

Environmental Change in World History:

Course Overview



Environmental history studies how humans and nature shape each other over time.



Environmental change is a central lens for understanding world history.



Highlights human agency, culture, and power—not just environmental science.

COURSE ARC: BIG THEMES ACROSS TIME AND PLACE



Climate

Shifting weather patterns and long-term climate change



Disease

Epidemics, population change, and health



Agriculture

Domestication, land use, and food systems



Water

Rivers, rainfall, irrigation, and scarcity



Energy

Fuel sources, technology, and labor



Empire & Environment

Expansion, extraction, and ecological consequences



The Anthropocene

Humans as a geological force and global responsibility

KEY EVIDENCE, MANY VOICES



Ice Cores

Reveal past climates through trapped gases and isotopes



Tree Rings

Show patterns of climate, drought, and disturbance



Documents

Letters, reports, laws, and diaries reveal human decisions and debates



Maps

Chart environments, resources, and changing worldviews



Archaeology

Material remains show how people lived with the environment



Oral Traditions

Stories, knowledge, and memory passed across generations



Multiple scales.
Global connections.
Local experiences.

Environmental change is always a human story.



We explore how people understood, used, protected, and transformed environments—and how those choices shaped the past and our future.



Core Concepts and Sources



- Distinguish climate, weather, environment, ecology, and landscape
- Key concepts: carrying capacity, resilience, adaptation, vulnerability, collapse
- Evidence types: ice cores, tree rings, sediment, pollen, corals, historical records
- Combine proxy data with textual and material evidence
- Avoid environmental determinism; take environmental constraints seriously



Climate Shifts and Early Civilizations



- Holocene climate variability shaped early agriculture and settlement



- Aridity and river systems linked to state formation in Egypt, Mesopotamia, Indus, China



- The 4.2 ka BP event brought widespread cooling and drought



- Scholars debate collapse versus resilience and continuity



- Adaptation included habitat tracking, pastoralization, and movement to river refugia



Disease, Ecology, and Demographic Change



- Human mobility and environmental disruption reshaped disease environments



- The Columbian Exchange marked a major biological watershed



- Plague, smallpox, and epidemics hit trade and colonial settings



- Disease mortality was driven by violence, labor, and social breakdown



- The Great Dying removed up to 90% of Indigenous populations



- Post-1492 depopulation changed land use and even atmospheric carbon



Agriculture, Soil, and Landscape Transformation



- Farming triggers widespread soil erosion and deforestation



- Irrigation creates salinization risks across regions



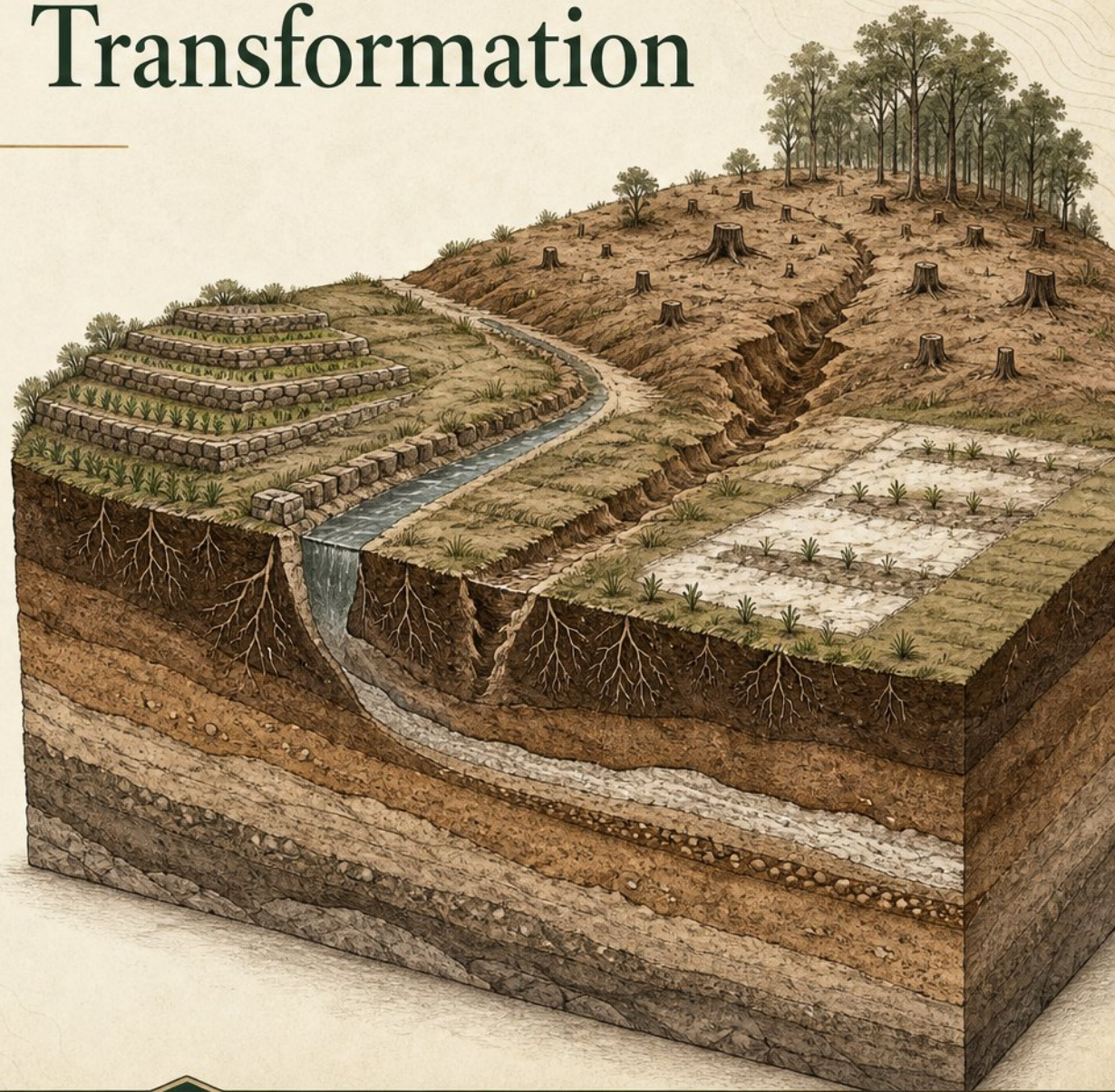
- Terracing reduces erosion but demands lasting labor



- Maya and Easter Island show intensification under pressure



- Modern mechanization accelerates soil loss globally



Water, Rivers, and Maritime Environments

- Nile basin irrigation used annual floods and silt deposits
- Mesopotamian canals balanced irrigation, navigation, and flood control
- Indus cities managed wells, reservoirs, and flood-based cropping
- Maya lowlands stored water in reservoirs and wetland basins
- Qanats moved groundwater through tunnels in arid regions



ENERGY REGIMES AND INDUSTRIAL TRANSFORMATION

ENERGY REGIMES: A LONG HISTORY OF HUMAN POWER

BIOMASS



Until ~10,000 BP

WIND



~10,000 BP – 1700s

WATER



~3000 BC – 1800s

COAL



1800s – early 1900s

OIL



early 1900s – mid 1900s

GAS



mid 1900s – present

RENEWABLES



late 1900s – present

FOSSIL FUELS RESHAPED THE MODERN WORLD

LABOR



CITIES



TRANSPORT



GLOBAL POWER



Enabled unprecedented economic growth, rising living standards, and geopolitical shifts.

INDUSTRIALIZATION: PROGRESS WITH A COST

POLLUTION



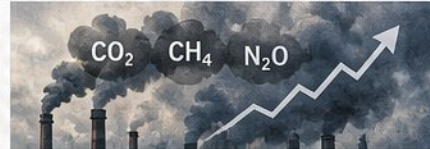
DEFORESTATION



EXTRACTION



ATMOSPHERIC CHANGE



Industrialization delivered prosperity—but at the expense of ecosystems, climate stability, and human health.

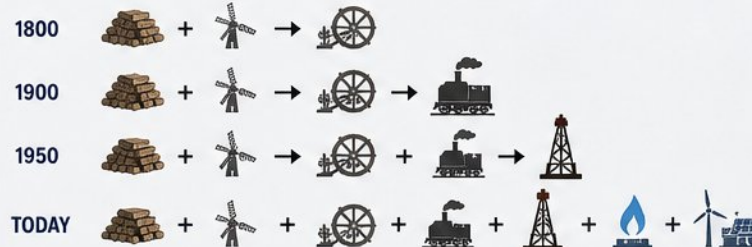
THE GREAT ACCELERATION

THE POST-1950 SURGE IN HUMAN IMPACT



HISTORICAL ENERGY TRANSITIONS

MOSTLY ADDED, RARELY REPLACED



DECARBONIZATION HAS NO HISTORICAL PRECEDENT

For the first time, humanity must rapidly reduce a dominant source of energy while meeting growing needs—without a playbook from the past.



OUR ENERGY CHOICES SHAPE OUR FUTURE. UNDERSTANDING THE PAST IS ESSENTIAL—BUT THE PATH AHEAD MUST BE NEW.

Empires, Extraction, and Ecological Imperialism



- Empires reshaped environments via plantations, mining, and extraction



- Ecological imperialism transferred species, pathogens, and land-use practices



- Colonialism drove settlement, dispossession, and enduring environmental inequality



- Guano/nitrate trade exemplifies unequal ecological exchange and metabolic rift



- Indigenous knowledge offers alternative land management traditions



The Anthropocene and Contemporary Crises



- The Anthropocene: proposed epoch of human-driven planetary change



- Rejected as formal geologic unit in 2024, remains vital humanistic concept



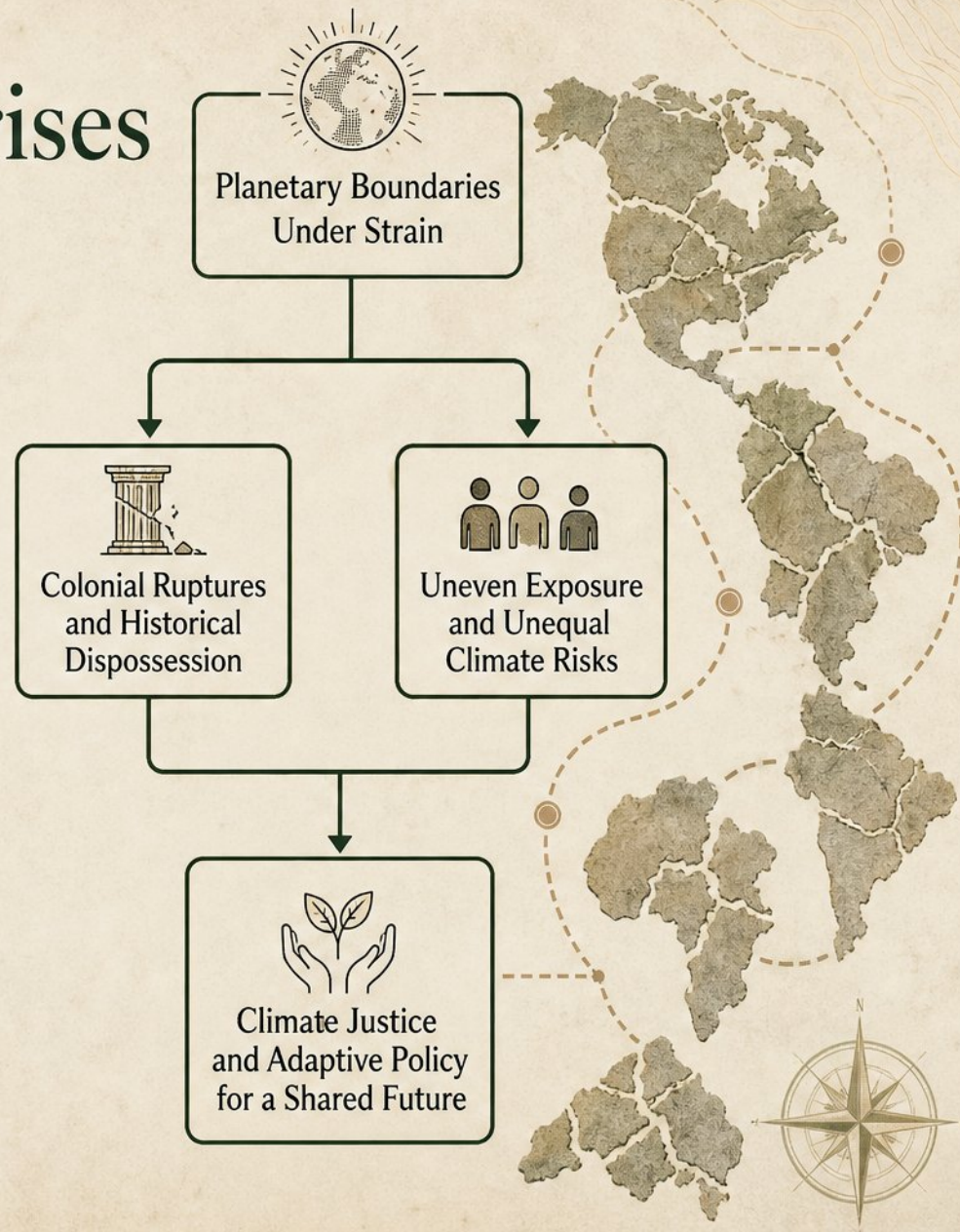
- Evidence: climate change, biodiversity loss, pollution beyond Holocene norms



- Critique 'one humanity' narratives: colonial rupture and unequal burdens

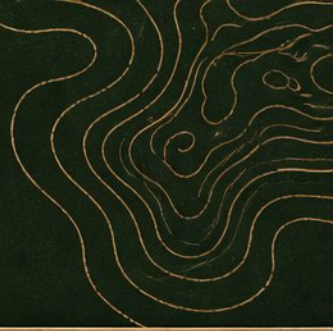


- Historical thinking informs climate justice and adaptive policy





Teaching Environmental Change in the Humanities Classroom



- Weave environmental history into existing topics, not separate units



- Use primary sources, scientific data, maps, and local cases



- Address environmental determinism, presentism, and interdisciplinary confidence



- Design for relevance, global interconnection, and critical thinking



- Include field study, decolonial approaches, and student-driven local projects



Case Study: The Little Ice Age and Global Crises



- Long-term climate change case study, roughly 1200-1900 CE



- Links colder temperatures, droughts, and harvest failures to social unrest



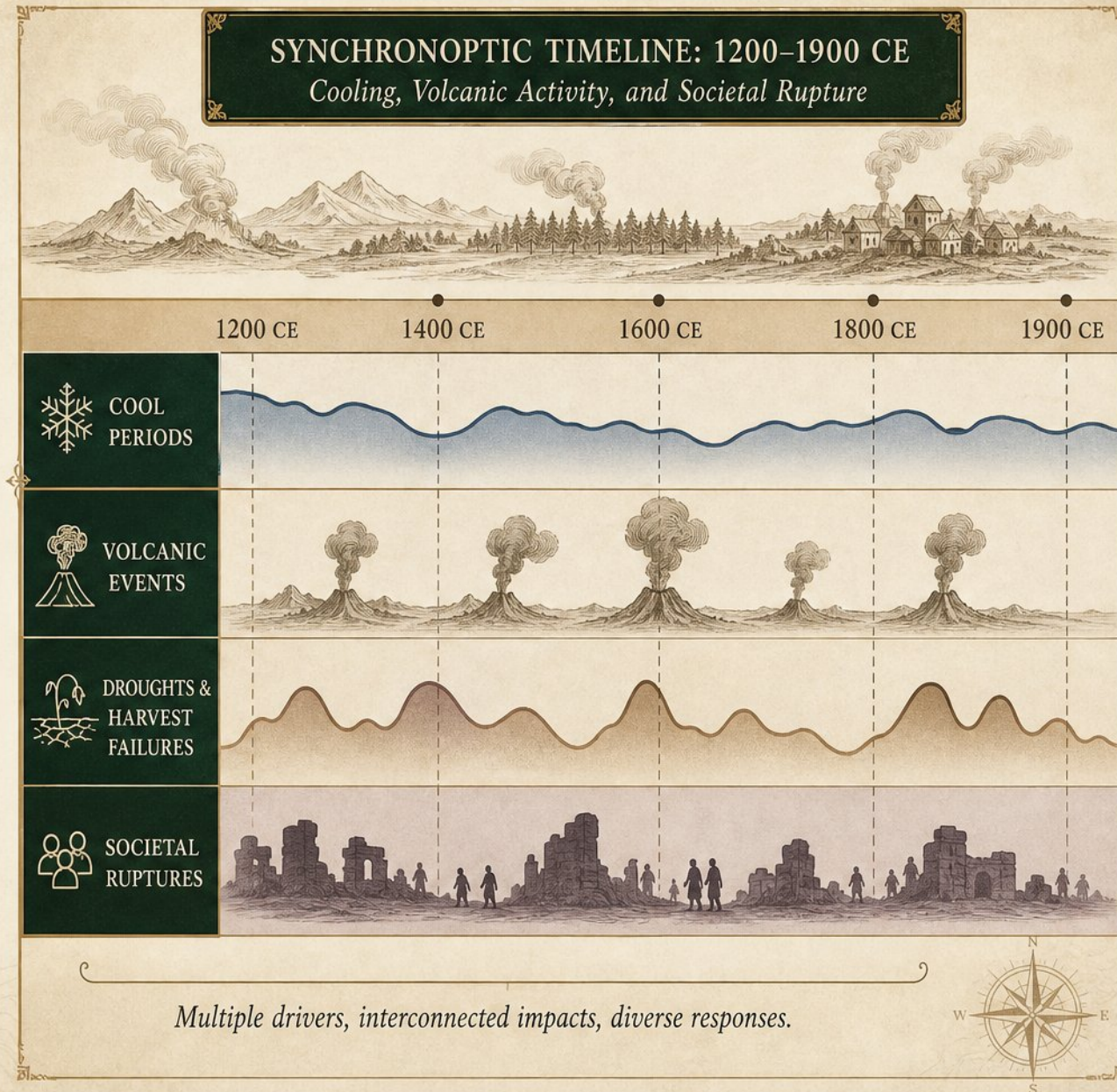
- Causes include pandemic-driven reforestation and volcanic activity



- Megadroughts connect Khmer, Pueblo, and Great Zimbabwe declines



- Shows interconnection and causality without environmental determinism



Case Study: The Columbian Exchange as Biological Globalization

1. Catastrophic Impact of Eurasian Diseases

Eurasian pathogens, to which Indigenous peoples had no prior exposure or immunity, caused catastrophic population declines across the Americas.

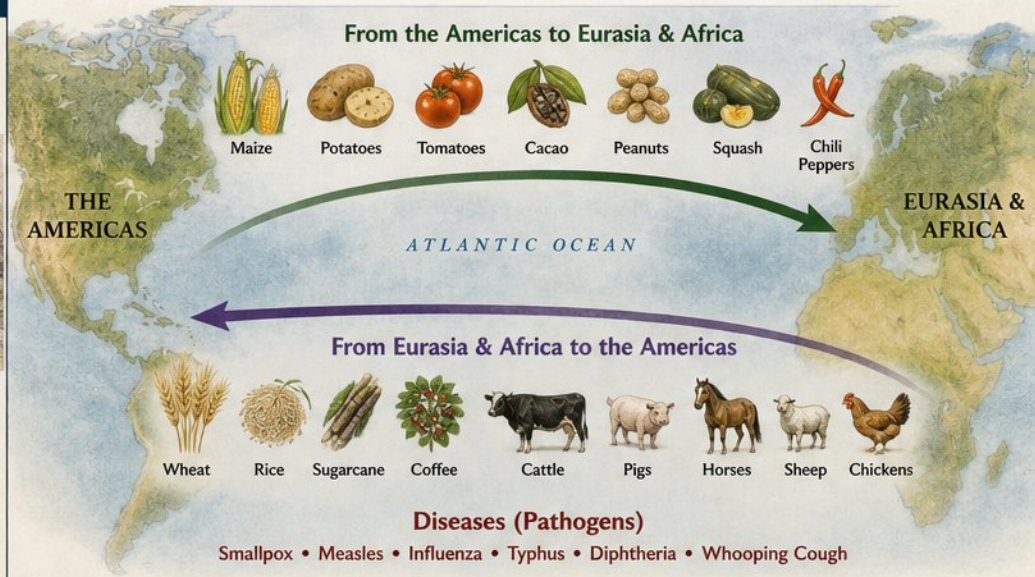


Debates Over Scale

Scholars debate the scale of population loss—estimates range from 50% to over 90% in different regions.



The Columbian Exchange refers to the unprecedented transfer of people, plants, animals, and pathogens across oceans after 1492.



2. American Crops, Global Consequences

Crops from the Americas transformed diets, agriculture, and economies across the Old World—helping to fuel a dramatic increase in the global population.



Estimated World Population

1500	~460 million	👤👤👤👤👤👤👤👤👤👤
1800	~980 million	👤👤👤👤👤👤👤👤👤👤👤👤👤👤👤👤

3. Transformation of Hispaniola

Introduced livestock and plantation agriculture profoundly transformed the island of Hispaniola, one of the first major sites of European colonization.

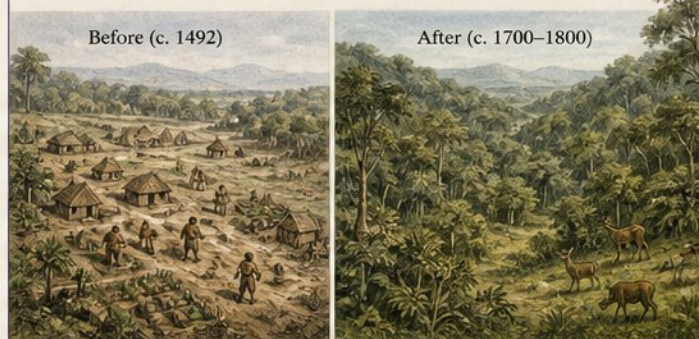


Key Changes

- Indigenous population collapse
- Introduction of livestock (cattle, pigs, horses, sheep)
- Expansion of sugar plantations
- Deforestation and soil depletion

4. Uneven Afforestation and Ecological Recovery

In many regions, depopulation led to the recovery of forests and wildlife. The pattern was uneven—shaped by climate, colonial policies, and continued land use.



Examples

- Eastern North America: reforestation after Indigenous depopulation
- Caribbean islands: mixed recovery amid ongoing plantation use
- Andes: varied recovery depending on elevation and land use

5. A New, Unevenly Connected World

The Columbian Exchange created an interconnected global system—biologically, economically, and politically—whose legacies continue today.



Key Takeaways

- Massive transfers of life transformed ecosystems
- Disease had devastating human consequences
- New foods underpinned global population growth
- Ecological impacts were profound and uneven
- The world became more connected—and more unequal

Case Study: Water, Rice, and the Making of Angkor



- Angkor's reservoirs managed floodwater for the city's center.



- These *barays* were both practical water stores and sacred symbols.



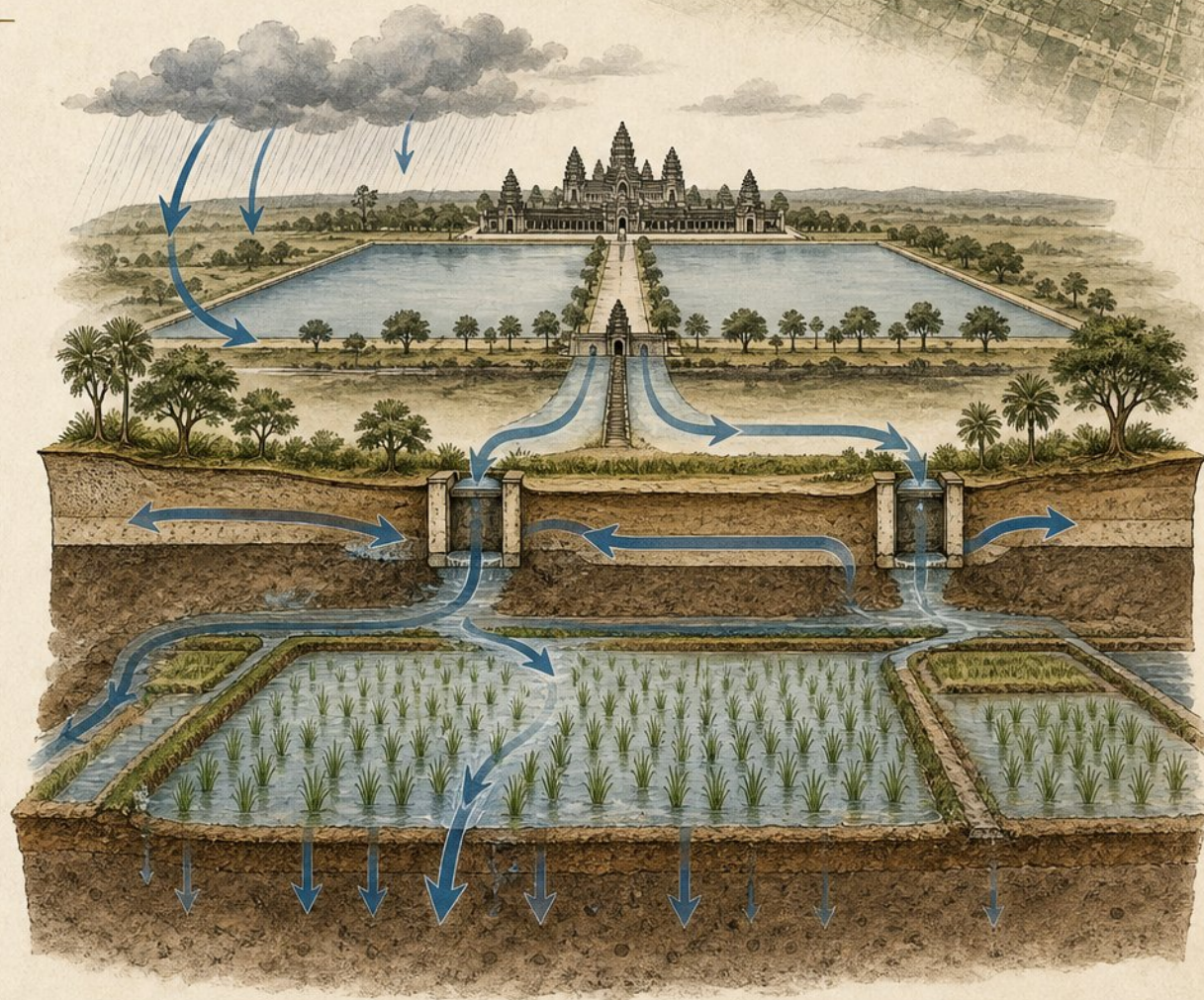
- Khmer farmers relied on flood-recession rice, not simple canal irrigation.



- Droughts and monsoonal shifts strained the system by the 1300s.



- A testament to how hydraulic ambition can also create fragility.



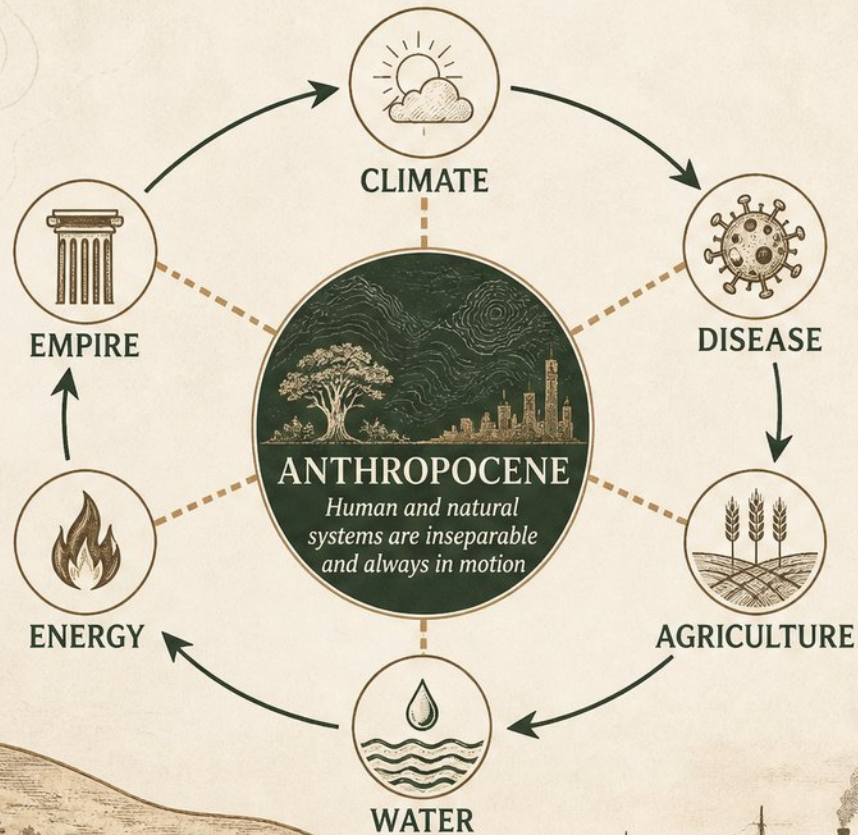


Case Study: Guano, Nitrates, and the Global Metabolic Rift

- Guano and nitrates flowed from Peru and Chile to enrich imperial soils
- Ecological imperialism created unequal exchange and a global metabolic rift
- Extraction relied on imported Chinese labor and debt peonage
- Resource competition fueled war and environmental degradation
- Commodity history links agriculture, empire, labor, and modern fertilizer inequality



Synthesis and Action



- Climate, disease, agriculture, water, energy, empire, Anthropocene connect as one story



- Environmental history reveals power, injustice, and uneven risk across time



- Analyze historically: respect environmental constraints without determinism or presentism



- Use Wakild and Berry's primers, AHA resources, McNeill, Marks for teaching



- Discussion prompts: local case studies, climate justice debates, student field investigation



- Core insight: human and natural systems are inseparable and always in motion

PersonWise.

PersonWise • AI digital-human course platform



Scan the code or click anywhere to watch this course live, with voice Q&A

personwise.ai/t/bb585672/public