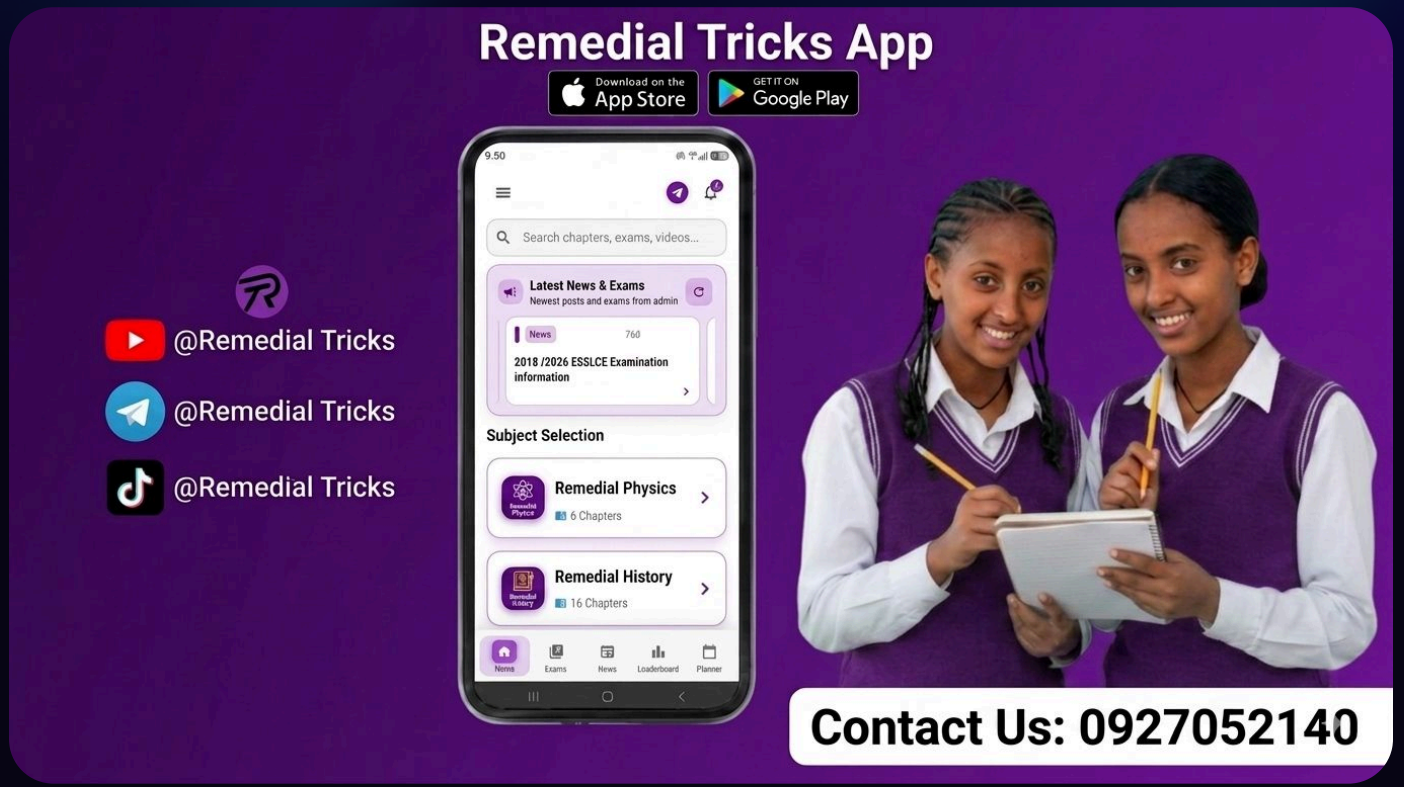
2019 Pre University
Remedial Geography course content



Unit 1
🌍 The Science of Geography

1.1 Meaning, Scope & Branches

Geography is the science that studies the Earth's surface, its physical features, human populations, and their interactions with the environment. It covers spatial distribution, human-environment relationships, and regional analysis at local, national, and global scales.

Physical Geography

Landforms, climate, soils, water, vegetation — the natural world

Human Geography

Population, culture, economy, settlements, and political systems

Regional Geography

Integrates physical and human aspects of specific regions (e.g., Ethiopia, Africa)

1.2 Geographic Inquiry Skills & Techniques

Maps are graphic representations of Earth's surface showing location, distance, direction, and spatial patterns. **Scale types:** Statement ("1 cm = 10 km"), Representative Fraction — RF (1:1,000,000), and Linear/Graphic scale. **RF → Statement conversion:** divide denominator by 100,000 to get km per cm. **Relief representation:** contour lines (equal elevation), hachures, spot heights, layer tinting.

GIS (Geographic Information System): Digital tool for capturing, storing, analyzing, and displaying spatial data — used in urban planning, disaster management, and resource mapping.

Map Components Summary

Component	Purpose	Example
Title	Identifies map subject	Map of Ethiopia
Scale	Shows distance ratio	1:50,000
Legend	Explains symbols	Blue = River
North Arrow	Shows orientation	↑ N
Grid	Locates positions	Latitude/Longitude

Every exam map question tests your ability to read at least one of these 5 components. Memorize them cold.

Unit 2

🏔️ Major Geological Processes

2.1 Geological Time Scale & Continental Drift

Earth's **4.6-billion-year history** is divided into Eons → Eras → Periods → Epochs.

1

Precambrian

Oldest rocks, simple life forms

2

Paleozoic

Marine life, first land plants

3

Mesozoic

Dinosaurs, Pangaea breakup

4

Cenozoic

Mammals, modern humans

Continental Drift Theory (Wegener, 1912): All continents were once joined as the supercontinent **Pangaea**, which broke apart ~200 million years ago. Evidence: matching coastlines (Africa & South America), identical fossils on separate continents, and similar rock formations across oceans.

2.2 Geological Forces & Landforms

Force Type	Process	Resulting Landform
Endogenic	Folding	Fold Mountains (e.g., Alps)
Endogenic	Faulting	Rift Valleys, Block Mountains
Endogenic	Volcanism	Volcanic cones, Lava plateaus
Exogenic	Erosion (River)	Valleys, Gorges, Canyons
Exogenic	Deposition	Deltas, Flood Plains, Sand Dunes

East African Rift System: An active divergent boundary running through Ethiopia — it created the Ethiopian Rift Valley, the Afar Depression, and numerous lakes. **Endogenic forces build up** landforms; **Exogenic forces wear them down**.

Ethiopia — Location, Size & Landforms

Location

3°N–15°N, 33°E–48°E; Horn of Africa; landlocked since 1993

Size

~1.1 million km² — 10th largest in Africa; borders 6 countries

Major Landforms:

- **Ethiopian Highlands:** Highest peak — Ras Dashen, **4,550 m**
- **Great Rift Valley:** Divides highlands east and west
- **Afar Depression:** Lowest point — **–116 m**, one of Earth's lowest places
- **Ogaden Plateau & Somali Plateau:** Semi-arid lowland areas

Geological History: Ancient Precambrian basement rocks; Mesozoic sedimentary layers; Cenozoic volcanic activity formed the highlands and rift system.

Africa — Location & Major Landforms

Location: Straddles the Equator; 37°N–35°S; surrounded by Atlantic (W), Indian Ocean (E), Mediterranean (N), Red Sea (NE).
Size: 30.3 million km² — world's **2nd largest continent**.

Sahara Desert

World's largest hot desert — dominates North Africa

Congo Basin

Vast rainforest basin in Central Africa

East African Highlands

Includes Ethiopia, Kenya, Tanzania highlands

Nile Valley

World's longest river system — from East Africa to Mediterranean

Key Fact: Africa is a **plateau continent** — most of the interior sits above 300 m elevation with steep escarpments near coasts.

2.3 Weather & Climate

Weather: Short-term atmospheric conditions at a specific place and time (temperature, rainfall, wind, humidity). **Climate:** Average weather conditions of a place over **30+ years**.

Elements of Climate: Temperature, Precipitation, Humidity, Wind, Sunshine, Evaporation.
Controls of Climate: Latitude, Altitude, Distance from sea, Ocean currents, Prevailing winds, Relief.

Ethiopia's 5 Agro-Climatic Zones

Zone	Altitude	Temp.	Rainfall	Main Activity
Bereha	<500 m	>27°C	<500 mm	Pastoralism
Kolla	500–1,500 m	20–27°C	500–900 mm	Sorghum, Cotton
Weyna Dega	1,500–2,300 m	15–20°C	900–1,200 mm	Coffee, Maize, Teff
Dega	2,300–3,200 m	10–15°C	1,000–1,500 mm	Barley, Wheat
Wurch	>3,200 m	<10°C	Variable	Livestock

2.4 Climate Change

Definition: Long-term shifts in global temperatures and weather patterns — **accelerated by human activities since the Industrial Revolution**.

Causes

Burning fossil fuels (CO_2), deforestation, industrial emissions, agriculture (methane), urbanization

Consequences

Rising sea levels, extreme weather, desertification, biodiversity loss, food insecurity, population displacement

Adaptation

Drought-resistant crops, early warning systems, water harvesting, migration planning

Mitigation

Renewable energy, reforestation, carbon taxes, Paris Agreement (2015)

2.5 Natural Resources Overview

Natural Resources: Materials found in nature that are useful to humans — classified as **Renewable** (solar, water, forests, wildlife) and **Non-renewable** (minerals, fossil fuels).

Ethiopia's Drainage Systems: 12 major river basins — **Abbay/Blue Nile** (largest, ~17% of Nile flow), Awash, Omo-Gibe, Tekeze, Wabe Shebelle, Genale-Dawa. Significance: Hydroelectric power (**GERD**), irrigation, fisheries, transport.

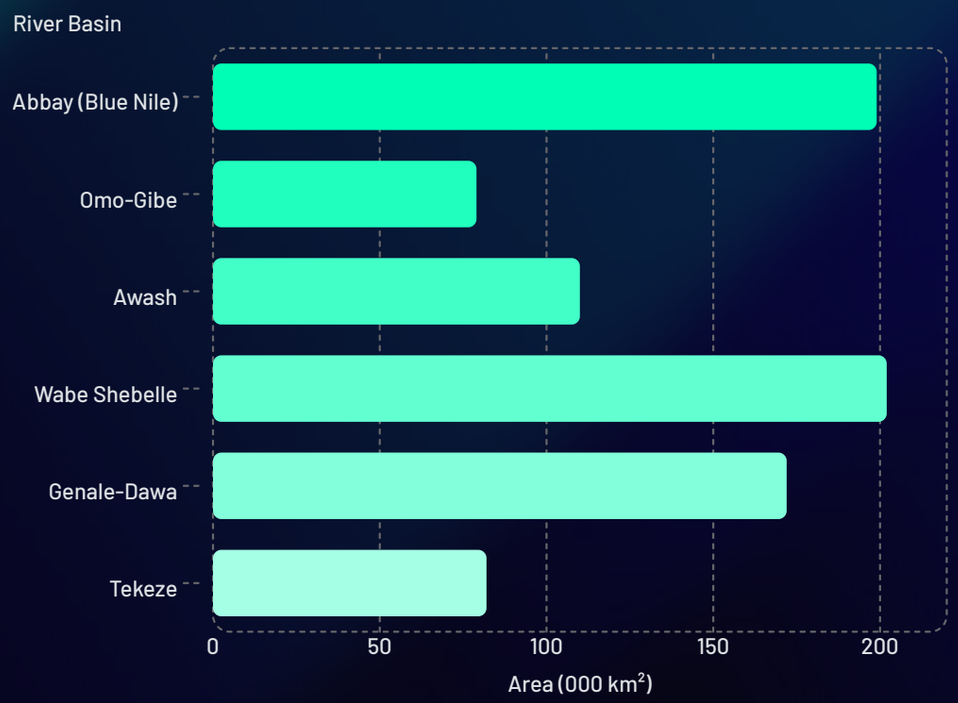
Biotic Resources: ~7,000 plant species (35 endemic), 284 mammal species, 861 bird species (17 endemic); Afromontane forests, savanna, wetlands.

⚠ **Resources Under Pressure:** Deforestation has reduced Ethiopia's forest cover from **40% → ~15%**. Soil erosion, overgrazing, poaching, and water pollution threaten remaining resources.

Resource Conflicts & Resolution

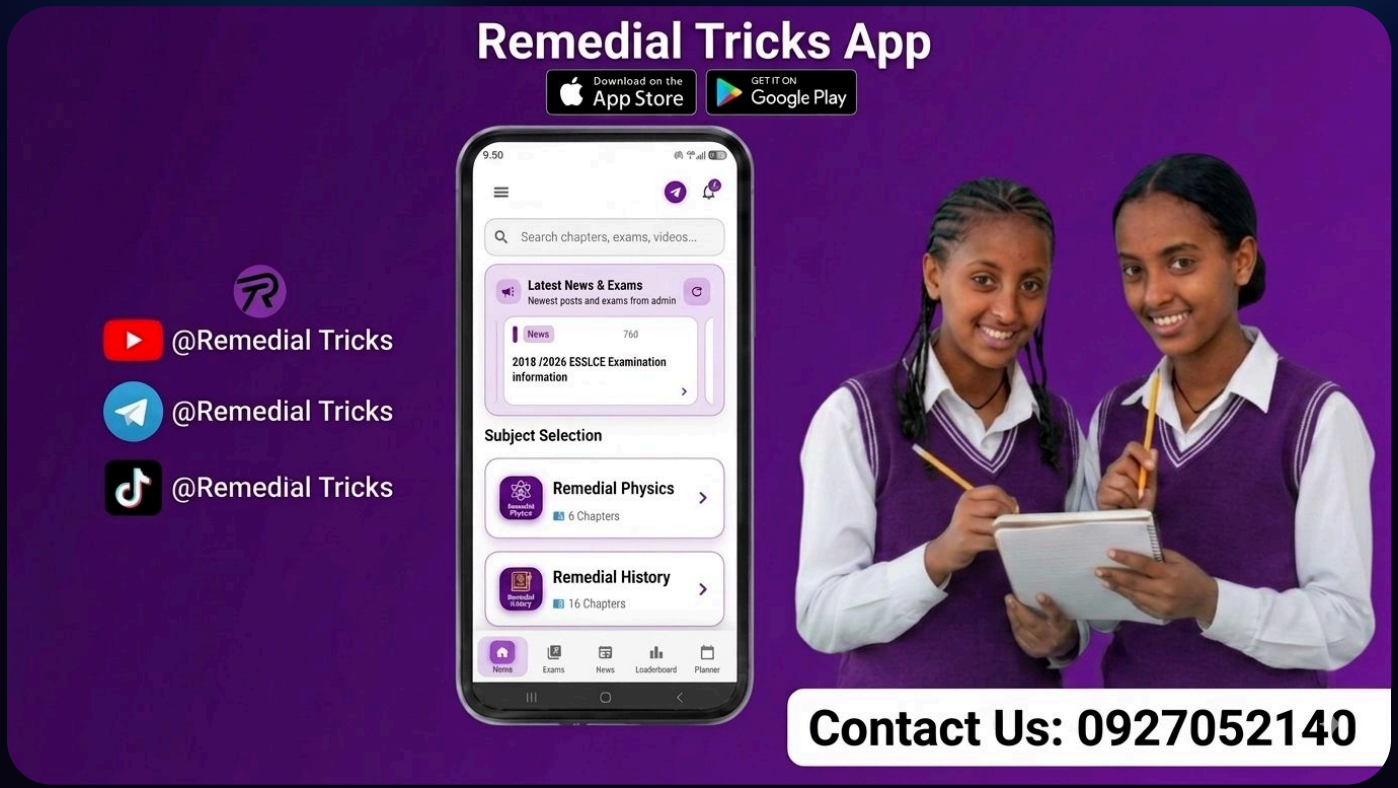
Key Conflicts: Nile water dispute (Ethiopia, Egypt, Sudan over GERD); land conflicts between farmers and pastoralists; oil conflicts in Africa.
Resolution: Diplomatic negotiation, UN frameworks, community-based management, African Union cooperation.

Ethiopia Major River Basins by Area (000 km²)



Wabe Shebelle and Abbay (Blue Nile) are the two largest basins. The Abbay supplies ~17% of total Nile discharge — making it a critical water source for downstream Egypt and Sudan, and the core of the GERD project.

📋 FIRST ROUND MODEL (Units 1–2)



Unit 3

👥 Population Geography & Human-Environment Interactions

3.1 Population & Demographic Characteristics

~8B

World Population

2023; growing ~80 million/year; reached 1B in 1804

126M

Ethiopia (2023)

2nd most populous in Africa; growth rate ~2.6%/year; 80% rural

~4.0

Ethiopia TFR

Total Fertility Rate — avg. children per woman; Africa avg. 4.3

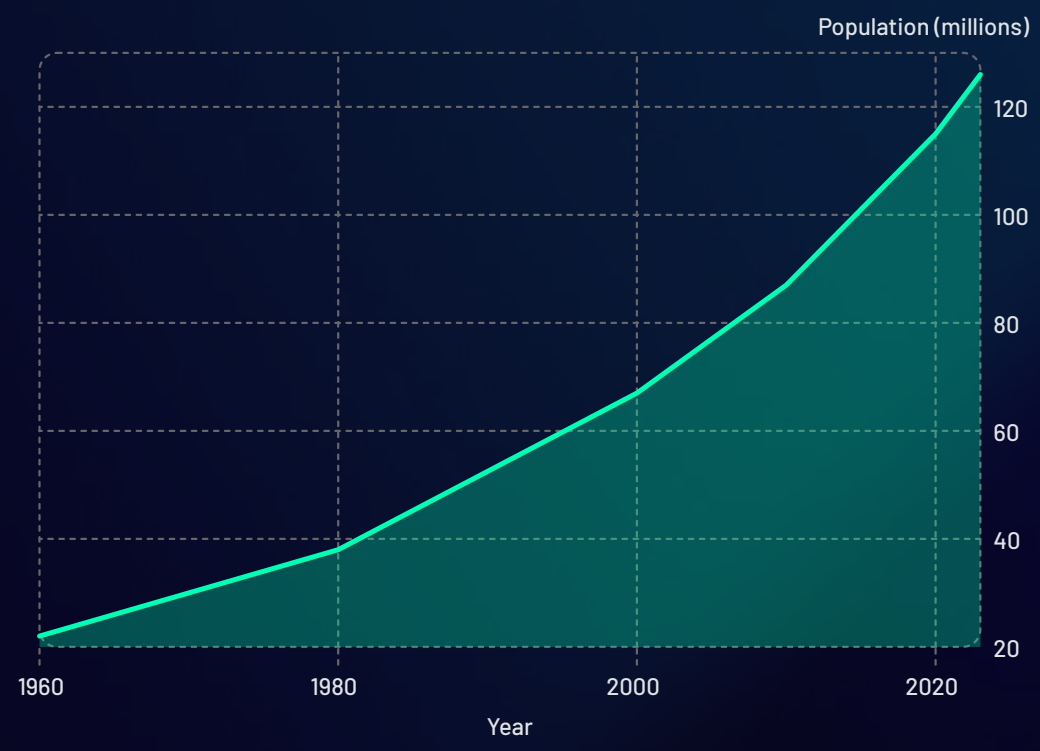
~67

Life Expectancy

Ethiopia (years); Infant Mortality Rate still a key development indicator

Migration: Push factors (drought, conflict, poverty) vs Pull factors (jobs, education, services).
Population Distribution: Densely populated highlands (Amhara, Oromia); sparsely populated lowlands (Afar, Somali).
Settlement Patterns: Urban (Addis Ababa, Dire Dawa, Mekelle) vs Rural (dispersed, nucleated, linear).

Ethiopia Population Growth Trend



3.2–3.3 Theories & Policies

Malthusian Theory: Population grows geometrically; food grows arithmetically → famine, disease, war as "checks." **Demographic Transition Model (DTM):** 4 stages from high birth/death rates → low birth/death rates as countries develop. **Ethiopia's Policy:** Promotes family planning, girls' education, and reducing maternal mortality. **Impact:** Rapid growth strains schools, hospitals, land, water, and employment.

UNIT 4

🏭 Economic Geography

4.1 Economic Activities in Ethiopia

1

Primary

Farming, mining, fishing

2

Secondary

Manufacturing, construction

3

Tertiary

Trade, transport, services

4

Quaternary

IT, research, information

Agriculture's Central Role

~35%

GDP Share

Agriculture's contribution to national output

~70%

Export Earnings

Share of export revenue from agricultural products

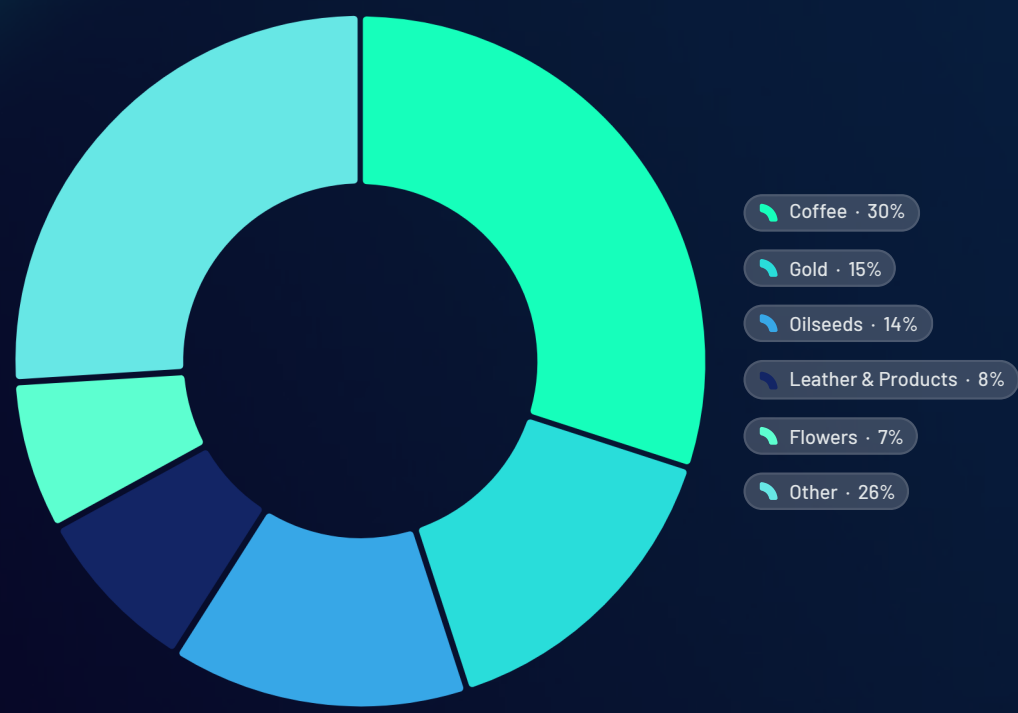
~80%

Workforce

Share of Ethiopians employed in agriculture

Major Crops: Coffee (top export, ~30% of forex), teff, maize, sorghum, wheat, barley, chat, sesame, pulses.
Problems: Subsistence farming, land degradation, drought, lack of irrigation, poor technology, limited credit, post-harvest losses.
Transport: Road network (dominant), Addis Ababa–Djibouti Railway, Ethiopian Airlines (Africa's largest airline).
Tourism: Lalibela, Axum, Gondar, Harar, Simien Mts, Danakil Depression — contributes ~5% of GDP.

Ethiopia Export Composition



Coffee alone accounts for **30%** of Ethiopia's foreign exchange earnings, making it both an economic pillar and a strategic vulnerability. Major imports include machinery, fuel, and food — a persistent **trade deficit** challenge.

4.2 Africa's Economic Challenges

Factors Hindering African Economy: Colonial legacy (resource extraction, artificial borders), political instability, corruption, poor infrastructure, low industrialization, brain drain, debt burden.

Landlocked Disadvantage

Higher transport costs (**+40–60%** vs coastal countries); dependence on transit nations; limited sea trade access. Affects Ethiopia, Uganda, Zambia, Mali.

Low Intra-African Trade

Only **~15%** of African trade is intra-African (vs 60%+ in Europe). **AfCFTA** aims to raise this to **52% by 2035**.

Unemployment Solutions

Industrialization, vocational training, SME support, agricultural modernization, regional integration

4.4 Sustainable Development

"Meeting the needs of the present without compromising the ability of future generations to meet their own needs." — Brundtland Commission, 1987

Economic Growth

Productive employment, innovation, equitable income distribution

Social Equity

Education, health, gender equality, poverty reduction

Environmental Protection

Conservation, clean energy, climate adaptation

Poverty: Multidimensional — income poverty, education deprivation, health gaps, lack of clean water; ~490 million Africans live below $1.90/day.

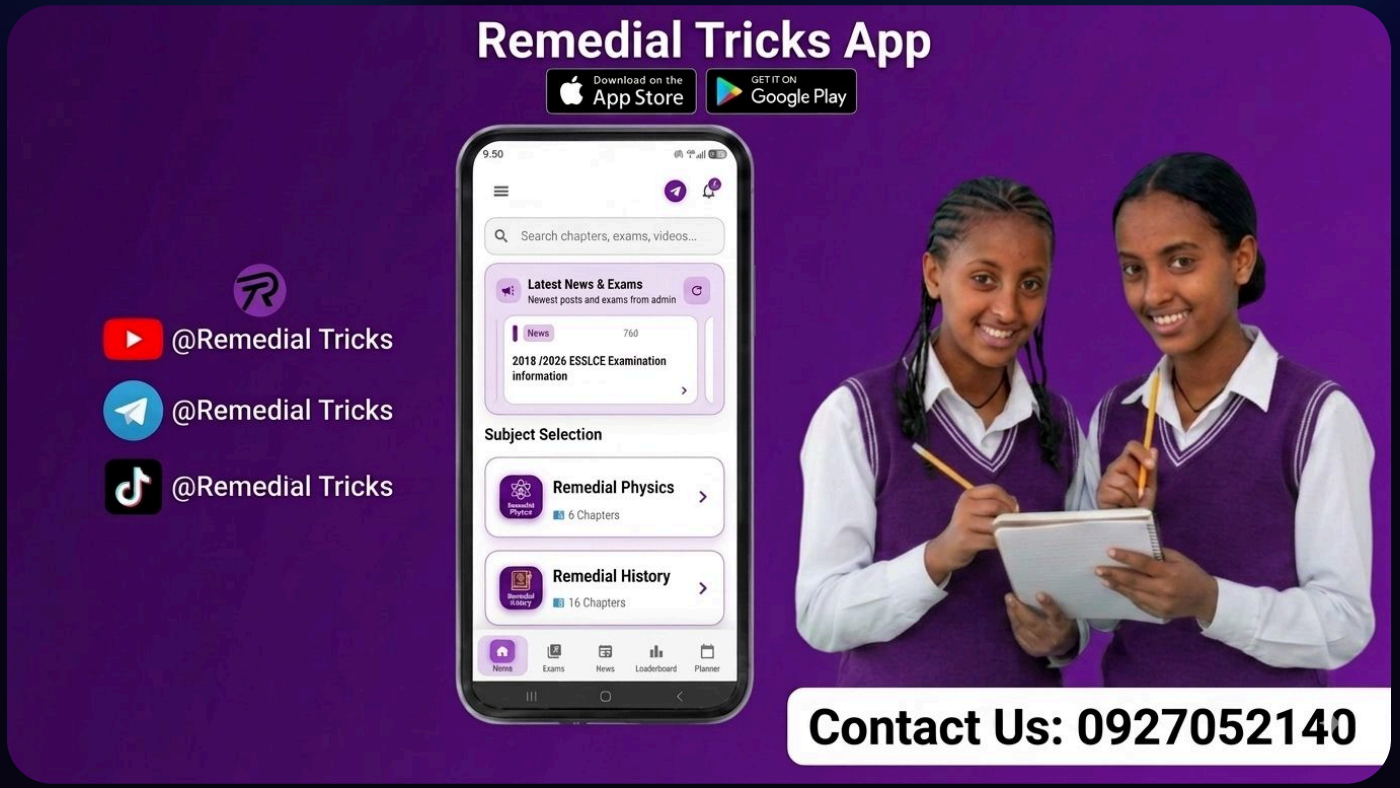
Globalization: Advantages — technology transfer, FDI, market access. Limitations — exploitation of cheap labor, cultural erosion, widening inequality.

Regional Imbalance: North-South divide; urban-rural gap; resource-rich vs resource-poor nations.

Unit 5
Contemporary Geographic Issues & Public Concerns

Issue	Main Cause	Key Impact	Solution
Environmental Degradation	Deforestation, overgrazing; Ethiopia loses ~150,000 ha forest/year	Soil erosion, biodiversity loss; Sahara expanding ~48 km/year southward	Reforestation, conservation
Unplanned Urbanization	Rapid rural-urban migration; Addis Ababa grew 1M (1984) → 5M+ (2023)	Slums, inadequate housing, traffic congestion, poor sanitation	Urban planning, decentralization
Migration in Africa	Conflict (Sudan, DRC, Somalia), drought, poverty; ~40M internal migrants	Refugee crises, brain drain, pressure on host communities	Peace, development, legal pathways
Coastal Pollution	Oil spills (Niger Delta), plastic waste, industrial effluents, overfishing	Marine ecosystem damage, fishing community losses, tourism decline	Regulation, clean-up, awareness
Drought & Famine	Climate change, El Niño; Ethiopia affected 1984, 2002, 2015–16, 2022	Food insecurity, displacement; Sahel faces chronic shortages	Early warning, irrigation, international aid

📋 SECOND ROUND MODEL
(Units 3–5)



🔄 REVISION All 5 Units

1	**Unit 1 — Science of Geography** Geography defined; Physical, Human, Regional branches; Map components (Title, Scale, Legend, North Arrow, Grid); Scale types (RF, Statement, Graphic) & conversion; Relief by contour lines; GIS for spatial analysis and planning.
2	**Unit 2 — Physical Geography** Geological Time Scale (Precambrian→Cenozoic); Continental Drift — Pangaea, ~200 Ma; Endogenic vs Exogenic forces; Ethiopia (Ras Dashen 4,550 m, Afar –116 m, Great Rift Valley); Africa (plateau continent, Sahara, Nile, Congo Basin); 5 agro-climatic zones; Climate change causes/effects/solutions; 12 river basins; GERD; Renewable vs Non-renewable resources.
3	**Unit 3 — Population Geography** World 8B, Ethiopia 126M; TFR, CDR, IMR; Malthus & DTM (4 stages); Push/Pull migration factors; Urban (Addis Ababa, Dire Dawa, Mekelle) vs Rural settlement (dispersed, nucleated, linear); Population policy — family planning, girls' education.
4	**Unit 4 — Economic Geography** Primary→Quaternary economic activities; Agriculture 35% GDP, 80% workforce; Coffee 30% exports; Landlocked disadvantage (+40–60% costs); AfCFTA and intra-African trade; Sustainable Development — 3 pillars (Brundtland 1987); Globalization pros/cons; Poverty dimensions; ~490M Africans below $1.90/day.
5	**Unit 5 — Contemporary Issues** Deforestation (150,000 ha/yr in Ethiopia; forest cover 40%→15%); Unplanned urbanization (Addis Ababa 1M→5M+); Migration push/pull factors; Coastal pollution — Niger Delta oil spills, plastic waste; Recurrent droughts (1984, 2002, 2015–16, 2022) — El Niño linkage and climate change intensification.

🏆 THIRD ROUND MODEL GEOGRAPHY (Units 1–5)

