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## Chapter 24

### Physical Geography of South Asia: The Land Where Continents Collided

South Asia's major landforms, including the massive Himalayan mountains, were created when the subcontinent broke off from Africa and drifted into Asia.

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#### Section 1: Landforms and Resources

#### Section 2: Climate and Vegetation

#### Section 3: Human-Environment Interaction

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#### Section 1: Landforms and Resources

- South Asia is a subcontinent of peninsulas bordered by mountains and oceans.
- A wide variety of natural resources helps sustain life in the region.

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### Mountains and Plateaus

#### The Indian Subcontinent

- India, Pakistan, Bangladesh, Bhutan, Nepal, Sri Lanka, the Maldives
- **Subcontinent**—large landmass that's smaller than a continent
  - called Indian Subcontinent because India dominates the region
- Though half the size of U.S., area has 1/5 of world's people
- Natural barriers separate subcontinent from rest of Asia
  - mountains form northern border, Indian Ocean surrounds rest
  - Arabian Sea to west, Bay of Bengal to east

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#### *Continued* Mountains and Plateaus

#### Northern Mountains

- South Asia was once part of East Africa
  - split off 50 million years ago and collided with Central Asia
  - collision of tectonic plates pushed land into huge mountain ranges
- **Himalaya Mountains**—1,500 mile-long system of parallel ranges
  - include world's tallest mountain—Mt. Everest
  - form barrier between Indian subcontinent and China

- kingdoms of Nepal, Bhutan are also in these mountains

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### *Continued* **Mountains and Plateaus**

#### **Northern Mountains**

- At west end, Hindu Kush mountains separate Pakistan, Afghanistan
  - historically blocked invasions from Central Asian tribes
  - Khyber Pass is one of the major land routes through the mountains
- Karakoram Mountains are in northeastern part of Himalayas
  - include world's second highest peak, K2

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### *Continued* **Mountains and Plateaus**

#### **Southern Plateaus**

- Tectonic plate collision also created smaller mountain ranges
  - Vindhya Rang in central India
- Deccan Plateau covers much of southern India
- Western, Eastern Ghats: mountain ranges flank Deccan Plateau
  - block moist winds and rain, making Deccan mostly arid

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### **Rivers, Deltas, and Plains**

#### **Great Rivers**

- Northern Indian, or Indo-Gangetic, Plain:
  - lies between Deccan Plateau, northern mountain ranges
  - is formed by three river systems that originate in Himalayas
- Indus River flows west, then south through Pakistan to Arabian Sea
- Ganges River flows east across northern India
- Brahmaputra winds east, then west, south through Bangladesh
- Ganges and Bramaputra meet, form delta, flow into Bay of Bengal

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### *Continued* **Rivers, Deltas, and Plains**

#### **Fertile Plains**

- Rivers irrigate farmlands, carry rich alluvial soil
  - overflow deposits this soil on **alluvial plains**—rich farmlands
- Indo-Gangetic Plain has some of the world's most fertile farms
- Heavily populated area has 3/5 of India's people

- area's big cities: New Delhi, Kolkata in India; Dakha in Bangladesh
- Plain is drier to west between Indus, Ganges
- The Thar, or Great Indian Desert, lies to the south

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## Offshore Islands

### Sri Lanka: The Subcontinent's "Tear Drop"

- Island in Indian Ocean, off India's southeastern tip
- Large, tear-shaped country with lush tropical land
- Range of high, rugged, 8,000-foot mountains dominate center
- Many small rivers flow from mountains down to lowlands
- Northern side has low hills, rolling farmland
- Island is circled by coastal plain, long palm-fringed beaches

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### *Continued* Offshore Islands

#### The Maldives Archipelago

- Maldives is **archipelago**—island group—of 1,200 small islands
  - stretch north to south for 500 miles off Indian coast, near equator
- Islands are **atolls**—low-lying tops of submerged volcanoes
  - surrounded by coral reefs, shallow lagoons
- Total land area of Maldives is 115 square miles
  - only 200 islands are inhabited

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## Natural Resources

### Water and Soil

- Water and soil resources provide food through farming, fishing
- River systems help enrich land with alluvial soil, water
  - large- and small-scale irrigation projects divert water to farmlands
- Types of fish include mackerel, sardines, carp, catfish
- Waters provide transportation, power
  - India, Pakistan work to harness hydroelectric power

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### *Continued* Natural Resources

#### Forests

- Indian rain forests produce hardwoods like sal and teak

- also bamboo and fragrant sandalwood
- Bhutan's and Nepal's highland forests have pine, fir, softwoods
- Deforestation is a severe problem
  - causes soil erosion, flooding, landslides, loss of wildlife habitats
  - overcutting has devastated forests in India, Bangladesh, Sri Lanka

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*Continued* **Natural Resources**

### **Minerals**

- India is fourth in world in coal production, has petroleum, uranium
- Pakistan, Bangladesh have natural gas resources
- Iron ore from India's Deccan Plateau used in steel industry, exported
- Other minerals: manganese, gypsum, chromium, bauxite, copper
- India has mica for electrical equipment and growing computer industry
- India is known for diamonds; Sri Lanka for sapphires, rubies

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### **Section 2: Climate and Vegetation**

- Climate conditions in South Asia range from frigid cold in the high mountains to intense heat in the deserts.
- Seasonal winds affect both the climate and vegetation of South Asia.

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### **Climate—Wet and Dry, Hot and Cold**

#### **Climate Zones**

- Cold highland zone in Himalayas, other northern mountains
- Humid subtropical in foothills (Nepal, Bhutan), Indo-Gangetic Plain
- Semiarid zone of west Plain, Deccan Plateau is warm with light rain
- Desert zone covers lower Indus Valley, west India, south Pakistan
  - Thar Desert is driest area, with 10 inches of rain annually
- Tropical wet zone in Sri Lanka and coasts of India, Bangladesh
  - Cherrapunji, India, holds rainfall record—366 inches in one month

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*Continued* **Climate—Wet and Dry, Hot and Cold**

#### **Monsoons and Cyclones**

- **Monsoons**—seasonal winds that affect entire region
  - dry winds blow from northeast October–February

- moist ocean winds blow from southwest June–September
- moist winds bring heavy rainfall, especially in southwest, Ganges Delta
- unpredictable; cause hardship in lowlands of India, Bangladesh
- **Cyclone**—violent storm with fierce winds, heavy rain
  - in Bangladesh low coastal region swamped by high waves

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## Vegetation: Desert to Rain Forest

### Vegetation Zones

- Forested tropical wet zone in India’s west coast, south Bangladesh
  - lush rain forests of teak, ebony, bamboo
- Highland forests of pine, fir in north India, Nepal, Bhutan
- Humid subtropical river valleys; foothills have sal, oak, chestnut
- Less vegetation in semiarid areas; desert shrubs, grasses
  - Deccan Plateau, Thar Desert
- Sri Lanka’s tropical wet and dry climate produces grasses, trees

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## Section 3: Human-Environment Interaction

- Rivers play a central role in the lives of South Asians.
- Water pollution and flooding pose great challenges to South Asian countries.

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## Living Along the Ganges

### Mother Ganges

- Ganges is the best-known South Asian river
  - it’s shorter than the Indus, Brahmaputra
  - flows 1,500 miles from Himalayan glacier to Bay of Bengal
  - drains area three times France; home to 350 million people
- Provides drinking and farming water, transportation
- Known as *Gangamai*—“Mother Ganges”
  - becomes the Padma where it meets the Brahmaputra

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### *Continued* Living Along the Ganges

#### A Sacred River

- **Hinduism** is the religion of most Indians
- To Hindus, the **Ganges River** is the sacred home of the goddess Ganga

- Hindus believe waters have healing powers; temples line its banks
  - pilgrims come to bathe, scatter ashes of dead
  - at sacred site of Varanasi they gather daily for prayer, purification
  - float baskets of flowers, burning candles on water

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### *Continued* **Living Along the Ganges**

#### **A Polluted River**

- Centuries of use have made Ganges most polluted river in world
  - sewage, industrial waste, human bodies poison the water
  - users get stomach and intestinal diseases, hepatitis, typhoid, cholera
- In 1986, government plans sewage treatment plants, regulations
  - today few plants are operational, factories still dump waste
- Clean up will take time, money, a change in how people see river

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### **Controlling the Feni River**

#### **A River Overflows**

- Feni River flows from Chittagong Hills to Bay of Bengal
- Wide, slow-moving river flows through low-lying coastal plain
  - flat, marshy area floods during wet season due to monsoon rains
- Cyclones bring **storm surges**—high waters that swamp low areas
  - sea water surges up river into flatlands, flooding villages
- In 1980s, Bangladesh builds earthen dam over river's mile-wide mouth

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### *Continued* **Controlling the Feni River**

#### **Using People Power**

- Bangladesh uses large population's unskilled workers to build dam
- Use cheap materials, low-tech process
  - lay bamboo mats, weight with boulders, cover with bags of clay
- Build partial closure, then close Feni completely February 28, 1985
  - when tide goes out 15,000 workers fill gaps with 600,000 bags
  - seven hours later the dam is closed

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### *Continued* **Controlling the Feni River**

### **Completing the Dam**

- Dump trucks, earthmovers raise clay dam to height of 30 feet
  - put concrete, brick over sides, build road on top
- South Asia's largest **estuary**—arm of sea at river's lower end—dam
- Dam holds against cyclones and storm surges
  - villages and lands are protected