UNIT SEVEN

CONTEMPORARY GLOBAL GEOGRAPHIC ISSUES AND PUBLIC CONCERNS

Contemporary Geographical Issues: Climate Change and Desertification

Introduction: Geography studies contemporary issues that are current and relevant, affecting different communities and regions in various ways. These issues often have both spatial (location-based) and temporal (time-based) dimensions. For example, local development proposals might be of short-term concern, while global climate change is a long-term issue impacting the planet for generations. This unit focuses on climate change and desertification, exploring their causes, effects, and interconnections.

Climate Change

Why It's a Global Issue: Climate change has emerged as a major global concern due to its widespread impact on the environment and human societies. The Paris Agreement of 2015, endorsed by 195 parties, represents a significant global effort to combat climate change by reducing greenhouse gas emissions and improving climate resilience.

Current and Projected Impacts:

1. **Health:** Temperature increases can lead to more health risks, including heatwaves and the spread of diseases like malaria. For example, a 1.2°C rise in temperature could significantly increase premature mortality, while a 3.0°C rise could put millions more at risk of malaria.
2. **Ecosystems:** A 1.0°C rise in temperature might cause a 10% damage to ecosystems. At higher temperatures, such as a 2.0°C rise, damage could increase to 15-20% of global ecosystems and cause significant losses in coastal wetlands.
3. **Agriculture:** Temperature rises can reduce crop yields. A 1.0°C increase could impact agriculture in the EU and US, while a 2.5°C rise by 2080 could add millions more to the risk of hunger.
4. **Water Resources:** Temperature increases can lead to water stress. A 1.5°C rise could affect 400-800 million people, while higher increases could push this number to over 3 billion.

5. **Other Major Events:** Higher temperatures can contribute to severe events like ice melting and sea-level rise, which could have catastrophic consequences.

Consequences of Climate Change:

- Melting ice at poles and glaciers.
- Rising sea levels.
- Impact on wildlife and habitats.
- Changes in species distribution.
- Increased precipitation in some regions, leading to severe droughts and wildfires.
- Growth in populations of pests and diseases.

Desertification

Definition and Causes: Desertification is the process where land becomes increasingly arid, losing its productivity due to various factors. It is different from natural deserts and affects vulnerable lands, particularly in arid, semi-arid, and dry sub-humid regions.

1. **Human Activities:** Overpopulation, over-exploitation of resources, deforestation, and agricultural practices can accelerate desertification. For instance:
    - **Population Growth:** Rapid growth increases pressure on land and resources.
    - **Over-Exploitation:** Intense use of land for farming and fuel depletes soil nutrients.
    - **Deforestation:** The removal of trees for fuel and land use reduces the land's ability to retain water and regenerate vegetation.
2. **Climate Change:** Changes in climate can exacerbate desertification by altering precipitation patterns and increasing temperatures.

Characteristics of Drylands:

- Low and unpredictable precipitation.
- Extreme temperature variations.
- Poor soil with low organic matter.
- Limited water availability.

Consequences of Desertification:

- Reduced land productivity and increased soil erosion.
- Loss of vegetation and biodiversity.

- Decline in food production and increased risk of hunger.
- Economic impacts, including significant losses in income.
- Increased migration and potential conflicts over resources.

Examples and Impacts:

- Drylands cover about 46% of the global land area and affect approximately 3 billion people.
- Desertification hotspots include regions in Africa, Asia, and the Middle East.

Understanding these issues is crucial for developing strategies to mitigate their effects and adapt to changing conditions. The study of these geographical concerns highlights the importance of sustainable practices and global cooperation to address and manage these challenges effectively.

Desertification in Eastern Africa

Overview: Desertification is a significant issue in Eastern Africa, affecting about two-thirds of the continent, which includes regions like the Sahel, the Horn of Africa, and parts of the Kalahari. These areas are prone to desertification due to factors such as poverty, environmental degradation, and rapid population growth.

Geographical Context: Eastern Africa stretches from 21° N to 11° S latitude and includes countries like Djibouti, Eritrea, Ethiopia, Kenya, Somalia, Sudan, South Sudan, Uganda, and Tanzania. The Sahara Desert influences the climate of this region, making it generally dry. The climate varies from arid in northern Sudan to more humid conditions along the coasts of Uganda and Tanzania. In between, you find semi-arid and mountain climates with varying rainfall and temperature patterns.

Causes of Desertification:

1. **Population Growth:** Rapid population increase puts pressure on land resources.
2. **Deforestation:** Large-scale deforestation for agriculture and fuel exacerbates land degradation.
3. **Environmental Damage:** Large-scale projects and traditional land-use practices contribute to land degradation.

Regional Examples:

- **Tanzania:** Areas like Sukumaland and Masai steppe face high land degradation due to population pressure and land use.

- **Sudan:** Overpopulation and tree cutting for agriculture lead to desertification.
- **Ethiopia:** Desertification in northern and southeastern areas is worsened by political instability and conflict.
- **Uganda:** Deforestation due to rapid population growth has caused environmental damage.
- **Kenya:** Desertification affects grazing lands, especially in the Kerio Valley and parts of Eastern Kenya.

Efforts to Combat Desertification:

- **National Initiatives:** Countries like Kenya and Ethiopia have established tree nurseries and national tree planting days. Ethiopia's "Green Legacy" program is a notable example.
- **International Projects:** UNESCO's Integrated Project on Arid Lands (now inactive) focused on finding solutions to desert encroachment and improving land management.

Drought

Definition: Drought is a temporary reduction in water or moisture availability significantly below normal levels for a specified period. It is linked to desertification and can be classified into meteorological, hydrological, and agricultural types.

Types of Drought:

1. **Meteorological Drought:** Reduced rainfall compared to historical averages.
2. **Hydrological Drought:** Decreased water resources such as river flows and groundwater levels.
3. **Agricultural Drought:** Insufficient water for agriculture, affecting crop yields and livestock.

Drought-Prone Regions: The world has five main dryland zones, including:

1. Sonoran Desert in Mexico.
2. Atacama Desert in South America.
3. Sahara and other deserts across Africa and Asia.
4. Namib-Kalahari Desert in Southern Africa.
5. Most of Australia.

Indices to Measure Drought:

1. **Palmer Drought Severity Index (PDSI):** Measures soil moisture based on precipitation and temperature.
2. **Crop Moisture Index (CMI):** Reflects short-term soil moisture for agriculture.
3. **Satellite Vegetative Health Index (VHI):** Uses satellite data to assess vegetation health.
4. **Percent of Normal Precipitation:** Compares actual precipitation to historical averages.
5. **Standardized Precipitation Index (SPI):** Measures precipitation deviations from normal levels.

Causes of Drought:

- **Natural Factors:** Includes El Niño and La Niña effects, which alter weather patterns.
- **Anthropogenic Factors:** Human activities such as land-use changes and greenhouse gas emissions contribute to drought conditions.

Considerations: Drought severity is influenced by factors such as irrigation practices, soil moisture retention, and the adaptive capacity of farmers. Understanding these factors helps in managing and mitigating the impacts of drought.

7.3.6 The Impact of Droughts

Understanding Droughts

Droughts are a significant natural hazard with widespread economic and social impacts. Unlike earthquakes or cyclones, which are intense but short-lived, droughts can persist for months or even years and affect vast areas, including entire countries or continents. The impact of a drought becomes more evident as it progresses, with the effects on food production and the economy growing increasingly severe.

Impact on Different Economies

The severity of a drought's impact depends on the country's economic structure and resources:

- **Country X (High Income)**: If this country has a diversified economy and relies on reliable underground aquifers for water, a 50% reduction in rainfall might have minimal impact. The country might experience reduced agricultural and industrial output, increased unemployment, and

higher costs of living, but it can adapt by investing in alternative water sources.

- **Country Y (Low Income)**: In contrast, if this country relies heavily on rainfed agriculture and agriculture contributes significantly to its GDP, the same reduction in rainfall can have catastrophic effects. The country might face severe food shortages, higher food prices, and significant economic and social strain.

Potential Economic and Social Impacts of Drought

Droughts can lead to a range of negative effects, including:

1. **Economic Impacts**:
    - **Reduced Income**: Farmers and agricultural laborers may earn less due to decreased production.
    - **Local Spending**: Reduced income affects local spending on agricultural inputs, equipment, and other goods and services.
    - **Livestock Prices**: As farmers sell off livestock due to high feed costs, livestock prices may drop.
    - **Food Prices**: Staple food prices often increase, affecting food affordability.
2. **Social Impacts**:
    - **Food Intake**: Higher food prices force some people to switch to cheaper foods, reduce their food intake, or borrow money. This can lead to malnutrition.
    - **Health**: Scarcity of water increases the risk of waterborne diseases and poor hygiene, while migration for survival may lead to increased health risks and stress.
    - **Water Access**: Drying water sources force people to travel longer distances for water and may lead to conflicts over remaining sources.
    - **Education**: Children may miss school due to lack of energy, money, or the need to assist in family survival efforts.
    - **Community Impact**: Migration can lead to the breakdown of communities and family structures.

7.4 Famine

Definition of Famine

Famine is not just about mass starvation but a complex process resulting from reduced food availability or reduced ability to access food. It causes severe increases in morbidity (disease) and mortality (death). Famine can arise from a combination of:

- **Natural Factors**: Such as droughts, floods, and pest invasions.
- **Human-Induced Factors**: Including conflict, economic mismanagement, and forced procurement of food.

Causes of Famine

1. **Decline in Food Availability**: This can be due to natural disasters or poor agricultural practices.
2. **Reduction in Access to Food**: Economic issues, conflict, or poor governance can limit people's ability to acquire sufficient food.

Maintaining Food Security

To address famine and ensure food security, it is essential to:

1. **Ensure Food Availability**: Through measures like price stabilization, food subsidies, and general food distributions.
2. **Protect Food Entitlements**: By creating employment programs, supplementary feeding programs, and providing support to livestock and pastoralist communities.

Conclusion

Droughts and famines are significant global challenges with complex causes and effects. Addressing these issues requires a multifaceted approach that includes understanding their impact on different economies, implementing effective relief measures, and working towards long-term solutions for food security.