Subject :	Geography	Year Group: 13
Scheme title	**The carbon cycle and energy security**	**The water cycle and water insecurity**
Knowledge in sequence	Enquiry question 1: How does the carbon cycle operate to maintain planetary health? 6.1 Most global carbon is locked in terrestrial stores as part of the long-term geological cycle. 6.2 Biological processes sequester carbon on land and in the oceans on shorter timescales. 6.3 A balanced carbon cycle is important in sustaining other earth systems but is increasingly altered by human activities. Enquiry question 2: What are the consequences for people and the environment of our increasing demand for energy? 6.4 Energy security is a key goal for countries, with most relying on fossil fuels. 6.5 Reliance on fossil fuels to drive economic development is still the global norm. 6.6 There are alternatives to fossil fuels but each has costs and benefits. Enquiry question 3: How are the carbon and water cycles linked to the global climate system? 6.7 Biological carbon cycles and the water cycle are threatened by human activity. 6.8 There are implications for human wellbeing from the degradation of the water and carbon cycles. 6.9 Further planetary warming risks large-scale release of stored carbon, requiring responses from different players at different scales.	Enquiry question 1: What are the processes operating within the hydrological cycle from global to local scale? 5.1 The global hydrological cycle is of enormous importance to life on earth 5.2 The drainage basin is an open system within the global hydrological cycle. 5.3 The hydrological cycle influences water budgets and river systems at a local scale. Enquiry question 2: What factors influence the hydrological system over short- and long-term timescales? 5.4 Deficits within the hydrological cycle result from physical processes but can have significant impacts. 5.5 Surpluses within the hydrological cycle can lead to flooding, with significant impacts for people. 5.6 Climate change may have significant impacts on the hydrological cycle globally and locally. Enquiry question 3: How does water insecurity occur and why is it becoming such a global issue for the 21st century? 5.7 There are physical causes and human causes of water insecurity. 5.8 There are consequences and risks associated with water insecurity. 5.9 There are different approaches to managing water supply, some more sustainable than others.
Skills	(1) Use of proportional flow diagrams showing carbon fluxes. (2) Use of maps showing global temperature and precipitation distribution. (3) Graphical analysis of the energy mix of different countries, including change over time. (4) Analysis of maps showing global energy trade and flows. (5) Comparisons of emissions from different energy source. (6) Using GIS to map land-use changes such as deforestation over time. (7) Analysis of climate model maps to identify areas at most risk from water shortages, floods in the future. (8) Plotting graphs of carbon dioxide levels, calculating means and rates of change. (1) Use of proportional flow diagrams showing carbon fluxes. (2) Use of maps showing global temperature and precipitation distribution. (3) Graphical analysis of the energy mix of different countries, including change over time. (4) Analysis of maps showing global energy trade and flows. (5) Comparisons of emissions from different energy source. (6) Using GIS to map land-use changes such as deforestation over time. (7) Analysis of climate model maps to identify areas at most risk from water shortages, floods in the future. (8) Plotting graphs of carbon dioxide levels, calculating means and rates of change.	(1) Use of diagrams showing proportional flows within systems. (2) Comparative analysis of river regime annual discharges. (3) Analysis and construction of Water Budget graphs. (4) Using comparative data, labelling of features of storm hydrographs. (5) Use of large database to study the pattern and trends in floods and droughts worldwide. (6) Interpretation of synoptic charts and weather patterns, leading to droughts and floods. (7) Use of a global map to analyse world water stress and scarcity. (8) Interpretation of water poverty indexes using diamond diagrams for countries at different levels of development. (9) Identify seasonal variations in the regime of international rivers, such as the Nile and the Mekong and assess impact of existing and potential dams.
Key Words	Carbon cycle, Fluxes, System feedback, Intergovernmental Panel on Climate Change (IPCC), Anthropogenic, Petagrams (Pg), Giga tonnes (Gt), Reservoir turnover, Sequestering, Processes, Geological fluxes, Carbon cycle pumps, Thermohaline circulation, Carbon balance, Millennium Ecosystem Assessment (MEA), CO2 fertilisation, Soil carbon balance, Climate forcing, Positive feedback, Carbon sink Carbon pool, Carbon fixation Flux (short definition),Termohaline circulation (short definition), Shortwave radiation, Longwave radiation, Photosynthesis Respiration, Decomposition, Carbon sequestration, Chemical and physical weathering, Subduction, Volcanic emissions, Plankton bloom, Natural greenhouse effect, Greenhouse gases, Short wave radiation, Long wave radiation, Carbon dioxide, Methane, Hydrological cycle, Terrestrial, Carbon pathway, Carbon store	Stores, Fluxes, Processes, Cryosphere, Blue water, Green water, Residence time, Fossil water, Groundwater flow, Convectional rainfall, Cyclonic rainfall, Orographic rainfall, Interception loss, Infiltration capacity, Surface run-off, Percolation, Potential evapotranspiration (PEVT), River regime, Meteorological drought, Water budget, Morphology, storm hydrograph, Agricultural drought, Hydrological drought, Famine drought, Teleconnection, Desertification, Eutrophication, Structural adjustment programmes (SAPs).
End Point	Paper 1 Section C 49 marks	
Assessment method	L6: 17 question quiz on EQ1 sat in class that student's peer assess L12: exam conditions formal paper on EQ1 and EQ2 (save in shared area) teacher to mark and give formal feedback to student using crib sheet L: EOU assessment on EQ1-3 1 hour exam.	L5: 17 question quiz on EQ1 sat in class that student's peer assess L12: exam conditions formal paper on EQ1 and EQ2 (save in shared area) teacher to mark and give formal feedback to student using crib sheet L19: EOU assessment on EQ1-3 1 hour exam.