

YEAR 10 GEOGRAPHY – CYCLE 3 – ENERGY

BOX 1: KEYWORDS	
energy surplus	more than enough energy (energy security) → uninterrupted/affordable
energy deficit	not enough energy (energy insecurity) → interrupted/unaffordable
energy demand	the amount of energy that is needed
energy supply	the movement of energy to where it is being used
energy consumption	using energy
energy exploration	searching for/discovering energy resources e.g. areas with oil and gas
energy exploitation	using energy resources to maximum , for profit → environmental damage
energy conservation	reducing energy consumption → using less energy
sustainable energy	energy that can be used long into future without harming future generations → does not release greenhouse gases
renewable energy	energy sources which cannot be exhausted/run out e.g. wind power
non-renewable energy	energy sources which will run out e.g. fossil fuels
fossil fuel extraction	removing fossil fuels from the ground e.g. mining or drilling

BOX 2: GLOBAL DISTRIBUTION OF ENERGY CONSUMPTION AND SUPPLY	
global demand	global demand for energy is rising → global consumption rising
global consumption	HICs → consume more energy (e.g. transport, industry, technology)
global supply	places with more energy resources → high supply → energy security

BOX 3: REASONS FOR INCREASING ENERGY CONSUMPTION	
1. economic development	economic development → energy demand increases → high demand in HICs and NEEs e.g. agriculture, industry, transport, domestic energy
2. rising population	more people → more energy needed e.g. population rising fast in Africa
3. technology	<ul style="list-style-type: none"> today more devices to use energy, especially in the home technology has made it easier for fossil fuels to be extracted

BOX 4: FACTORS AFFECTING ENERGY SUPPLY	
1. physical factors	geology for coal? climate for solar energy? coastline for tidal power?
2. cost of exploitation	when cost of extracting energy is low → cheap energy → more demand
3. technology	e.g. new fracking technology (to extract gas), new renewable technology
4. political factors	political factors can reduce energy supply e.g. war in Ukraine → reduced oil and gas imports from Russia

BOX 5: IMPACTS OF ENERGY INSECURITY	
1. more exploration of environmentally sensitive areas	e.g. increased searching for energy resources → harm environment → oil drilling in Alaska threatens tundra, flooding of land for HEP reduces biodiversity, rainforest destruction for biofuel causes climate change
2. economic costs	more energy insecurity → energy prices rise
3. food production	energy insecurity → less energy for food production → food insecurity
4. industrial output	unreliable energy → power cuts → less manufacturing and job cuts
5. conflict	when demands exceeds supply → energy insecurity can cause conflict : - e.g. River Nile HEP dam to increase energy for Ethiopia → but possible conflict between Sudan, Egypt, Ethiopia due to reduced water supplies

BOX 6: RENEWABLE STRATEGIES TO INCREASE ENERGY SUPPLY	
biomass	wood, crops → burned for electricity or made into biofuels → but this releases greenhouse gases e.g. carbon dioxide
wind	electrical energy generated from the wind e.g. wind turbines
hydroelectric power	HEP → river dammed → water flows through dam to spin turbines
tidal	water level changes between high tide and low tide → spins turbines
geothermal	energy generated by heat stored deep in the Earth e.g. in volcanic areas
wave	waves used to generate energy → but wave strength varies day to day
solar	solar energy converted into heat or electricity e.g. by solar panels

BOX 7: NON-RENEWABLE STRATEGIES TO INCREASE ENERGY SUPPLY	
fossil fuels	coal, oil, gas → formed from remains of living organisms → releases greenhouse gases when burnt → e.g. CO₂ → climate change
nuclear power	nuclear reaction (uranium) → heats water → steam rises → turns turbines → electricity → no greenhouse gases → but nuclear waste

BOX 8: THE EXTRACTION OF NATURAL GAS → ADVANTAGES AND DISADVANTAGES	
advantages of gas ☺	<ul style="list-style-type: none"> produces less carbon dioxide than coal and oil gas leaks are less environmentally damaging than oil leaks easily transported by pipelines can be used for both heating and cooking
disadvantages of gas ☹	<ul style="list-style-type: none"> gas is a fossil fuel → releases carbon dioxide → climate change 'fracking' can be used to release gas → causes water pollution gas leaks can cause explosions or fires and gas is toxic to humans needs expensive pipeline infrastructure to transport gas political issues can disrupt transportation of gas e.g. Russia

BOX 9: MOVING TOWARDS A SUSTAINABLE RESOURCE FUTURE	
reducing carbon footprints	e.g. reducing individual energy use , using more sustainable energy , reducing global energy consumption , reducing waste , insulating homes
energy conservation	<ol style="list-style-type: none"> sustainable homes/workplaces by → home insulation and double glazing to reduce heat loss, new boilers, solar panels, LED lighting sustainable transport by → sharing transport, cycling, electric cars
demand reduction	<ul style="list-style-type: none"> public given incentives to use less energy e.g. money for insulation new laws to ensure new houses and new cars are energy efficient
technology	new technology is used to increase efficiency of fossil fuels → reduces carbon emissions e.g. efficient car engines , ' carbon capture and storage '

BOX 10: LOCAL RENEWABLE ENERGY SCHEME IN LIC/NEE → SUSTAINABLE ENERGY	
case study example	Darbang community, Nepal, Asia (LIC) → Micro Hydro Scheme
features of the micro hydro scheme	<ul style="list-style-type: none"> HEP → sustainable, renewable → no greenhouse gases uses powerful Himalayan rivers to generate electricity cheap/easy to construct and maintain in remote rural areas energy for 700 homes → powers small factories e.g. noodle factory

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