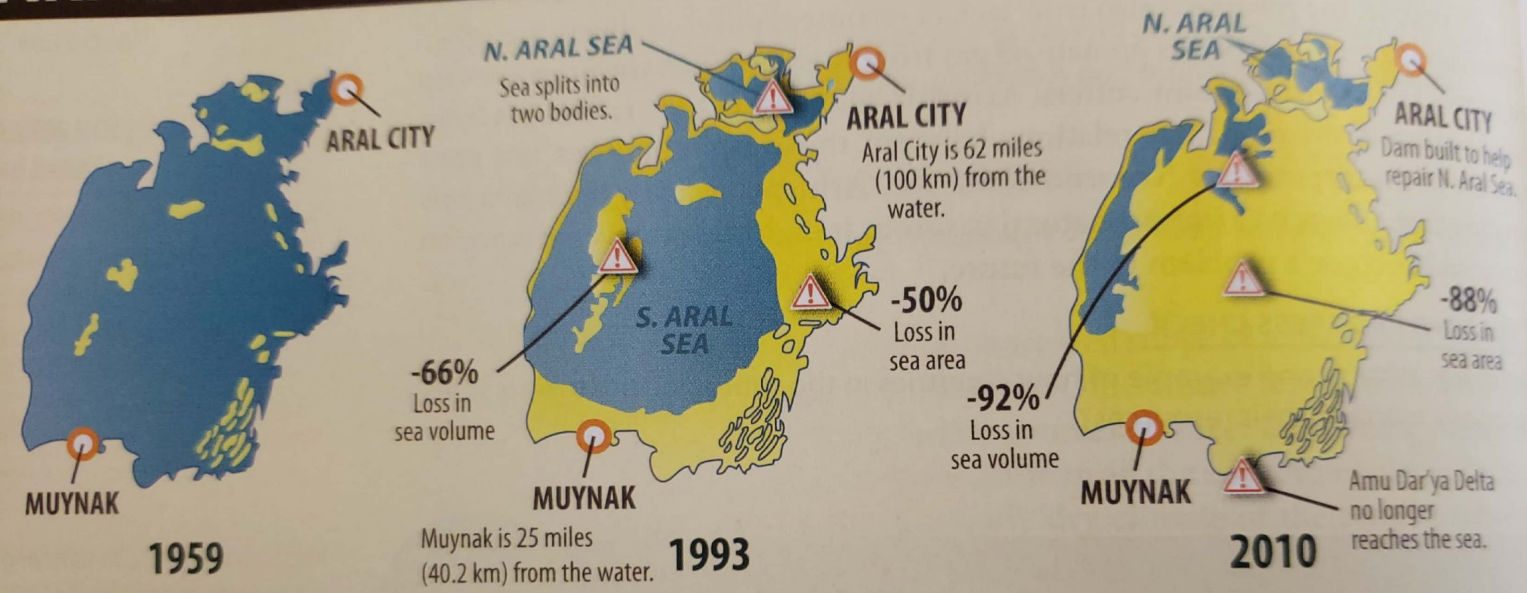
GUIDING QUESTION *How does water scarcity define the climate of North Africa?*

North Africa has a varied climate because it is the meeting place of humid and cold air masses that come from the north and hot, tropical air masses that come from the south. Despite the region's ample amount of rainfall in some parts during the rainy season, desert is the dominant feature of the North African environment.

Climate Regions and Biomes

Water scarcity defines the subregion's variations in climate. Today's North African landscape is most commonly associated with vast stretches of sand and the occasional watering hole. Meanwhile, part of the African continent was once wet
f the landscape indicate changing climates
es. Moreover, changes in climates across the
d human activities in the past and

ARAL a Sea Sacrificed



ECONOMICS

FISHING INDUSTRY GONE
Freshwater fish perished. Shoreline fishing villages were abandoned.

SHIPPING IS GONE
Drying sea is now four small lakes, which makes moving goods by boat impossible.

ENVIRONMENT

WATER QUALITY DROP
Water now 20 times more saline than before.

POISON DUST STORMS
Seabed dirt, laden with chemicals, is blown by dust storms to nearby farms, ruining them.

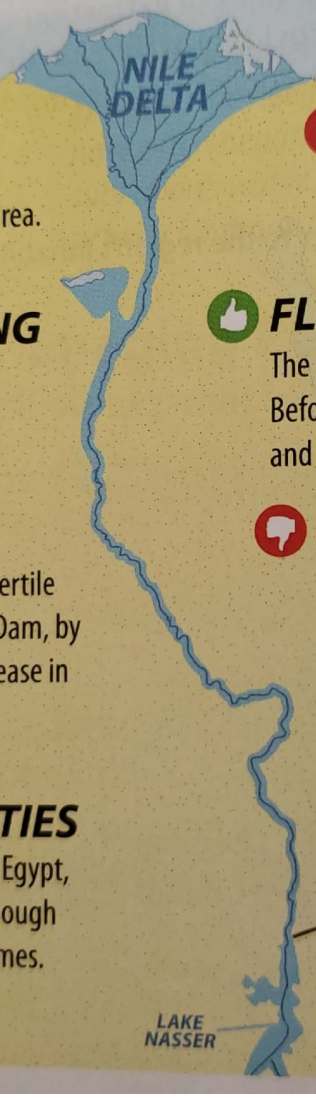
PEOPLE

HUMAN COST
Increased rates of infection, poverty, and migration.

EPIDEMIC
High rates of drug-resistant diseases around the S. Aral Sea.

EGYPT'S Aswān High Dam

BENEFIT DRAWBACK



Egypt's Aswān High Dam, located near the Egypt-Sudan border, brings both benefits and drawbacks for the human geography of the area.

IRRIGATION FOR FARMING

The dam helps provide irrigation to thousands of new acres of farmland.

FLOODING AND FARMS

When the Nile River flooded, it deposited fertile silt on agricultural lands. The Aswān High Dam, by preventing flooding, has resulted in a decrease in agricultural productivity.

POWERING COMMUNITIES

The dam provides hydroelectric power to Egypt, about 10 billion kilowatt-hours. This is enough to power nearly 870,000 average U.S. homes.

POPULATION RELOCATION

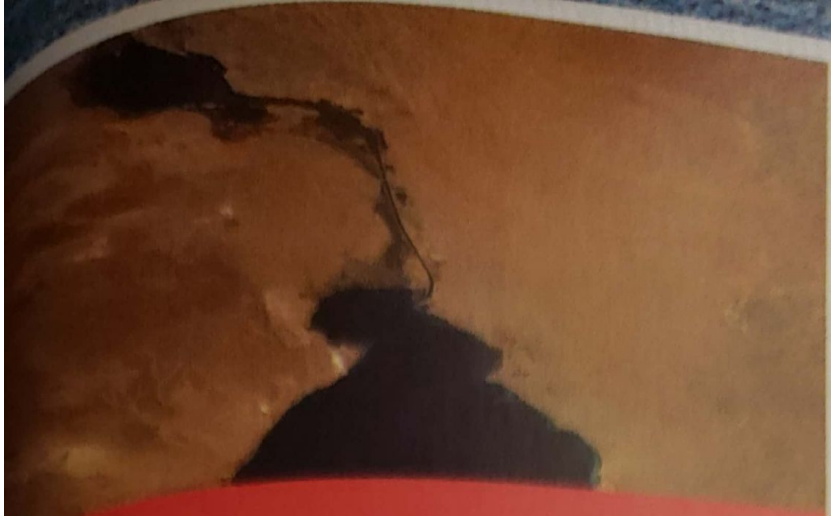
About 90,000 Egyptians and Sudanese had to be relocated because of the dam.

FLOOD CONTROL AND SAFETY

The Aswān High Dam controls flooding along the Nile River. Before construction of the dam, flooding could be unpredictable and dangerous. The dam makes it safer to live along the Nile.

THREAT TO CULTURE

The flooding caused by building the dam would have submerged the ancient temple of Abu Simbel. The temple was dismantled by hand and moved to higher ground.



What is a choke point?

A choke point is a narrow channel or canal that connects two larger bodies of water. Choke points are valuable trading routes that save vessels from traveling thousands of miles to reach a destination. Historically, countries have used choke points to create a trade monopoly by restricting trade through the narrow passage.

Today, choke points are a part of major trade networks for oil and petroleum products. In an energy-dependent world, these integral passageways power our daily lives. Roughly half of the world's oil production is shipped and moved through a choke point. Any disruption in shipment would add thousands of miles to shipping distance, raise energy prices worldwide, and possibly increase political tensions.

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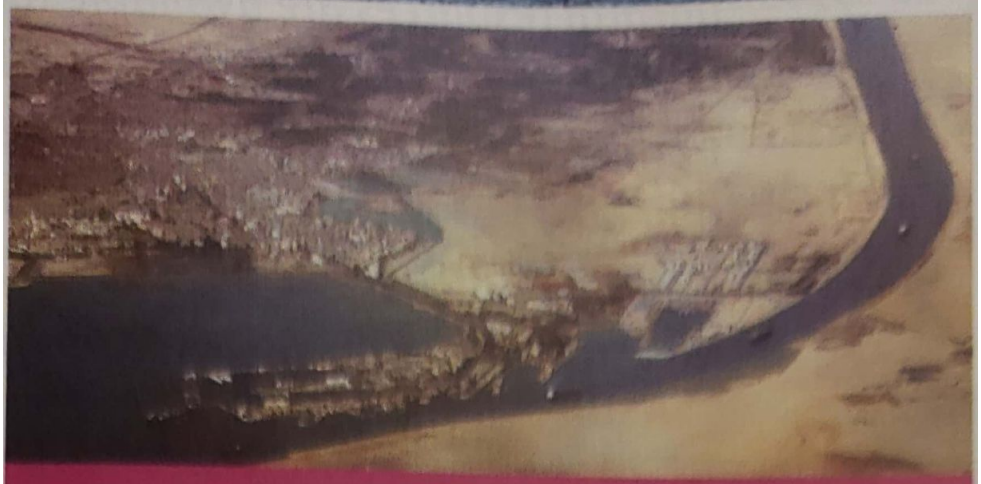
1. Environment and Society How have choke points influenced modern maritime trade routes?



Where is the Suez Canal?

The Suez Canal is in northern Egypt and connects the Red Sea to the Mediterranean Sea. The canal is 101 miles (163 km) long but is only 179 feet (55 m) wide at its narrowest point. Its depth has been increased over time to accommodate larger vessels. Before the completion of the canal in 1869, maritime traders were forced to sail around the tip of Africa, known as the Cape of Good Hope, which added some 4,000 miles (6,437 km) to their journey.

The canal was constructed as a shorter route between Europe and Asia. Today the Suez Canal's importance has increased due to the rise of the oil trade in the region. It now serves as a major passage for ships carrying oil and petroleum products from North Africa and Southwest Asia to Europe, North America, and the rest of the world. The canal is also a major source of revenue for Egypt. Ships pay a toll for passing through the strategic waterway. Each year the Suez Canal generates about $5 billion in foreign currency for Egypt.

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2. Human Systems How has the purpose of the Suez Canal changed since its construction?

The Suez Canal is one of the world's most important passageways for oil and petroleum products. Northbound transit through the canal supplies part of Europe's and North America's energy needs. In recent years, southbound transit has delivered more of the energy resources needed by Asia's growing economies.

Egypt controls the Suez Canal. Thus, the internal political stability of Egypt affects the world's energy security. Conflict in Egypt could jeopardize the security of the canal or shippers' confidence in the canal's safety. This could force vessels to use alternate routes to ensure that cargo reaches intended locations. Increased shipping times and costs would have a direct impact on oil and petroleum prices worldwide.

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3. The World in Spatial Terms How could conflict in one country affect an uninvolved country far away?

Addressing the Issues

GUIDING QUESTION *How have people and governments on the Arabian Peninsula addressed the environmental challenges they face?*

Water use in most countries of the Arabian Peninsula is similar to that of more developed countries with far greater supplies of freshwater. Saudi Arabia uses the same amount of water per capita as other more developed countries. Qatar uses almost twice that amount.

One response to the need for water has been to build **desalination** plants. Desalination removes salt from seawater, as well as minerals from undrinkable groundwater. Current methods of desalination require enormous amounts of energy. For example, desalination accounts for 25 to 30 percent of the energy used in Saudi Arabia.

As groundwater has been depleted, the countries of the subregion have greatly increased their dependence on desalination. Qatar is an extreme example of this dependence. It relies on desalination for 99 percent of its water needs. Yemen, on the other hand, has just recently begun to use desalination.

desalination the removal of salt from seawater or from brackish groundwater to make it usable for drinking and irrigation

Desalination is not a perfect solution. Desalinated water must be blended with water from aquifers to make it drinkable. Even then, many people prefer the taste of imported bottled water to that of their local tap water.

Perhaps more important, desalination has environmental costs. Disposal of the brine that results from the desalination process presents problems. If it is collected in pools, it can seep into the groundwater and contaminate the aquifer. If it is piped into the sea, it increases the salinity of the water, interfering with the ecology of the coastal waters.

Historically, all of the governments of the Arabian Peninsula have subsidized the cost of water, and cheap water has led to overconsumption. To cater to wealthy citizens and attract tourists, the Persian Gulf countries have built resorts and spas that feature swimming pools and waterfalls, among other water-intensive attractions. Even the less wealthy are accustomed to using water freely to wash their cars and water their gardens.

By far the greatest overconsumption, however, has been in the practice of agriculture. During the 1970s, the demand for meat and dairy products increased as the urban population grew richer. An effort was made to supply meat from local ranches, but within 10 years most meat was imported. Many governments became alarmed by increasing prices on the world market and concerned about their countries' dependence on foreign food. In response, the governments of Kuwait, Bahrain, the United Arab Emirates, and Saudi Arabia joined in an effort to encourage agriculture. However, about 85 percent of the region's annual water supply is used for agriculture, and much of it is wasted due to inefficient irrigation. Yemen provides another example of impractical water use. Much of its groundwater goes toward khat cultivation, the leaves of which are chewed as a mild stimulant.

Today, many countries on the Arabian Peninsula, particularly Saudi Arabia, are promoting a variety of changes in how agriculture is practiced. Greenhouse agriculture, which uses much less water than other methods of growing food, is being encouraged. Scientists are developing salt-tolerant plants that can make use of water that is too salty for drinking. Several countries are also looking abroad to find new solutions to their food problems. They are investing in land overseas. They plan to use the natural resources and labor of the host countries to produce food for import to the peninsula. Qatar, for example, is purchasing farmland in such distant places as Sudan, Australia, Kenya, Brazil, Argentina, Turkey, and Ukraine.

✓ READING PROGRESS CHECK