

Handout 4: Syllabus excerpts

Activity 3

2. Atmosphere and weather

2.1 Diurnal energy budgets

Factors affecting diurnal energy budget: incoming (shortwave) solar radiation, reflected solar radiation, energy absorbed into the surface and subsurface, albedo, sensible heat transfer, longwave radiation, latent heat transfer – evaporation, dew and absorbed energy returned to earth.

2.2 The global energy budget

The latitudinal pattern of radiation: excesses and deficits.

Atmospheric transfers: wind belts and ocean currents.

Seasonal variations in temperature, pressure and wind belts: the influence of latitude, land/sea distribution, and ocean currents.

2.3 Weather processes and phenomena

Atmospheric moisture processes: evaporation, condensation, freezing, melting, deposition, and sublimation.

Causes of precipitation: convection, frontal and orographic uplift of air, and radiation cooling.

Types of precipitation: clouds, rain, hail, snow, dew, and fog.

2.4 The human impact

The enhanced greenhouse effect and global warming: the evidence, possible causes and atmospheric impacts.

Case study: candidates must study an urban area which shows the effects of human activity on climate: temperature (heat island), humidity, precipitation and winds.

3. Rocks and weathering

3.1 Plate tectonics

Nature of tectonic plates and their global patterns.

Types of plate boundaries: divergent (constructive), conservative and convergent (destructive).

Processes and associated landforms: sea floor spreading, subduction, fold mountain building, ocean ridges, ocean trenches, and volcanic island arcs.

3.2 Weathering

Physical (mechanical) weathering processes: freeze-thaw, heating/cooling, salt crystal growth, pressure release (dilatation), and vegetation root action.

Chemical weathering processes: hydrolysis, hydration, and carbonation.

General factors affecting the type and rate of weathering: climate, rock type, rock structure, vegetation, and relief.

Specific factors affecting the type and rate of weathering: temperature and rainfall (Peltier diagram).

3.3 Slope processes

Slope processes, conditions under which each occurs and effects on slopes.

Mass movement: heaves, flows, slides, and falls.

Water and sediment movement on hillslopes: rainsplash and surface runoff (sheetwash and rills).

3.4 The human impact

The impact of human activities on the stability of slopes: increasing stability and decreasing stability.

Strategies to modify slopes to reduce mass movements: pinning, netting, grading and afforestation.

Case study: candidates must study the impacts of human activity on slopes showing the effect on the stability of the slope, and evaluate attempts to reduce mass movement.

5. Migration

5.1 Migration as a component of population change

Movements of populations (excluding all movements of less than one year's duration).

Causes of migration: push factors and pull factors, processes of migration (including chain migration) and patterns of migration (including by distance and by age), the role of constraints, obstacles and barriers (e.g. cost, national borders).

5.2 Internal migration (within a country)

Rural–urban and urban–rural movements: their causes and impacts on source areas and receiving/destination areas including population structures.

Stepped migration within the settlement hierarchy and urban–urban movements.

Causes and impacts of intra-urban movements (within urban settlements).

5.3 International migration

Voluntary and forced (involuntary) movements.

Causes and patterns of international migrations (including economic migration and refugee flows) and impacts on source areas and receiving/destination areas.

5.4 The management of international migration

Case study: candidates must study one international migration stream: its causes, character, scale, pattern and impacts on source areas and receiving/destination areas.

6. Settlement dynamics

6.1 Changes in rural settlements

Contemporary issues in rural settlements in LICs, MICs and HICs, (e.g. depopulation, service provision) including the impacts of internal migration and the consequences of urban growth.

Case study: candidates must study a rural settlement (village or hamlet) or a rural area showing some of the issues of its development and growth (or decline) and evaluating the responses to these issues.

6.2 Urban trends and issues of urbanisation

Urban growth. The process of urbanisation and its causes and consequences in LICs, MICs and HICs, including counterurbanisation and re-urbanisation, competition for land and urban renewal.

The concept of a world city: causes of the growth of world cities and the development of a hierarchy of world cities.

6.3 The changing structure of urban settlements

Factors (social, economic, environmental and political) affecting the location of activities within urban areas (including planning) and how urban locations change over time for retailing, services and manufacturing.

The changing central business district (CBD).

Competition for space (spatial competition) in urban areas, the concept of bid rent, and functional zonation.

Residential segregation: causes (income and race/ethnicity) and processes (e.g. operation of the housing market, influence of family and friends, culture and planning).

6.4 The management of urban settlements

Case study: candidates must study urban settlements showing the challenges of, and evaluating the attempted solutions in, each of the following:

- a shanty town (squatter settlement) in an LIC or MIC
- providing infrastructure (either power or transport) for a city.