

RIVERS, REEFS, AND PIPELINES: Environmental Cooperation as a Path to Peace in the Middle East

This lesson examines some of the major environmental challenges in the Middle East and ways that Israelis, Jordanians, and Palestinians are cooperating to meet these challenges.

Essential Questions

- What are some of the biggest environmental challenges that countries in the Middle East face today?
- Can transboundary cooperation on environmental issues help to reduce regional conflict?
- What types of collaborative efforts effectively address environmental challenges?

Learning Outcomes

Students will be able to:

1. Identify major environmental challenges in the Middle East
2. Describe ways that Israelis, Jordanians, and Palestinians are cooperating to meet environmental challenges
3. Evaluate the impact that the use, availability, and distribution of natural resources has on regional conflict
4. Describe the effects of human processes in shaping landscapes
5. Examine different viewpoints regarding resource use
6. Determine the central ideas or information of primary and secondary sources
7. Determine the meaning of words and phrases used in a text

Materials Needed

MULTIMEDIA RESOURCES

- Adobe Spark: *Rivers, Reefs, and Pipelines*, available online
- Google Slide Deck: *Rivers, Reefs, and Pipelines*, available online

PRIMARY AND SECONDARY SOURCES

All of these sources are available as part of this pdf or online in an interactive digital format.

- CASE NUMBER 1: Good Water Neighbors Summary
- CASE NUMBER 2: Artificial Reef Project Summary
- CASE NUMBER 3: Red Sea-Dead Sea Canal Summary

HANDOUTS

- Physical/Political Geography Handout
- Elevator Pitch Guidelines
- Reading for Meaning Graphic Organizer

Lesson Plan

1. INTRODUCTION:

You may want to introduce the topic with these **talking points**:

- Media reports tend to focus on conflict in the Middle East. It is easy to get the impression that religion or oil or land are the primary sources of these conflicts.
- What is not widely reported is that the region also faces significant environmental challenges. These challenges impact the daily lives of millions of people and contribute to the ongoing conflicts.
- There are reasons for hope, however, as environmental cooperation is beginning to happen across borders.
- For example, there are number of projects where Jordanians, Palestinians, and Israelis are working together to meet some of these regional environmental challenges.

2. PHYSICAL AND POLITICAL GEOGRAPHY OF THE MIDDLE EAST

A. Using either the Adobe Spark resource or the Google Slide Deck, project the Google Earth map of the Middle East; pass out the **Physical/Political Geography Handout**.

B. Guide students to answer the map interpretation questions:

- What do you notice about the physical geography of the Middle East?
- What do you think are some of the major environmental challenges in the Middle East?
If students give a very broad or general answer (e.g., "water"), ask them to identify the specific ways that this is a challenge (e.g., "There is a limited amount of fresh water so it is difficult to meet the needs of all the people in the area," "It is difficult to grow crops with limited amounts of water," etc.).
- How are human relationships impacted by the relationship between physical geography and political geography?
Many of the natural resources are shared by two or more countries, distribution of resources is not always fair, resources may not be sufficient for the population of the region, etc.

3. ENVIRONMENTAL CHALLENGES IN THE MIDDLE EAST

A. Using the Google Slide Deck or the Adobe Spark resource, identify the major environmental challenges in the Middle East, including their causes and the way that they impact people in the region.

B. Inform students that they will learn about specific environmental challenges in the Middle East and some of the ways that organizations are working together to address them.

4. CASE STUDIES

A. Organize students into manageable cooperative groups of four, assigning student roles such as Leader, Recorder, Time Keeper, and Presenter to establish individual and group accountability.

- Assign “expert groups,” providing each group with a different case study to research.
- There are three secondary sources, each with additional resources for primary source research for student use online, depending on the technology resources available in your classroom.
- Distribute the **Reading for Meaning Graphic Organizer**, directing students to collect evidence from their assigned reading to support one or more of the guiding statements.
- Distribute the **Elevator Pitch Guidelines** to each group. Each group can either make a poster, a brief outline on the board, or two-three Google Slides which they can use for their presentations.

B. Reconvene class and facilitate expert group presentations.

- Student groups will present their “elevator pitch,” a concise, carefully planned, and well-practiced description about the organization students were assigned to research. Each group’s “pitch” should be about 150 words and take no longer than 60 seconds to share with the class.
- Direct students to complete their Reading for Meaning Graphic Organizer, collecting evidence from the expert group presentations to support the guiding statements.

5. CONCLUSION

Prompt students to share how their understanding of the region may have changed based on this learning experience.

Physical and Political Geography Handout



1. What do you notice about the physical geography of the Middle East?
2. What do you think are some of the major environmental challenges in the Middle East?
3. How are human relationships impacted by the relationship between physical geography and political geography?

KEYWORDS

physical geography: exterior features and changes of the earth

political geography: human governments and the boundaries and subdivisions of states

Elevator Pitch Guidelines

Your expert group will research an organization in the Middle East that is working cooperatively to address an environmental challenge in the region. Your **goal** is to create an elevator pitch to **convince a foundation that your project/organization should receive a large grant to continue its work**. Create a short presentation using a small poster or a slide deck which includes the essential information listed below.

Essential Guidelines:

1. Identify the project discussed in your reading.
2. Identify who is involved in the project.
3. Explain the environmental challenge(s) discussed in your reading.
4. Explain how the project addresses the environmental challenge(s).
5. For your poster or slide deck, use at least one illustration that represents the environmental challenge in your reading and/or how the challenge is being addressed.

Transferable Skill: The "Elevator Pitch"

An **"elevator pitch"** is a concise, carefully planned, and well- practiced description that someone should be able to understand in the time it would take to ride up an elevator. Your group's "pitch" should be about 150 words and take no longer than 60 seconds to share with the class.

Graphic Organizer: Collect this information from your assigned reading

Name of project	
Who is involved in the project?	
What environmental challenges is the project addressing?	
How is the project addressing environmental challenges?	

Reading for Meaning Graphic Organizer

Begin by collecting evidence from your assigned reading to support one or more of the guiding statements. Complete this graphic organizer by collecting evidence from your peers' expert group presentations.

Statement	Evidence (from the primary and secondary sources you've reviewed)
Collaborating on regional projects allows Jews and Arabs to support each other, empowering them to create social cohesion.	
Environmental <i>challenges</i> know no political boundaries.	
Transboundary water cooperation can lead to regional stability and peace.	
Working together to solve environmental challenges builds relationships, understanding, and skills needed to transform communities and contribute to a culture of peace.	
<i>Cooperation</i> in the Middle East transcends political boundaries and helps to solve environmental challenges.	

CASE NUMBER 1: Good Water Neighbors Summary

EcoPeace Middle East (also known as Friends of the Earth Middle East) is a **grassroots** organization that brings together Jordanian, Palestinian, and Israeli environmentalists. EcoPeace ME promotes cooperation between these communities because they depend on many of the same environmental resources for their survival. EcoPeace ME believes that connecting Jordanian, Palestinian, and Israeli communities through projects and dialogue will create sustainable and healthy ecosystems, as well as help bring peace to the region.

One of the biggest environmental challenges in the Middle East is the proper use of water. Israelis, Jordanians, and Palestinians all share sources of fresh water, such as the Jordan River and the Sea of Galilee. However, even though there is some fresh water, the Middle East is mostly an **arid** region. The climate is hot and there is not enough water for to meet the needs of the people who live there. Because of the shortage of fresh water, it is very important that people in Jordan, Israel, and the Palestinian territories learn how to **conserve** and recycle water.

EcoPeace Middle East has developed a project called *Good Water Neighbors*. The goal of this project is to teach Jordanians, Palestinians, and Israelis about the water shortage and help all three communities work together to develop techniques for conserving and recycling water. Conservation and recycling are important parts of sustainable water management, using water in a way that is not wasteful or harmful to the environment. When a community signs up for the *Good Water Neighbors* project it is partnered with a community along a shared border. Each pair of communities is assigned a supervisor who works with youth and adults from both communities to come up with creative ideas and solutions for conserving and recycling water.

Currently, 28 different communities have become part of EcoPeace ME's *Good Water Neighbors* program and real progress in **sustainable** water management has been made. For example, special water saving devices have been installed in public buildings reducing the amount of water used in the buildings by one third. Another example of sustainable water management was developed for schools. Teachers, students, and even the janitor helped create a system which would catch rainwater falling from the roof. This water can then be re-used for flushing toilets and watering the school garden. These schools now serve as examples for other schools and as more communities get involved, more people become educated about this issue.

Good Water Neighbors also has a unique program for youth. Hundreds of youth participate in weekly or biweekly environmental education activities and ecological training sessions. They then teach their friends and community members about the issues and create projects in their neighborhoods. Some have even started educational campaigns – creating posters, stickers, and maps to place around their districts.

Though the primary focus of this project is to develop sustainable water practices it has also helped to promote peace and trust between differing communities. Having Israelis, Jordanians, and Palestinians working together on sustainable water projects means that there will be more water for everyone. All three groups are also creating trust between each other which can lead to further cooperation and more positive attitudes towards each other. Working together and learning about each other helps Arabs and Jews see one another as neighbors with shared concerns and helps reduce tensions between them. These interactions have led to closer ties between the communities including economic partnerships. For example, mayors from several towns decided to develop joint tourist sites.

EcoPeace Middle East has been honored for both its positive impact on the environment and for being able to turn an area of conflict – regional water shortages – into a platform for cooperation, coexistence, and tolerance. Its work has been recognized by diverse groups including a U.S. congressional committee, *Time* magazine, and various nonprofit organizations.

KEYWORDS

arid: having little or no rain; too dry or barren to support vegetation

desalination: processes that removes some amount of salt and other minerals from saline water

salinity: the saltiness or dissolved salt content of a body of water

transboundary: crossing a territorial or national boundary or border

STRAIGHT TO THE SOURCES

Video:

For an overview of the situation in the region, watch "EcoPeace Middle East: Peace is Possible" at

<https://youtu.be/QCtUc-BwyYs>

For close-up of youth work that is organized by EcoPeace, see:

https://youtu.be/BiGOpeOH_V8

Background Information:

"Good Water Neighbors" Project, EcoPeace Middle East website:

<http://ecopeaceme.org/projects/community-involvement/>

"Youth Education" Initiatives, EcoPeace Middle East website:

<http://ecopeaceme.org/projects/youth-education/>

CASE NUMBER 2: Artificial Reef Project Summary

At the southernmost tip of Israel, between Jordan, Saudi Arabia and the Sinai Peninsula, is a gulf, the northernmost part of the Red Sea. In Jordan, it is called the "Gulf of Aqaba," while in Israel, it is referred to as the "Gulf of Eilat." The gulf has two names because the coastal cities of Eilat and Aqaba are both located on the gulf's shore. Like many coastal cities, Eilat and Aqaba serve as important commercial ports, supporting large amounts of shipping and tourism.

In addition to commerce and tourism, the Gulf of Aqaba/Eilat is also an environmentally unique place. It is the world's northernmost tropical sea **ecosystem** and the reefs in this region are different from any other in the world. Hundreds of different corals, 1,120 species of mollusks, and 1,270 types of fish live in this small gulf. Because the waters are filled with such varied and beautiful marine life, it has become one of the world's most popular destinations for snorkeling and scuba diving. In fact, scuba diving comprises nearly 10 percent of the tourism in Eilat.

Despite the limited size of the reefs, nearly 250,000 people dive there each year impacting the gulf's extremely fragile ecosystem. Frequently, inexperienced divers will accidentally kick up sand or break parts of the reef. This puts a lot of pressure on the reef, making it difficult for the natural life to overcome the damage. As a result, significant parts of the reef have begun to die. In 1978, the reefs around Eilat were about 54 percent living coral but by 2007 the amount of living coral dropped to about 20 percent. The rapid **deterioration** of the reef not only impacts tourism, but also threatens the survival of this distinct natural site.

In order to slow down the deterioration process and save the reef from extinction, the Marine Science Station of Jordan and Ben-Gurion University of Israel teamed up in 2007 to create the world's largest **artificial** coral reef. The purpose of the man-made reef is to draw divers away from the natural reef, allowing it to recover from years of mistreatment. They named the reef "Tamar" because its 'Y' shape resembles a palm tree, and "tamar" means palm tree in Hebrew.

The Tamar reef is made out of concrete and wire, and the exterior is textured to make it easier for marine life to attach itself to the surface. Instead of waiting for coral to start growing on its own (which can take between 80 – 100 years), scientists cultivated a variety of coral in a marine nursery. Then 1,000 holes were drilled into the cement structure and the coral was planted inside. Placing coral within the artificial reef allows it to grow in a much more sturdy and resilient environment. It also helps attract fish to the site. This was the first time an artificial reef of this kind was created and artificial reefs have been used in other parts of the world.

Constructing Tamar was not easy and the project had to overcome a number of challenges. For example, scientists had to find a special material which would be extremely strong and durable, while also being friendly for marine life. They also had to design the structure to be safe, so that no divers could get trapped or hurt. Because this was a collaborative project between Israel and Jordan, the teams had to cooperate and be in constant contact with each other. This was challenging because transportation between Israel and Jordan is not always easy.

Nevertheless, both teams worked well together and successfully installed the Tamar Reef into the gulf. Since then, the number of divers visiting the artificial reef is nearly double the number of people who visit the natural site. Israel and Jordan are planning to install four more similar reefs into the gulf – three on the Jordanian side and another on the Israeli side. The teams are not only saving a beautiful natural site, but also developing and strengthening relations between the two countries.

KEYWORDS

artificial: made or produced by human beings rather than occurring naturally

deterioration: the process of becoming progressively worse

ecosystem: a biological community of interacting organisms and their physical environment

STRAIGHT TO THE SOURCES

Video:

"Tamar Artificial Reef, Deployment and Transplantation." Ben Gurion University, August 8, 2011.

<https://youtu.be/grleDle9xKI>

News Articles:

"New Artificial Reefs 'Grow' From Mideast Peace Deal." National Geographic News, September 25, 2007.

<http://news.nationalgeographic.com/news/2007/09/070925-mideast-reef.html>

"Stanford scientists team with Israeli, Jordanian researchers to study Gulf of Aqaba." Stanford News. August 25, 2009.

<http://news.stanford.edu/news/2009/august24/gulf-aqaba-project-082509.html>

"Human-made reefs: A compelling diving alternative." Science Daily, September 5, 2017.

www.sciencedaily.com/releases/2017/09/170905123303.htm

CASE NUMBER 3: Red Sea-Dead Sea Canal Summary

At first glance, the Dead Sea seems like an ordinary body of water. Bordered by Israel and the West Bank on the western side and Jordan on the eastern side, the sea's primary inflow is from the Jordan River. The Dead Sea, the saltiest body of water on earth, is a unique and important site. While most oceans have a salinity rate of about 3.5%, the Dead Sea's **salinity** is around 30%. This high salinity creates a harsh environment in which animals cannot live, earning the Dead Sea its name. Geographically, it is the lowest point on the earth - more than 1,400 feet below sea level.

The Dead Sea also has religious significance. According to the Hebrew Bible, before becoming king, David fled to the mountains surrounding the Dead Sea to escape people who wanted to kill him. Some people also believe that the biblical cities of Sodom and Gomorrah were located in the area that is now covered by the sea. Important historical landmarks are connected to the Dead Sea. More than 2,000 years ago, King Herod the Great built a major fortress to the southwest, Masada, overlooking it. This was last fortress to fall when Jews tried to regain their independence from the Romans about 100 years later.

Another major historical site lies to the northwest at a site called Qumran. Qumran is the location where the Dead Sea Scrolls were discovered. These scrolls contain the earliest known surviving copies of books from the Hebrew Bible as well as other ancient texts.

The Dead Sea is a **transboundary** resource shared by Israel, Jordan, and the Palestinian Authority, playing an important commercial and economic role in the region. Because the mud from the sea is so rich in minerals, many products are made from the natural resources, such as, cosmetics, fertilizers, and of course – salt. In addition, the sea's exceptional qualities attract thousands of tourists every year, helping support local economies. Unfortunately, the Dead Sea has become a concern for environmentalists.

Because the Middle East is mostly an **arid** region there is a limited supply of fresh water. Both Jordan and Israel pump much needed fresh water out of the Jordan River for crops and drinking water, reducing the amount of water flowing to the Dead Sea. As a result, the Dead Sea has begun to shrink by an alarming rate of about three feet per year. The dropping water level of the Dead Sea threatens tourism and mineral industries and has resulted in the appearance of large sinkholes. These sinkholes are slowly eroding the ground, causing roads to collapse and creating dangerous zones.

In order to produce drinking water and save the Dead Sea, Israel, Jordan, and the Palestinian Authority have proposed the creation of a canal going from the Red Sea to the Dead Sea. This project, introduced in December 2013, is known as the "Red-to-Dead Sea Canal." The proposed canal, 200 miles long with the ability to carry nearly 100 million cubic meters of water, will create an additional fresh water resource by diverting some of the Red Sea water and treating it at a **desalination** plant in Aqaba, creating much needed fresh water. The fresh water will be shared between all three communities, while the remaining salty water will be piped into the Dead Sea to replenish it.

Some researchers are concerned about the unpredictable environmental consequences of the water transfer claiming that changes to the minerals and organisms in the Dead Sea could damage the Dead Sea, negatively impacting the site's economic and commercial value.

Many believe that in addition to the environmental benefits, the canal could positively influence the political situation in the region by promoting cooperation and increasing the available supply of water. In February 2015, Israel and Jordan signed a water cooperation agreement to carry out the project expected to cost upwards of \$10 billion dollars and take more than three years to complete.

KEYWORDS

arid: having little or no rain; too dry or barren to support vegetation

desalination: processes that removes some amount of salt and other minerals from saline water

salinity: the saltiness or dissolved salt content of a body of water

transboundary: crossing a territorial or national boundary or border

STRAIGHT TO THE SOURCES

News Articles:

"A Rare Middle East Agreement, on Water." New York Times, December 9, 2013.

<https://nyti.ms/2o1z3>

"New pipeline plan may help save the Dead Sea." Financial Times, March 22, 2017.

<https://www.ft.com/content/c9a188c4-bad1-11e6-8b45-b8b81dd5d080>

Name: _____

Score: _____

Oral Presentation Rubric

	4—Excellent	3—Good	2—Fair	1—Needs Improvement
Delivery	<ul style="list-style-type: none"> • Holds attention of entire audience with the use of direct eye contact, seldom looking at notes • Speaks with fluctuation in volume and inflection to maintain audience interest and emphasize key points 	<ul style="list-style-type: none"> • Consistent use of direct eye contact with audience, but still returns to notes • Speaks with satisfactory variation of volume and inflection 	<ul style="list-style-type: none"> • Displays minimal eye contact with audience, while reading mostly from the notes • Speaks in uneven volume with little or no inflection 	<ul style="list-style-type: none"> • Holds no eye contact with audience, as entire report is read from notes • Speaks in low volume and/or monotonous tone, which causes audience to disengage
Content/ Organization	<ul style="list-style-type: none"> • Demonstrates full knowledge by answering all class questions with explanations and elaboration • Provides clear purpose and subject; pertinent examples, facts, and/or statistics; supports conclusions/ideas with evidence 	<ul style="list-style-type: none"> • Is at ease with expected answers to all questions, without elaboration • Has somewhat clear purpose and subject; some examples, facts, and/or statistics that support the subject; includes some data or evidence that supports conclusions 	<ul style="list-style-type: none"> • Is uncomfortable with information and is able to answer only rudimentary questions • Attempts to define purpose and subject; provides weak examples, facts, and/or statistics, which do not adequately support the subject; includes very thin data or evidence 	<ul style="list-style-type: none"> • Does not have grasp of information and cannot answer questions about subject • Does not clearly define subject and purpose; provides weak or no support of subject; gives insufficient support for ideas or conclusions
Enthusiasm/ Audience Awareness	<ul style="list-style-type: none"> • Demonstrates strong enthusiasm about topic during entire presentation • Significantly increases audience understanding and knowledge of topic; convinces an audience to recognize the validity and importance of the subject 	<ul style="list-style-type: none"> • Shows some enthusiastic feelings about topic • Raises audience understanding and awareness of most points 	<ul style="list-style-type: none"> • Shows little or mixed feelings about the topic being presented • Raises audience understanding and knowledge of some points 	<ul style="list-style-type: none"> • Shows no interest in topic presented • Fails to increase audience understanding of knowledge of topic
Comments				