

TURKEY LESSON PLAN OUTLINE

TITLE

Turkey's Need for Dams

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INTRODUCTION

This lesson plan takes the form of an expedition, which derives from a 2-week Study Tour of Turkey that I took with 24 teachers from around the U.S. We traveled 2000+ miles throughout Turkey, & a goal I had was to analyze the importance of dams for Turkey's growing economy & population. It was easily apparent to me that dams were crucial to Turkey's agricultural production, allowing dry regions to produce a great variety of crops through irrigation. Prime Minister Erdoğan recently set a national goal, as noted by my tour guide, for Turkey to break the top 10 economies of the world by 2023, the 100th Anniversary of the Republic of Turkey. Turkey's economy is ranked 17th in the world today. Dam creation & operation will play a vital role. This expedition consists of videos, resources, graphic organizers, readings & pictures. The pictures, except the satellite images & the picture of Ataturk Dam, were all taken during my tour of Turkey. This experience was made possible through the Turkish Cultural Foundation.

Prior to teaching the lesson, students should have been taught about the geography of Turkey. This lesson fits in well with modern history and post WWII economic development. This lesson is to be taught using the technology through We Explore. It can be done in a lab or in the classroom with lap tops. It also could be driven from a teacher's computer projected for the entire class to view and experience.

Students will identify the impact of the construction of dams on the Anatolia Plateau; students will map locations of major dams and identify their impact on economic development, irrigation, power, and flood control. Turkey being proud of their economic development while being ahead of other "Middle East" countries must be highlighted. However, the continued dam building is controversial globally. Be certain to highlight the benefits of the dam construction for Turkey to develop the entire country--especially the east. Students will use Google Earth to locate dams, label facts, and identify areas where future dams could be built.

Students will create a thematic map depicting the breakdown of energy production and what it is used for. Students will access the General Directorate of State Hydraulic Works (DSI) website to investigate the importance and history of dams to Turkey's people and economy. Students will also use the Hurriyet Daily News, which is the leading news source for Turkey and the region, to access local articles on the dams in the region.

LEVEL

7-12

OBJECTIVES

- 1) Students will understand Turkey's economy and the goals that have been set by the government.
- 2) Students will examine the importance of dams to a countries development.
- 3) Students will examine the impact dams have on the environment, upstream, downstream, and the location they are built.
- 4) Students will access and explore various websites to gain knowledge into the government of Turkey's stance and view on the construction and operation of dams.
- 5) Students will analyze pictures of dams and irrigation.
- 6) Students will compare and contrast the positives and negatives of building dams.
- 7) Students will create a newspaper article, speech, presentation or poster depicting their stance on dam building.

CONNECTIONS TO STANDARDS

MN Standard 8.3.3.6.4: Describe how the physical and environmental features of Southwest Asia and North Africa affect human activity and settlement.

MN Standard 8.3.3.10.5: Describe how the distribution and development of oil and water resources influence the economy and societies of Southwest Asia and North Africa.

MN Standard 8.3.2.3.1: Students will use appropriate geographic tools to analyze and explain the distribution of physical and human characteristics of places.

TIME

3-4 class periods

MATERIALS

- 1) Lesson website:
- 2) Copy of the graphic organizer (available through online lesson plan and attached as PDF)
- 3) Access to computers for the online webquest (guided by graphic organizer, which is available through online lesson plan)
- 4) National Geographic Readings (optional)
 - a. Water and Peace in the Middle East (Donald Smith 7/14/2000)
 - b. Protests Grow Over More Turkish Dams (Donald Smith 12/1/2000)

BACKGROUND ESSAY

Included above in introduction.

PROCEDURES

- 1) Access the online expedition through the We Explore link:
- 2) From the We Explore Link there is a link to the Lesson Plan (if needed)
- 3) Access the Graphic Organizer with the link posted on that slide
 - a. Print it out
 - b. Students can explore their way through the Expedition on their own, in groups, or as a class
 - c. Students are to fill out the graphic organizer as they go through the slides
 - i. Web links are provided in case the We-Explore site is not working
 - ii. Websites to be visited in order
 1. Turkish Cultural Foundation: <http://www.turkishculturalfoundation.org/>
 - a. Students explore what the foundation is
 2. Turkey's Economy: <http://www.youtube.com/embed/tj5sP3xSuZM>
 - a. Students view information on Turkey's growing economy
 3. Republic of Turkey Ministry of Foreign Affairs: http://www.mfa.gov.tr/turkey_s-policy-on-water-issues.en.mfa
 - a. Students examine Turkey's policies on water
 4. Republic of Turkey Ministry of Foreign Affairs: <http://www.mfa.gov.tr/dams-and-development.en.mfa>
 - a. Students examine the goals for dams and development
 5. Republic of Turkey Ministry of Foreign Affairs: http://www.mfa.gov.tr/turkey_s-policy-on-water-issues.en.mfa
 - a. Students analyze what the Southeastern Anatolian Project (GAP) is
 6. Deriner Dam video: <https://www.youtube.com/watch?v=qd5m8EA6iWo>
 - a. 1:44, overview of dam
 7. Deriner Dam video: <http://player.vimeo.com/video/58613786>
 - a. 43:44, Build it Bigger, long clip, show segments if desired
 8. Harran Plains: satellite imagery before and after analysis
 - a. Photos are uploaded onto the We-Explore online expedition
 9. Ataturk Dam: infogram/satellite imagery before/after
 - a. Photos are uploaded onto the We-Explore online expedition
 10. General Directorate of State Hydraulic Works: <http://www2.dsi.gov.tr/english/topraksue.htm>
 - a. Webquest continuation for students to answer questions
 11. Study Tour Photo Analysis
 - a. Photos are uploaded onto the We-Explore online expedition
 12. Republic of Turkey Ministry of Foreign Affairs: <http://www.mfa.gov.tr/ilisu-dam.en.mfa>
 - a. Ilisu Dam Reading
 13. National Geographic: <http://news.nationalgeographic.com/news/2014/02/140221-tigris-river-dam-hasankeyf-turkey-iraq-water/>
 - a. Ilisu Dam Reading
 14. Ilisu Dam National Geographic Video: <http://news.nationalgeographic.com/news/2014/02/140221-tigris-river-dam-hasankeyf-turkey-iraq-water/>
- 4) Students take 5 mins to fill out pro/con chart with their own responses
- 5) Students take 10 mins in groups of 4 to continue to fill out graphic organizer
- 6) Summative Assessment – RAFT listed in assessment section of lesson plan

ASSESSMENT

Formative Assessment: students will fill out graphic organizer, participate in class discussions, and group work

Summative Assessment: RAFT project below

ROLE	AUDIENCE	FORMAT	TOPIC
The Minister of Forestry and Water affairs	citizens of Turkey	NATIONAL NEWS PAPER ARTICLE (persuasive, follow OMS essay guidelines, 1 pg, Times font, double spaced)	Construction of the Ilisu dam and how it is pertinent to creating irrigation, hydropower, water source, and construction jobs, higher standard of living for the region and nation
Construction Manager	members of the city	PRESENTATION: 10 slides, outlining how new houses, streets, businesses, and infrastructure will raise the standard of living (use of visuals encouraged)	Outlining building plans, highlighting new features and infrastructure that will replace outdated buildings and infrastructure of the city that will be submerged
Local Historian	members of the community, national and global attention	SPEECH: 60 seconds, done through video or live in class, (graphs, pictures, charts , etc encouraged, be sure to rehearse)	anti-dam building, loss of artifacts from civilizations dating back to 12,000 years ago
Local Business Owner	local community, the citizens of Turkey, and global awareness	POSTER/PAMPHLET: (must be in color, graphs, pictures, charts , etc. encouraged)	denouncing dam building, and the relocation of the city after it is submerged by the reservoir, increased cost of living

EXTENSION IDEAS

- 1) Have students do some online research.
 - a) What is the most up-to-date status you can get on the Ilisu Dam project?
 - b) How are the people who were forced to move dealing with the change?
 - c) What is your stance on controversial construction projects such as this?
 - d) What should be the deciding factor(s) when developing the environment?
- 2) Students examine the Bosphorus Canal, which would alleviate traffic on the Bosphorus Strait by providing another access route.
 - a) What is it?
 - b) Draw a map of it.
 - c) What are the pros and cons to the project?
- 3) Alakpru Dam: project that would bring water from Turkey to Cyprus.
 - a) What is it?
 - b) Draw a map of it.
 - c) What are the pros and cons to the project?

SOURCES

We Explore: <http://we-explore.com/>

Turkish Cultural Foundation: <http://www.turkishculturalfoundation.org/pages.php?ID=1>

Turkey's Economy: <http://www.youtube.com/embed/tj5sP3xSuZM>

Turkish Foreign Ministry (policies on water): http://www.mfa.gov.tr/turkey_s-policy-on-water-issues.en.mfa

Turkish Foreign Ministry (dams and development): <http://www.mfa.gov.tr/dams-and-development.en.mfa>

Turkey's Rivers: <http://www2.dsi.gov.tr/english/topraksue.htm>

South Anatolia Project: http://www.mfa.gov.tr/turkey_s-policy-on-water-issues.en.mfa

Deriner Dam energy production vid 2 mins: <https://www.youtube.com/watch?v=qd5m8EA6iWo>

Deriner Dam, Build it Bigger: <http://player.vimeo.com/video/58613786>

Harran Plains: <http://earthobservatory.nasa.gov/Features/HarranPlains/>

Ataturk Dam: <http://www.gly.uga.edu/railsback/CTW/CTW2.html>

dsi: <http://www2.dsi.gov.tr/english/topraksue.htm>

Ilisu Dam Reading (Turkish Ministry of Foreign Affairs): <http://www.mfa.gov.tr/ilisu-dam.en.mfa>
Ilisu Dam Reading (National Geographic): <http://news.nationalgeographic.com/news/2014/02/140221-tigris-river-dam-hasankeyf-turkey-iraq-water/>
Ilisu Dam Video: <http://www.youtube.com/embed/XNQoRyAoZx4>
Satellite imagery: <http://earthobservatory.nasa.gov/Features/HarranPlains/>
Pistachios: <http://www.economy.gov.tr/upload/sectoralreports/Pistachios.pdf>
<http://www.growingproduce.com/nuts/pistachio-production-soars-around-the-world/>
Sugar beets: <http://www.sugarpub.com/features/sugarbeets-in-turkey>
Olives: <http://www.mediterraneangardensociety.org/olives.html>
Corn/maize: http://www.tmo.gov.tr/Upload/Document/istatistikler/2013_ing_tables/5_Maize.pdf
Hurriyet News Ilisu Dam funding lost: <http://www.hurriyet.com.tr/english/domestic/12022266.asp>
Hurriyet News: plea to stop Ilisu funding: <http://www.hurriyet.com.tr/english/domestic/11636071.asp>
Hurriyet Alakpru Dam Cyprus: <http://www.hurriyet.com.tr/english/domestic/9676703.asp>
Protests Grow Over Plan For More Turkish Dams: http://news.nationalgeographic.com/news/2000/12/1201_turkey.html
Current energy/planned energy creation:
http://www.geni.org/globalenergy/library/national_energy_grid/turkey/EnergyOverviewofTurkey.shtml
Ilisu Dam Conflict: <http://www.mfa.gov.tr/ilisu-dam.en.mfa>
<http://www.smithsonianmag.com/travel/endangered-site-the-city-of-hasankeyf-turkey-51947364/?page=2>

HANDOUTS

Name _____ Date _____ Hr _____ **Turkey's Need for Dams**

<p>Read the expedition overview.</p>	<p>Economy of Turkey's global ranking:</p> <p>Goal for 2023?</p> <p>Why 2023?</p>
<p>What is the Turkish Cultural Foundation? What are some of TCF's goals?</p> <p>http://www.turkishculturalfoundation.org/pages.php?ID=1</p>	<p>1)</p> <p>2)</p> <p>3)</p>
<p>Why are organizations like this important?</p>	
<p>List some facts about Turkey's economy. (after watching video)</p> <p>http://www.youtube.com/embed/tj5sP3xSuZM</p>	<p>1)</p> <p>2)</p> <p>3)</p>
<p>Ministry of Foreign Affairs: describe Turkey's Policies on water issues (conclusion section)</p> <p>http://www.mfa.gov.tr/turkey-s-policy-on-water-issues.en.mfa</p>	<p>1)</p> <p>2)</p> <p>3)</p>
<p>What are 3 major purposes of dams? Which one do you feel is most important?</p> <p>http://www.mfa.gov.tr/dams-and-development.en.mfa</p>	<p>1)</p> <p>2)</p> <p>3)</p>
<p>Why are dams important to development? (2 slides)</p> <p>http://www.mfa.gov.tr/dams-and-development.en.mfa</p>	<p>1)</p> <p>2)</p> <p>3)</p>
<p>Turkey's Rivers: make 2 observations about the rivers</p> <p>http://www2.dsi.gov.tr/english/topraksue.htm</p>	<p>1)</p> <p>2)</p> <p>What about the dams?</p>

<p>What is the Southeast Anatolia Project (GAP)? What are the goals?</p> <p>http://www.mfa.gov.tr/turkey_s-policy-on-water-issues.en.mfa</p>	<p>1)</p> <p>2)</p> <p>How many dams _____ power plants _____ irrigation for _____</p>
<p>How are dams built? (Deriner Dam video or online research)</p> <p>http://www.youtube.com/embed/F6WbHZ5t9vk</p> <p>http://player.vimeo.com/video/58613786</p>	
<p>How long does a dam construction project take? (Deriner Dam video or online research)</p>	<p>http://www.youtube.com/embed/F6WbHZ5t9vk http://player.vimeo.com/video/58613786</p>
<p>During construction how is the flowing river handled? (Deriner Dam video or online research)</p>	<p>http://www.youtube.com/embed/F6WbHZ5t9vk http://player.vimeo.com/video/58613786</p>
<p>Once the project is completed, what happens to the area upstream? (Deriner Dam video or online research)</p>	
<p>What about downstream? (Deriner Dam video or online research)</p>	
<p>What are some obstacles to building a dam? (what may be impacted? (Deriner Dam video or online research)</p>	<p>1)</p> <p>2)</p> <p>3)</p>
<p>Harran Plains Picture - in regards to the 5 Themes of Geography, what do you see? http://earthobservatory.nasa.gov/Features/HarranPlains/</p>	

Ataturk Dam - in regards to the 5 Themes of Geography, what do you see? http://www.gly.uga.edu/railshack/CTW/CTW2.html	
Why is dam building important for the country of Turkey? (your thoughts)	

DSI Web Quest

Go to this website: <http://www2.dsi.gov.tr/english/about/goreve.htm>

What is proper title of this organization?

What is their Turkish acronym?

When did this organization start?

What is their mission?

What are some of their responsibilities under law?

Click on the "Land and Water Resources" tab from the above link, or go to this link:

<http://www2.dsi.gov.tr/english/topraksue.htm>

What is the location of Turkey?	Latitudinal: Longitudinal: Relative:
What countries does Turkey border?	
What waterways does Turkey border?	
How many lakes are in Turkey?	

How many large dam reservoirs? Which are the largest?	
Explain Turkey's streams & rivers. (1st bullet point under the rivers map)	
What is the climate of Turkey?	
Explain the precipitation in Turkey?	<p>Are there concerns with the precipitation patterns of Turkey?</p> <p>Where is the driest region in Turkey?</p> <p>How many inches of rain does this region get per year? (convert mm to inches)</p> <p>mm: inches:</p> <p>How many inches of rainfall does MN get on average per year?</p>
Under the section "Water Resources versus Water Consumption Needs of Population"	<p>What problems exist?</p> <p>What is a solution DSI has identified to solve the lack of precipitation?</p>
Under the section "HYDRAULIC STRUCTURES IN TURKEY",	<p>How many dams exist in Turkey?</p> <p>Large -</p> <p>Small -</p> <p>Under construction -</p> <p>Total -</p> <p>What organization has the majority control of the dams?</p>
By looking at the table, what 4 ways are the	1)

<p>water from dam projects used?</p>	<p>2)</p> <p>3)</p> <p>4)</p> <p>What is a Gwh?</p> <p>How much is produced by the dams in operation from the table?</p> <p>Dams under construction?</p> <p>Total?</p>
<p>Under the section: “DEVELOPMENT OF IRRIGATION, HYDROPOWER, AND WATER SUPPLY SECTORS IN TURKEY”</p>	<p>How are the “Ultimate Goals by 2030” in comparison to the “In Operation” state?</p> <p>Development of Irrigation</p> <p>Hydroelectricity</p> <p>Domestic and Industrial Use</p>
<p>In conclusion, why are these goals important to DSI and the country of Turkey? How will reaching these goals impact the economy? In turn, how will it affect the standard of living for the people of Turkey?</p>	

Picture Analysis

What are your thoughts on the picture showing the vegetation comparison from the same location on either side of the road?

What do you see in the photographs? (people, objects, activities)

1) people:

2) objects:

3) activities:

Based on what you have observed in the pictures, list 3 things you might INFER from the pictures.

1)

2)

3)

Using your Geographic Inquiry skills, create 2 questions based on your analysis of the pictures.

1)

2)

Where can you find the answers to the questions? _____ Do your best to answer them.

1)

2)

After analyzing the photos, explain the impact dams and irrigation have on agriculture in Turkey.

Ilisu dam Project Reading #1

<http://www.mfa.gov.tr/ilisu-dam.en.mfa>

Summary:

Personal Response/Reaction:

Ilisu dam Project Reading #2

<http://news.nationalgeographic.com/news/2014/02/140221-tigris-river-dam-hasankeyf-turkey-iraq-water/>

Summary:

Personal Response/Reaction:

Ilisu dam Project Video

<http://www.youtube.com/embed/XNQoRyAoZx4>

Summary:

Personal Response/Reaction:

PROS	CONS

What is your stance on building dams?

What did your partner say?

What did your group say?

Summative Assessment:

ROLE	AUDIENCE	FORMAT	TOPIC
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Local Business Owner (CON)	local community, the citizens of Turkey, and global awareness	POSTER/PAMPHLET: (must be in color, graphs, pictures, charts , etc. encouraged)	denouncing dam building, and the relocation of the city after it is submerged by the reservoir, increased cost of living

Water and Peace in the Middle East

Donald Smith for National Geographic News · July 14, 2000

A 12th-century sultan ordered it built to carry water from the Nile to Cairo. Napoleon filled in the arches and turned it into a wall. Now, after another year of severe drought in the Middle East, the government has ordered the city's ancient aqueduct restored to slake the thirst of modern Egyptians.

The project, which will take two years to complete at a cost of U.S. \$11 million, dramatizes the importance of one of the major keys to peace in the Middle East: water. Experts say that a lack of agreement on how the region's scarce resources should be divided not only could wreck any peace deal with Israel, but could actually lead to new outbreaks of war among the Arab states.

"People outside of the region tend not to hear about the issue," says a U.S. State Department official. "It just doesn't make the news. But there are talks all the time among water specialists. Guaranteeing fair access to water is critical to any peace agreement."

Palestinian official Fadi Ka-wash declared yesterday on the official government radio station that water "is no less important and serious than any other final status issues on the agenda of the Camp David summit" between the Palestinian National Authority President Yasser Arafat and Israeli Prime Minister Ehud Barak.

Running on Low

In a region with a population of 12 million and about as much rainfall every year as Phoenix, Arizona, water weighs heavily in the concerns of Palestinians, Jordanians, and Israelis over their joint

futures together. Forty percent of Israel's water supply comes from aquifers beneath the occupied West Bank and Gaza Strip. About 25 percent comes from the Sea of Galilee, which helps explain why Israelis balked when Syria this spring insisted on giving up control of the shoreline as well as the entire Golan Heights—often called the "water tower of the Middle East"—as the price of peace.

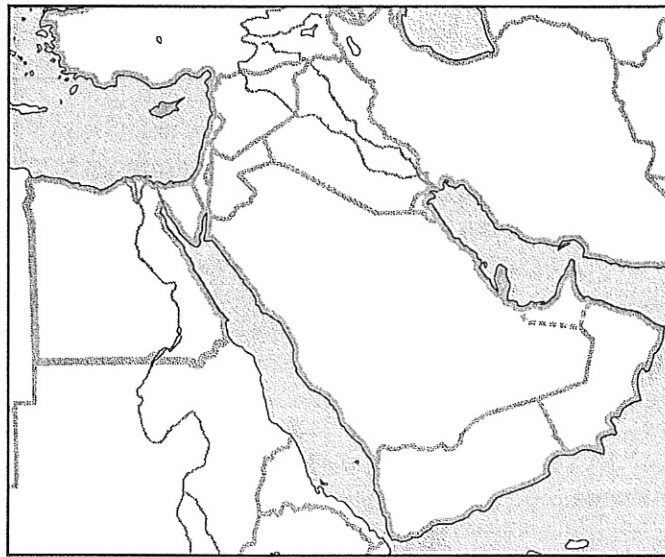
Even though it controls most of its water resources now, Israel is running dry. Last spring, in the midst of the worst drought since 1990-91, the cabinet decreed a 40 percent reduction in subsidized water allocations for farmers and promised compensation to farmers for their losses. The leading newspaper Ha'aretz, citing the possibility of more years of reduced rainfall and an "imminent threat to the

supply of drinking water," called on the government to set "special regulations to reduce urban consumption and educational activities to promote water conservation."

Green Lawns, Dry Taps

While water shortages are proving an annoyance to Israeli citizens, they are angering the Palestinians. At one point Palestinian officials in Hebron—hardest-hit of the West Bank cities—limited households to running water only twice per month.

Most West Bank water still flows through Israeli pipes, despite the existing agreement yielding control over the territory to the Palestinian Authority. Palestinians claim their average citizen receives less than one-third as much water as the average Israeli,



MAP: MIDDLE EAST REGION
NATIONAL GEOGRAPHIC EXPEDITIONS © 2001 NATIONAL GEOGRAPHIC SOCIETY

"Hot Spot: Iraq" Maps, news, and more on the Middle East

www.nationalgeographic.com/iraq

Water and Peace in the Middle East (continued)

National Geographic News — July 14, 2000

and criticize California-style watered lawns and vat-sized bathtubs in Israel.

A study released this spring by the U.S. National Academy of Sciences and counterpart groups from Israel, Jordan, and the Palestinian Authority confirmed that Israel's per capita water use in 1994 was nearly quadruple that of the West Bank and Gaza Strip.

But Israel and its immediate neighbors aren't the only Middle-Eastern states with water problems. The Egyptian aqueduct project was spurred partly by predictions that the country's water needs will rise 30 percent by 2017. Water Resources Minister Mahmoud Abu Zaid told a January symposium at Cairo University that Egypt will have to find an extra 20 billion cubic meters of water by then to meet the demands of its rapidly growing population.

In Egypt as elsewhere, agriculture is a prime consumer of water, especially since 1977, when the government embarked on an ambitious irrigation program in the northeast to help feed the country's 68 million people.

Moving It Around

Several Arab states are busy moving their dwindling water supplies around to serve the neediest areas. Iran—which has set up a crisis committee to deal with water shortages in Tehran—recently opened a 207-mile (333-kilometer) pipeline to supply water from the Zayandeh River in central Iran to the desert province of Yazd. President Mohammad Khatami visited his native region in March to inaugurate the U.S. \$88.6-million pipeline, which the official news agency called the largest water transfer project in the Middle East.

The government of Iraq in March began digging a canal to take water from the Tigris River to drought-stricken lands north of Baghdad—part of emergency measures ordered by President Saddam Hussein to cope with water shortages. Saddam also ordered relief measures for the western town of Rawa, where falling levels in Lake Qadissiyah and in the Euphrates River have caused a drinking-water crisis. Water levels in the Tigris—which along with the Euphrates form the major sources of Iraq's supplies—have been falling sharply because of slack rainfall over the past three years. The government

also has bitterly complained that the situation has been worsened by dams built upstream, further reducing the flows.

Dams, in fact, have become a source of dangerous friction that could lead to war, in the opinion of some of the ministers from nations attending a World Water Forum held in the Hague in March.

"Worldwide, at least 214 rivers flow through two or more countries, but no enforceable law governs the allocation and use of international waters," said Sandra Postel, a senior researcher for the U.S.-based environmental group Worldwatch Institute.

Water Wars?

Many believe the biggest flash point is the Middle East with its desert climate, shrinking aquifers, staggering rates of population growth, and tradition of settling differences by fighting.

"Many of the wars of this [20th] century were about oil," World Bank Vice President Ismail Serageldin once observed, "but the wars of the next century will be about water."

No country is so dependent on a single lifeline as Egypt is on the Nile—the source of which lies several countries to the south. Eighty percent of Iraq's water originates outside its borders. Turkey controls most of the headwaters of the Tigris and Euphrates, the twin rivers upon which both Syria and Iraq depend.

Syria and Iraq are gravely concerned about the effects that water-rich Turkey's massive South-eastern Anatolian Project, with its dam system, will have on their stretches of the Tigris and Euphrates.

Former Turkish President Turgut Ozal a decade ago proposed a "peace pipeline" to sell surplus water from the Seyhan and Ceyhan rivers to parched countries on the Arabian Peninsula. Experts estimated that such a project would cost billions of dollars and take a decade to build. But the most daunting challenge to such a project—or any other regional water-sharing arrangement—would be getting nations that often have warred against each other to cooperate.

In the end, a pan-Arab deal on water resources that takes into account Israel's concerns may not only be a price of peace in the region. Peace might be the price of such a deal.

"Hot Spot: Iraq" Maps, news, and more on the Middle East
www.nationalgeographic.com/iraq

Protests Grow Over Plan For More Turkish Dams

Donald Smith for National Geographic News ♦ December 1, 2000

When it's finished, perhaps in the next decade, it is expected to bring life-giving water to a region about the size of Austria. Turkey's controversial US \$32 billion Southeast Anatolia Project—a massive plan calling for 22 dams and 19 hydroelectric plants strung along the Tigris and Euphrates Rivers—is also intended to provide almost one-quarter of that country's electric power.

But issues unrelated to irrigation and electricity are raising anxieties among an odd collection of international political bedfellows drawn together by their various concerns about GAP—as the project is known by its Turkish initials. Opponents include Turkey's downstream neighbors Syria and Iraq—along with local and foreign environmentalists, human rights activists, and even archaeologists and art historians worried about the flooding of ancient cultural sites.

Bowing to growing public pressure, Great Britain recently put a hold on its plans to help finance the next major component of the project, the proposed Ilisu Dam on the Tigris River. Some groups are insisting that Turkey consult with Syria and Iraq—both of which have had hostile relations with Turkey—about the use of the waters.

Last month an alliance of 14 human rights and environmentalist groups appealed to the U.S. Export-Import Bank and U.S. Secretary of State Madeleine Albright to halt any further discussion of plans to support the Ilisu Dam.

Even some companies that stand to be enriched by the construction work have begun getting cold feet. In August the Swedish firm Skanska announced that it was pulling out of an inter-

national consortium of contractors that have been designated for the work in order to protect its environmental reputation.

Turkey's government is giving every indication that it intends to proceed despite these setbacks. The project is expected to give the pro-western country an enormous strategic advantage in a

chronically thirsty part of the world. Many experts predict that during the 21st century, whoever controls the water supply in the Near East will dominate to a great extent economic and political events, possibly even the production of oil by water-reliant members of OPEC.

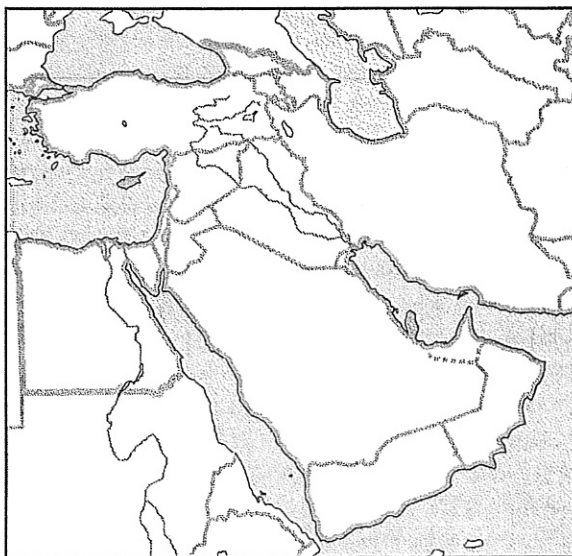
"The next war in the Near East will not be about politics, but over water," former UN Secretary General Boutros Boutros-Ghali once warned an American think tank. "Washington

does not take this threat seriously because everything in the U.S. relates to oil."

Water Blackmail?

The concerns of Syria and Iraq focus primarily on their reliance on the Tigris and Euphrates Rivers for water. The rivers, which flow through Turkey, are being systematically dammed up by GAP activities. Turkish officials have said repeatedly that they will not restrict flows once their reservoirs are filled; but the two downstream countries fear they will be subject to blackmail by Turkey whenever their national policies conflict.

Citing international law requiring agreement of downstream countries to dam projects, Iraq has



MAP: MIDDLE EAST REGION
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Protests Grow Over Plan For More Turkish Dams (continued)

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threatened to bring Turkey—which does not recognize this law—before an international tribunal.

Earlier this year a chorus of protest arose when rising water in a new reservoir behind the recently completed Birecik Dam threatened to inundate the site of the 2,000-year-old Roman city of Zeugma, including its collection of long-buried mosaics and other stunning examples of imperial Roman artwork. The filling operation was briefly suspended during a frantic effort to salvage some of the most important known artifacts, and then resumed. The project also has destroyed pistachio fields and other orchards and has affected an estimated 30,000 people—mostly members of Turkey's Kurdish minority—in 44 villages. Some 6,500 residents have been forcibly resettled.

The Birecik Dam is the third dam on the Euphrates, following the Karakaya and Ataturk Dams. The proposed Ilisu Dam would obliterate 52 villages and 15 small towns along the Tigris. Among these is the modern 5,500-person settlement of Hasankeyf—which lies in at the bottom of a limestone cliff below the ruins of its medieval predecessor, a nationally recognized cultural heritage site. Artifacts consumed by the rising water include a bridge built by a local 12th-century chieftain, a mosque built by a sultan, and a royal tomb.

In human terms, more troubling to many than the loss of cultural and historical areas is the effect that GAP is having on the hard-pressed Kurds, who happen to be the majority in the areas designated for flooding. Kurdish guerrillas in southeastern Turkey have been waging a war for independence since 1984. Some critics see GAP as playing a helpful role in the government's efforts to suppress them.

Environmentalists Join Critics

London-based Kurdish human rights lawyer Kerim Yildiz is spearheading an international campaign to block the Ilisu Dam, taking aim at what is possibly its most vulnerable spot: its need for large amounts

of money. Appealing to several western governments that along with Japan have been asked to provide export credits or guarantees of about US \$850 million, Yildiz argues that "if anyone supports this dam it will contribute to the violation of human rights and international law."

Critics say the Ilisu Dam will require the forced resettlement of as many as 34,000 local people—mostly Kurds—and could negatively affect the lives of 78,000.

Yildiz' allies include several prominent environmental groups, including London-based Friends of the Earth. They maintain that with tons of untreated solid waste and wastewater of major cities already being dumped into the Tigris, the new reservoir would vastly reduce the ability of the river to cleanse itself naturally. They also argue that besides displacing thousands of Kurds, the reservoir would bring malaria and other waterborne diseases to those who remain in the area.

"The Ilisu project will wreak environmental and social havoc and wreck the lives of thousands of Kurds," says Friends of the Earth policy director Tony Juniper. He called British government support for the project a "direct intervention in a war zone."

The Turkish government has answered critics at every step of the way, promising to conduct new environmental impact studies, to install wastewater treatment plants and laboratories, and to launch health education programs in the affected areas.

Government officials say that if international financing is cut off, Turkey will find a way to continue. They cite interest from several unnamed construction companies in participating if the others were to join Sweden's Skanska in backing out.

"Turkey wants to realize the project either with these firms in some way, on credit or on its own," says State Waterworks Authority General Manager Dogan Altinbilek. "We want to complete this project, not waste our efforts."