrasion (rocks thrown at the cliff breaking bits off), attrition (rocks thrown against each other) and solution (acid rain dissolves some rock).
	Material is transported along the coast by longshore drift. Swash carries material onto the beach, backwash carries it back down the beach.
	Deposition occurs when the water carrying the sediment loses energy and slows down
	Headlands and bays form on discordant coastlines where alternating bands of hard and soft rock are at 90 degree angle to the coast.
	Headlands are eroded to form caves, arches and stacks.
	Waves erode cliffs to form wave cut platforms.
	Beaches, spits, bars and sand dunes are all formed by deposition.
	Swanage, Dorset is an example of a coastal landscape with these features.
	Hard and soft engineering can be used to manage coastlines or managed retreat can be used which means leaving the coastline and doing nothing. Lyme Regis needs protection from coastal erosion. Parts of Lyme Regis are protected by sea walls and rock armour.
UK River Landscapes	Coastal management at Lyme Regis has created conflict because while the hard engineering strategies used have been successful, it has resulted in increased tourism which damages the environment and it has been very expensive and only has a short life-span, will need rebuilding and frequent maintenance
	A river's long profile and cross profile vary over its course. Changing from steep and v-shaped to gentle wide and flat.
	Vertical erosion deepens the river valley and channel, lateral erosion widens the river valley and channel
	Rivers channels are eroded through hydraulic action, abrasion, attrition and solution.
	Material in the river is transported through traction, saltation, suspension, and solution.
	Deposition is dominant in the lower course as the river loses velocity and energy.
	Waterfalls and gorges are found in the upper course of a river where the river flows over an area of hard rock followed by an area of soft rock.
	Interlocking spurs are created in the upper course as the river lacks the power to erode sideways so has to wind around the hillsides.
	Meanders are large bends in the middle and lower courses of a river that formed by erosion and deposition as the current flows faster on the outside of a bend so erodes the outer bank.
	Over time ox-bow lakes are formed from meanders. Erosion causes the bends to get closer leaving only a small bit of land that the river breaks through.
	Flood plains are flat areas of land that flood.
	Levees are natural embankments where the river has deposited material at the edges of the river channel.
	Estuaries are tidal areas where the river meets the sea.
	The River Tees is an example of a river landscape in the UK.
River discharge is the volume of water flowing in a river.	
Heavy rainfall, prolonged rainfall, rock type and changes in land height (relief) all affect flood risk.	
Changes in land use, such as the use of impermeable material (e.g. concrete) and the removal of trees which intercept water all increase flood risk.	
Dams, reservoirs, channel straightening, embankments and flood relief channels are all examples of hard engineering strategies that can be used to reduce the risk of flooding and its effects	
Flood warnings / preparation, restricting where people can build on flood plains (flood plain zoning), planting trees and restoring rivers are examples of soft engineering strategies that can be used to reduce the risk of flooding and its effects	

THE LIVING WORLD	
Topic	Crucial Knowledge
UK Small Scale Ecosystem	An ecosystem is all the biotic (living) parts (e.g. plants and animals) and all the abiotic (non-living) parts (e.g. soil and climate) of an area
	Organisms in ecosystems are classed as either producers (use sunlight to produce food), consumers (eat other organisms) or decomposers (break down dead material for
	The nutrient cycle shows how nutrients move through an ecosystem
	Food chains and food webs show what organisms eat
	Epping forest is an example of an interdependent ecosystem, where all the components depend on each other. Changing one thing can have multiple knock-on consequences.
Tropical Rainforests	The climate determines what type of ecosystem forms - tundra / grassland / temperate forest / tropical rainforest / hot desert / polar.
	Tropical rainforests are hot and wet all year around. They are found around the equator, between the tropics.
	Soil in rainforests is not very fertile, this is because competition is high and the nutrients get used up quickly
	Rainforests have very high biodiversity.
	The rainforest has four distinct layers - the emergent trees, the main canopy, the under canopy and the shrub layer.
	Plants in the rainforest are adapted to high rainfall, high temperatures and competition for light. For example, plants have thick, waxy drip tip leaves so that water runs off and does not damage the leaf
	Animals are adapted to finding food and escaping predators. For example, the leaf-tailed gecko is camouflaged so it can blend into its surrounding and hide from predators
	The global rate of deforestation is changing. It is very high but varies from country to country. Some countries are trying to reduce the rate of deforestation.
	The Malaysian rainforest has experienced large scale deforestation due to logging, resource extraction, road building, population growth, commercial & subsistence farming and hydroelectric power.
	Deforestation in Malaysia has both environmental and economic impacts. It has led to climate change and soil erosion. However, it brings jobs and economic development to regions as crops are exported.
	Tropical rainforests can be sustainably managed through local strategies such as replanting trees, only cutting down some trees instead of whole areas (selective logging) and using them to attract tourists (ecotourism).
Tropical rainforests can be sustainably managed through national/international strategies such as educating people about the importance of rainforests and their impact on them, conservation, reducing international debt so more can be spent on conservation and establishing international agreements to protect areas/species.	
Cold Environments	Polar and tundra environments are found in cold environments. Polar areas are usually below freezing and have low precipitation.
	Tundra soil is acidic, thin and not very fertile. Beneath the soil is a layer of permanently frozen ground (permafrost) which traps greenhouse gases
	Polar and tundra areas have low biodiversity with very few plants or animals due to the extreme conditions
	The plants and animals have adapted to a cold dry climate. For example, plants are low growing to be protected from the wind and have short growing seasons. Animals are well insulated and have thick fur to cope with the extremely cold temperatures.
	Extreme temperatures and inaccessibility make it difficult to develop areas like Svalbard, Norway.
	Places like Svalbard create development opportunities as they are rich in mineral resources, fish and energy. They are also attractive to tourists who want a sense of adventure. All of these bring money and jobs to the region.
	Cold environments need protecting as they take a long time to recover, are habitats to animals/plants and have scientific value for research.
	Strategies are needed to balance economic development and environmental conservation. Conservation groups can create pressure to protect regions. International agreements can be used to protect area, examples include limiting the number of tourists. Technology can be used to limit the environmental impact of constructing infrastructure.
National government can introduce laws to protect designated wilderness areas	

URBAN ISSUES AND CHALLENGES

Topic	Crucial Knowledge
<i>The Urban World</i>	Urbanisation is the growth in the number of people living in cities, Idea that this is growing: Quickly in LIC/NEEs and Slowly in HICs
	Megacities are cities with over 10 million people- Most megacities in NEE countries now. Cities grow due to Push and Pull factors
	Importance of a NEE city (Rio De Janeiro) on a Global, Regional and Local scale
	Social/Economic and Environmental Challenges and Opportunities and its impact on People and the Environment
	Planning for the Urban Poor, life in squatter settlements (Favelas) and how life can be improved
<i>Urban Change in the</i>	Distribution of the population in the UK along a narrow belt from London, through the midlands and to the North West (M6 Corridor)
	Influence of a UK City (Bristol) on a Global, Regional and Local scale, how the city has changed and the impact of migration on the cities Opportunities and
	Social/Economic and Environmental Challenges and Opportunities and its impact on People and the Environment
	The ways in which Bristol responds to the waste and atmospheric pollution (Green City)
	How regeneration projects are helping to improve the landscape, social and economic opportunities for Bristol's residents and economic migrants
<i>Sustainable Urban De</i>	Sustainable Urban Living is to plan for the needs of the people without compromising future generations to be able to meet thier needs in a City
	Sustainability is on 3 different levels, Social/Economic and Environmental
	How can resources be made sustainable in cities (Water, Waste, Energy, Transport and Food)
	Using Green space to protect and influence urban sustainability
	How Traffic Management schemes are promoting and reducing congestion in Freiburg, Singapore and Beijing

THE CHANGING ECONOMIC WORLD

Topic	Crucial Knowledge
The Development Gap	Development is the positive change to make people's lives better. Measured using Gross National Income (GNI) and Human Development Index (HDI)
	Quality of Life vs Standard of Living. Different measures of development and the limitations of these measures.
	How can Development be tracked through the Demographic Transition Model (DTM) and Population Pyramids to look at the structure change.
	What causes Uneven development? Physical, Economic, Trade, Historical. What is the Gap through- Wealth/Health and Migration
	Ways the gap can be reduced. Investment/Industrial Development/ Aid/ Intermediate Technology/ Fair Trade v Free Trade/ Debt Relief/ Tourism Jam
NEE: Nigeria	Newly-Emerging Economy: Nigeria. Importance on a Global/ Regional and Local scale and how it has developed historically. Social/Cultural and Environmental
	Nigeria's place in the wider world and influence Politically (African Union ECOWAS/UN/CEN-SAD/OPEC) /Trade (Oil/Agriculture)
	Economic change through a growing manufacturing sector and the impact of Transnational Corporations (TNC's-Shell)
	Management of Environmental issues- Industrial/Urban and Growth of Mining and Oil)- Bodo Oil Spills 2008/2009
	Improvements in Quality of life in Nigeria and the disparities between people and areas
The Changing UK Econ	How the UK economy has changed through De-Industrialisation, from Primary to secondary and into a Tertiary- How have government policies changed to s
	What is a Post-Industrial Economy, I.T and Research. How have Science and Business Parks supported this change.
	Impacts of industry on the Environment, and how this can be made sustainable with reference to Torr Quarry. How has this impacted Rural Landscapes (G
	Through Infrastructure change how has this helped to change the Economy. Road/ Railway (HS2)/ Crossrail/ Ports (Liverpool2)/ Airports (Heathrow)
	What is the North-South divide. What are the problems and solutions?
	What is the UK's place in the wider world? Europe and Globalisation and links through Trade/Culture/Transport/Communications/Empire and Commonwealth

THE CHALLENGE OF RESOURCE MANAGEMENT

Topic	Crucial Knowledge
Resource Management	A Resource is a stock or supply of something that has a value or a purpose. Food/Water and Energy
	The Provision of Food in the UK- What are the Challenges of supply and demand? How is this managed? Agribusiness.
	The Provision of Water in the UK- What are the Challenges of supply and demand? How is this managed? Water Transfer.
	The Provision of Energy in the UK- What are the Challenges of supply and demand? How is this managed? Fracking and Renewables.
Energy Management	Global Energy consumption and supply. Surplus and Deficit (Energy Security)- What effects supply? Cost/Exploitation/Physical factors/Politics/ Technology/
	What is energy insecurity? What can be done about it? How can energy supply be increased through renewables (Biomass/Wind/Hydro/Tidal/Geothermal/)
	Gas is a non-renewable resource. What is Fracking and what are the positives and negatives of Fracking?
	How can energy use be made sustainable? Sustainable energy use in the home and in cities, looking at Carbon Footprint and Energy Conservation
	Mini Hydro-Electric scheme. What is it? Why is it beneficial and efficient? Benefits to Chambamontera, Peru: Renewable/Low cost and maintenance/ little