



EDUCATION AND THE ENVIRONMENT INITIATIVE TEACHER ORIENTATION



Educating for Careers
with the EEI Curriculum

Introductions

California Environmental Protection Agency

Office of Education and the Environment



Kirk Amato

Environmental Education Specialist



David Whitman

High School Science Teacher,
EEI Teacher Ambassador



AGENDA



- **Part I – Introduction and Instructions**
Goals and Descriptions

- **Part II – Quick Tour of High School Curriculum**
Building 21st Century Skills

- **Part III – Walk Through an EEI Unit**
Structure and Components

- **Part IV - Conclusion**

Today's Goals:

- Critical academic content – Science, History-Social Science, and English Language Arts
- EEI helps build 21st Century workforce skills:
 - Critical Thinking
 - Sound Decision Making
 - Effective Problem Solving
 - Communication and Collaboration



Today's Goals:

- Benefits for your programs
- Help you get started
- Inspire you to use the EEI Curriculum for your High School and Career Partnership Academy



The EEI Curriculum

- Builds environmental literacy
- Teaches students about their relationship with the environment
- Teaches academic content standards



PRINCIPLE I

People Depend
On Natural
Systems

PRINCIPLE II

People Influence
Natural Systems

PRINCIPLE III

Natural Systems
Change in Ways
That People Benefit
From and Can
Influence

PRINCIPLE IV

There are no Permanent
or Impermeable Boundaries
that Prevent Matter
from Flowing Between
Systems

PRINCIPLE V

Decisions Affecting
Resources and Natural
Systems are Complex
and Involve Many
Factors

ENVIRONMENTAL PRINCIPLES

The EEI Curriculum

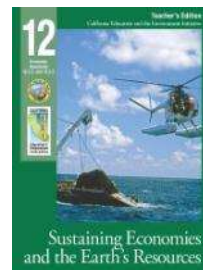
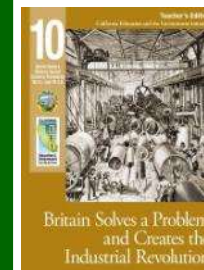
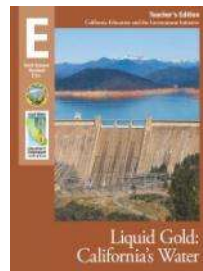
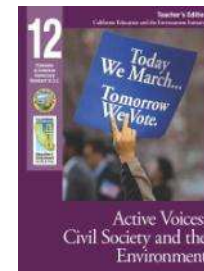
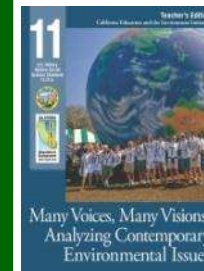
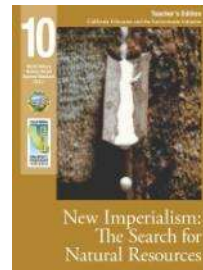
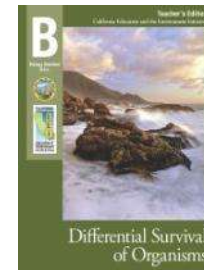
□ 85 units total — 26 high school

□ ELA support

Reading & Writing Skills

Vocabulary Development

Projects Engaging/Collaborative



ENVIRONMENTAL TOPICS

Air

Climate change

Energy

Environmental justice

Environmental sustainability

Fish and wildlife resources

Forestry

Integrated pest management

Integrated waste management

Oceans

Pollution prevention

Public health and the environment

Resource conservation and recycling

Toxics and hazardous waste

Water





Why use the EEl Curriculum?

- Easy to implement
- Replacement strategy
- Go in-depth on a standard



Why use the EEl Curriculum?

□ why should I care?"





AGENDA



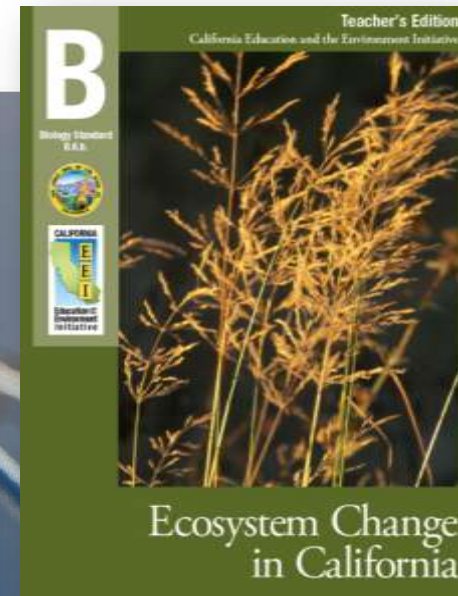
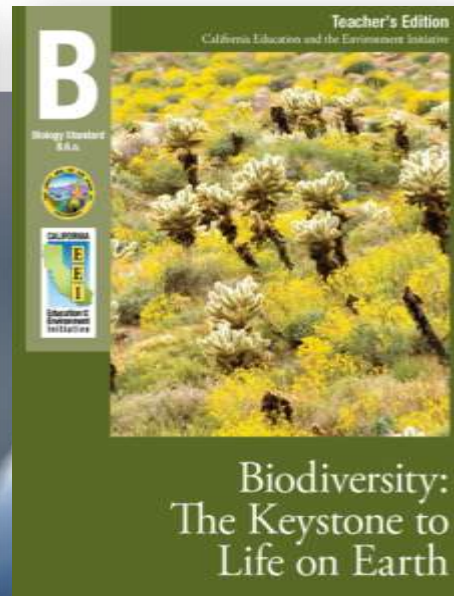
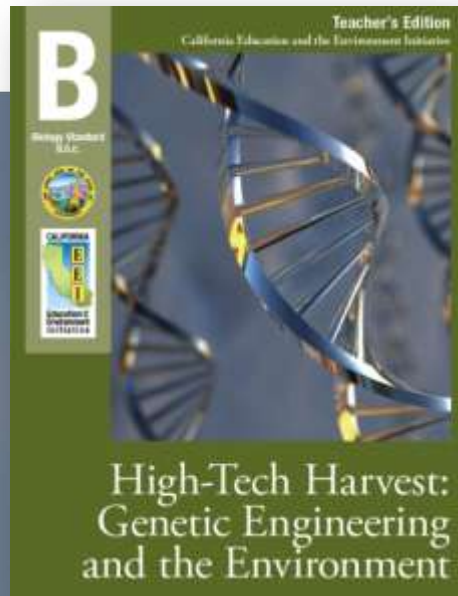
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Structure and Components

- **Part IV - Conclusion**

EEI Curriculum — Biology (6 units)



EEI Curriculum — Earth Science (6 units)

Teacher's Edition
California Education and the Environment Initiative



E
Earth Science
Standard
E.S.1

CALIFORNIA
EEI
Education & Environment
Initiative

The Greenhouse Effect
on Natural Systems

Teacher's Edition
California Education and the Environment Initiative




E
Earth Science
Standard
E.S.2

CALIFORNIA
EEI
Education & Environment
Initiative

Ocean Currents and
Natural Systems

Teacher's Edition
California Education and the Environment Initiative




E
Earth Science
Standard
E.S.3

CALIFORNIA
EEI
Education & Environment
Initiative

Rainforests and Deserts:
Distribution, Uses, and
Human Influences

Teacher's Edition
California Education and the Environment Initiative



E
Earth Science
Standard
E.S.4

CALIFORNIA
EEI
Education & Environment
Initiative

The Life and Times
of Carbon

Teacher's Edition
California Education and the Environment Initiative




E
Earth Science
Standard
E.S.5

CALIFORNIA
EEI
Education & Environment
Initiative

Living Under
One Roof

Teacher's Edition
California Education and the Environment Initiative



E
Earth Science
Standard
E.S.6


CALIFORNIA
EEI
Education & Environment
Initiative

Liquid Gold:
California's Water

EEI Curriculum — World History (4 units)

10
World History
History-Social
Science Standards
10.3.1 and 10.3.2

Teacher's Edition
California Education and the Environment Initiative




Britain Solves a Problem
and Creates the
Industrial Revolution

CALIFORNIA
E
E
I
Education & Environment
Initiative

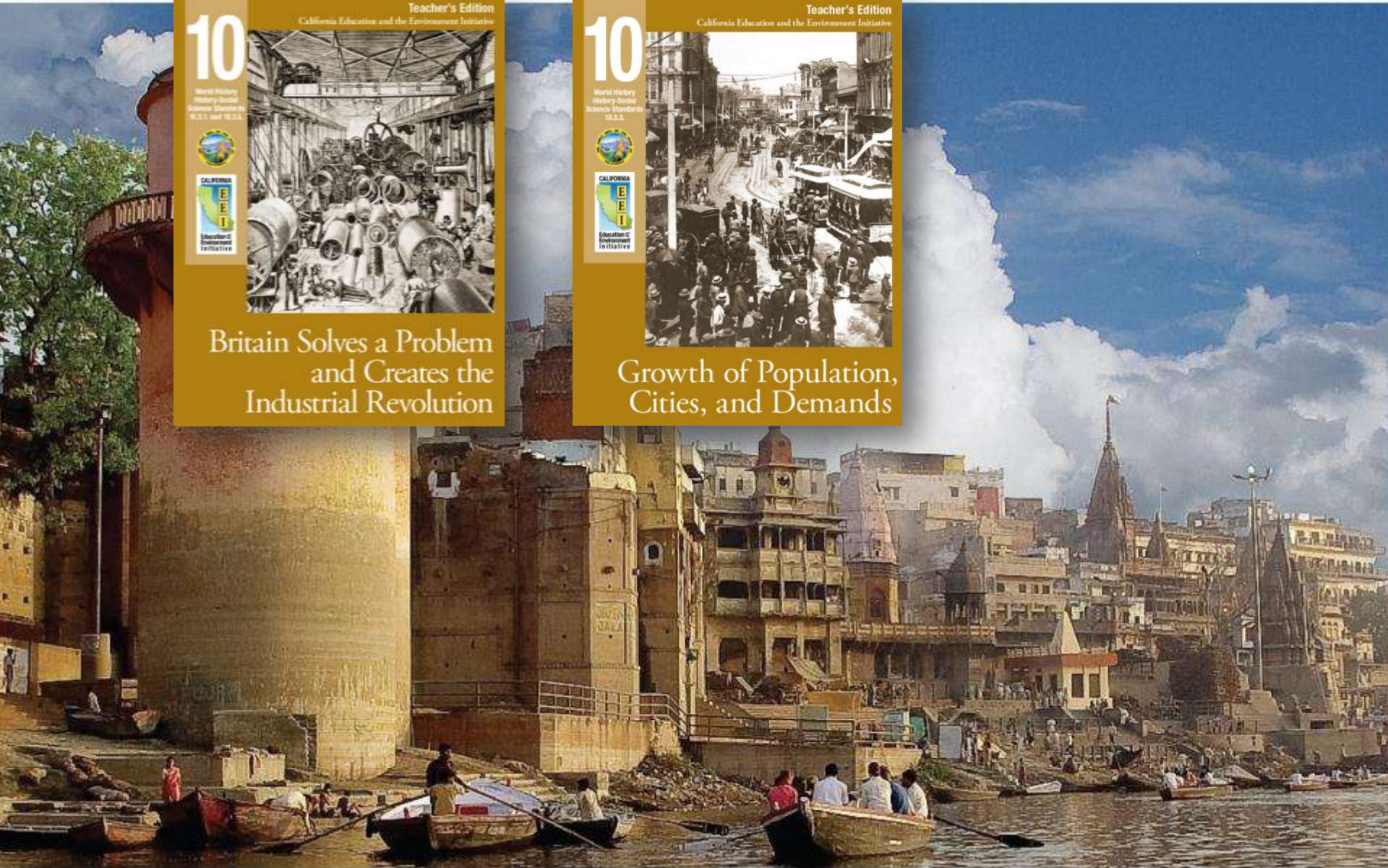
10
World History
History-Social
Science Standards
10.3.3

Teacher's Edition
California Education and the Environment Initiative



Growth of Population,
Cities, and Demands


CALIFORNIA
E
E
I
Education & Environment
Initiative



EEI Curriculum — World History (4 units)

10
World History
History-Social
Science Standards
10.1.1 and 10.2.1

Teacher's Edition
California Education and the Environment Initiative




California
EEI
Education & Environment
Initiative

Britain Solves a Problem
and Creates the
Industrial Revolution

10
World History
History-Social
Science Standards
10.2.3

Teacher's Edition
California Education and the Environment Initiative




California
EEI
Education & Environment
Initiative

Growth of Population,
Cities, and Demands

10
World History
History-Social
Science Standards
10.1.1

Teacher's Edition
California Education and the Environment Initiative




California
EEI
Education & Environment
Initiative

New Imperialism:
The Search for
Natural Resources

10
World History
History-Social
Science Standards
10.2.3

Teacher's Edition
California Education and the Environment Initiative

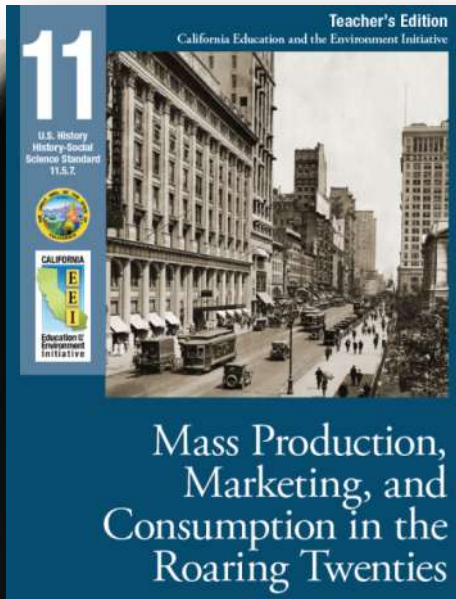


California
EEI
Education & Environment
Initiative

New Imperialism: The
Control of India's and
South Africa's Resources



EEI Curriculum — U.S. History (4 units)



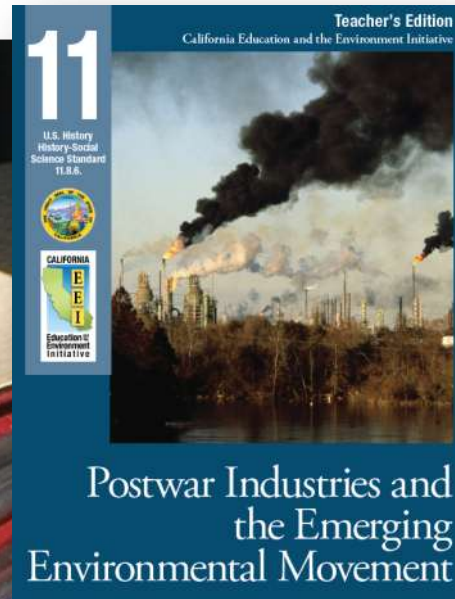
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Teacher's Edition
California Education and the Environment Initiative

U.S. History
History-Social
Science Standard
11.5.7.

CALIFORNIA
EEI
Education II
Environment
Initiative

Mass Production,
Marketing, and
Consumption in the
Roaring Twenties



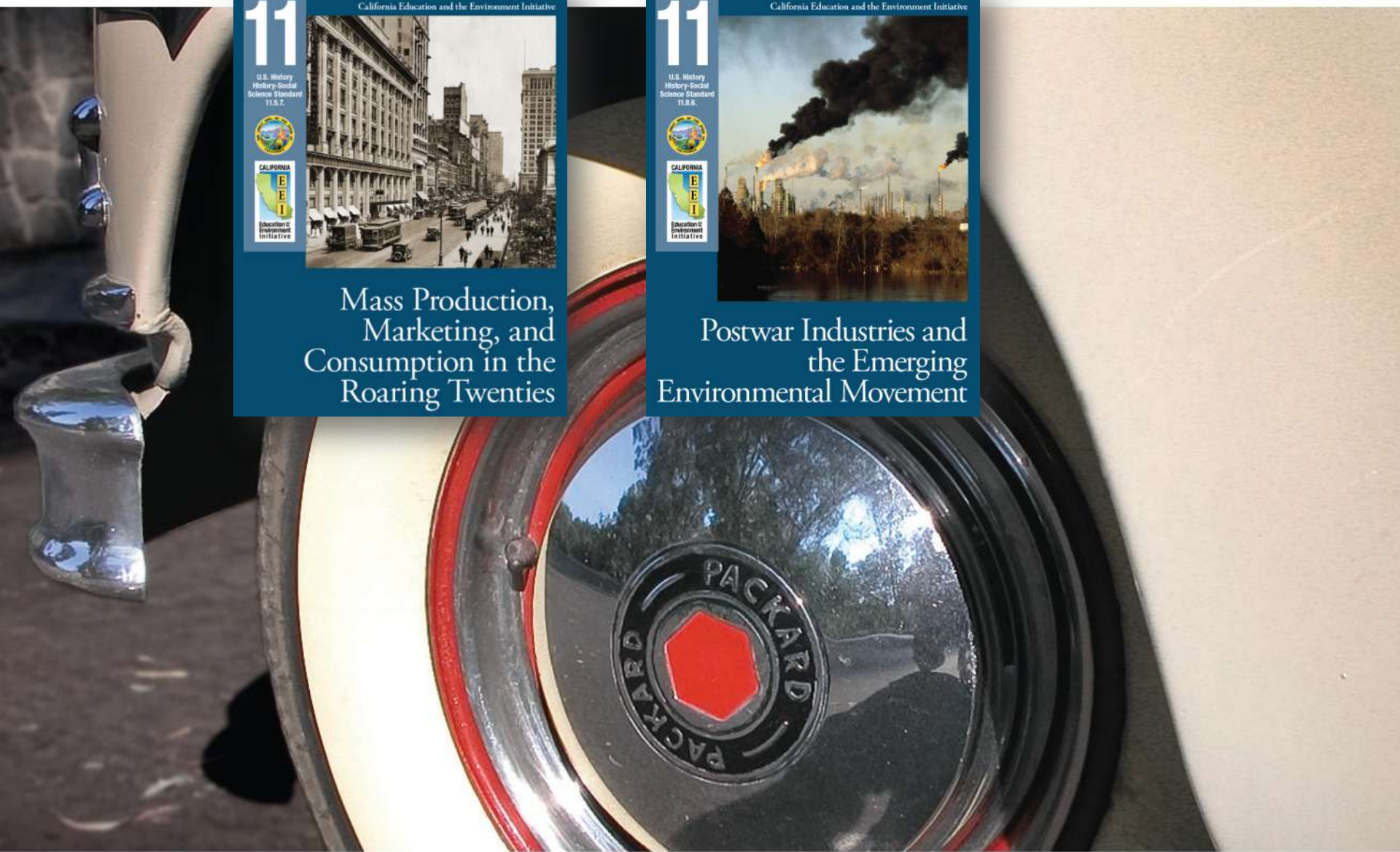
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Teacher's Edition
California Education and the Environment Initiative

U.S. History
History-Social
Science Standard
11.8.6.

CALIFORNIA
EEI
Education II
Environment
Initiative


Postwar Industries and
the Emerging
Environmental Movement



EEI Curriculum — U.S. History (4 units)

11
Teacher's Edition
California Education and the Environment Initiative

U.S. History
History-Social
Science Standard
11.5.7




California
EEI
Education & Environment
Initiative

Mass Production,
Marketing, and
Consumption in the
Roaring Twenties

11
Teacher's Edition
California Education and the Environment Initiative

U.S. History
History-Social
Science Standard
11.8.6



California
EEI
Education & Environment
Initiative

Postwar Industries and
the Emerging
Environmental Movement

11
Teacher's Edition
California Education and the Environment Initiative

U.S. History
History-Social
Science Standard
11.5.3



California
EEI
Education & Environment
Initiative

CONTAMINATED
WITH SEWAGE
KEEP OUT

AVOID ALL CONTACT
NO DRINKING, WADING, SWIMMING OR WATER SPORTS

MANTENGASE FUERA
EL MAR ESTA CONTAMINADO
CON AGUAS RESIDAS


EVITE TODA CLASE DE CONTACTO
RESERVA, NO ANDE DESCALZADO, NO TOQUE NI
MIRA CON LA MANO O EL CODO RESERVADO

QUARANTINED
DO NOT EAT MUSSELS
FROM THESE WATERS
FROM MAY 1 TO OCT. 31
THE BARK MUST FROM CLAMS SHOULD
BE DISCARDED AND NOT EATEN

The United States and
Mexico: Working Together

11
Teacher's Edition
California Education and the Environment Initiative

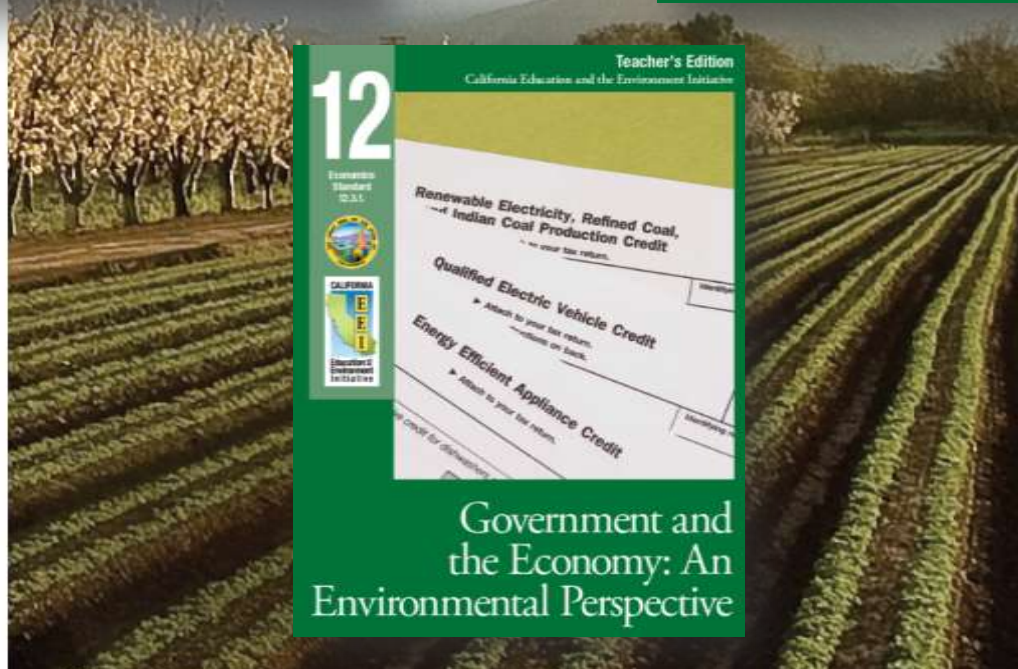
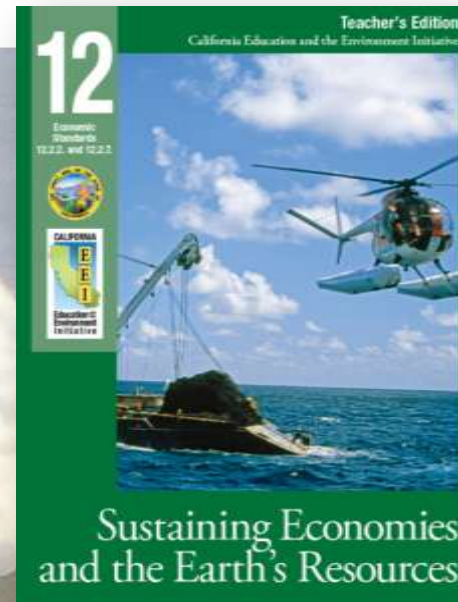
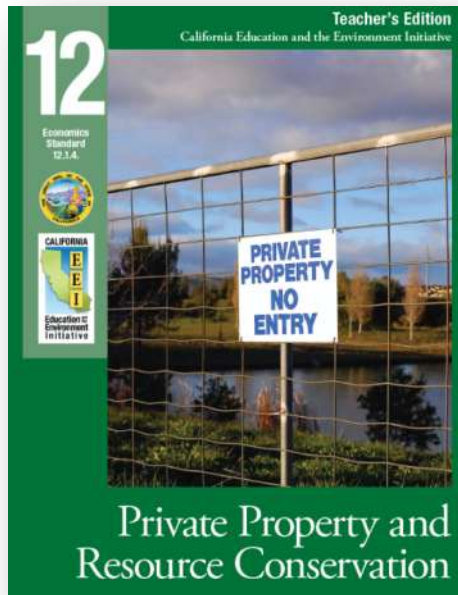
U.S. History
History-Social
Science Standard
11.11.5



California
EEI
Education & Environment
Initiative

Many Voices, Many Visions:
Analyzing Contemporary
Environmental Issues

EEI Curriculum — Economics (3 units)



EEI Curriculum — Principles of American Democracy (3 units)

Teacher's Edition
California Education and the Environment Initiative

12
Principles of American Democracy
Standards 12.2.2 and 12.2.5.

California EEI
Education & Environment Initiative

We love Our Land - And We Won't Leave it!

STOP WATER HOSES

This Land Is Our Land

Teacher's Edition
California Education and the Environment Initiative

12
Principles of American Democracy
Standard 12.3.2.

California EEI
Education & Environment Initiative

Today We March...
Tomorrow We Vote.

**Active Voices:
Civil Society and the Environment**

Teacher's Edition
California Education and the Environment Initiative

12
Principles of American Democracy
Standard 12.3.6.

California EEI
Education & Environment Initiative

THE FEED
CLOSED
TO ALL BIRDS
OF ALL KINDS
AND OTHER ANIMALS
DUE TO POLLUTION

**Making and
Implementing
Environmental Laws**



AGENDA



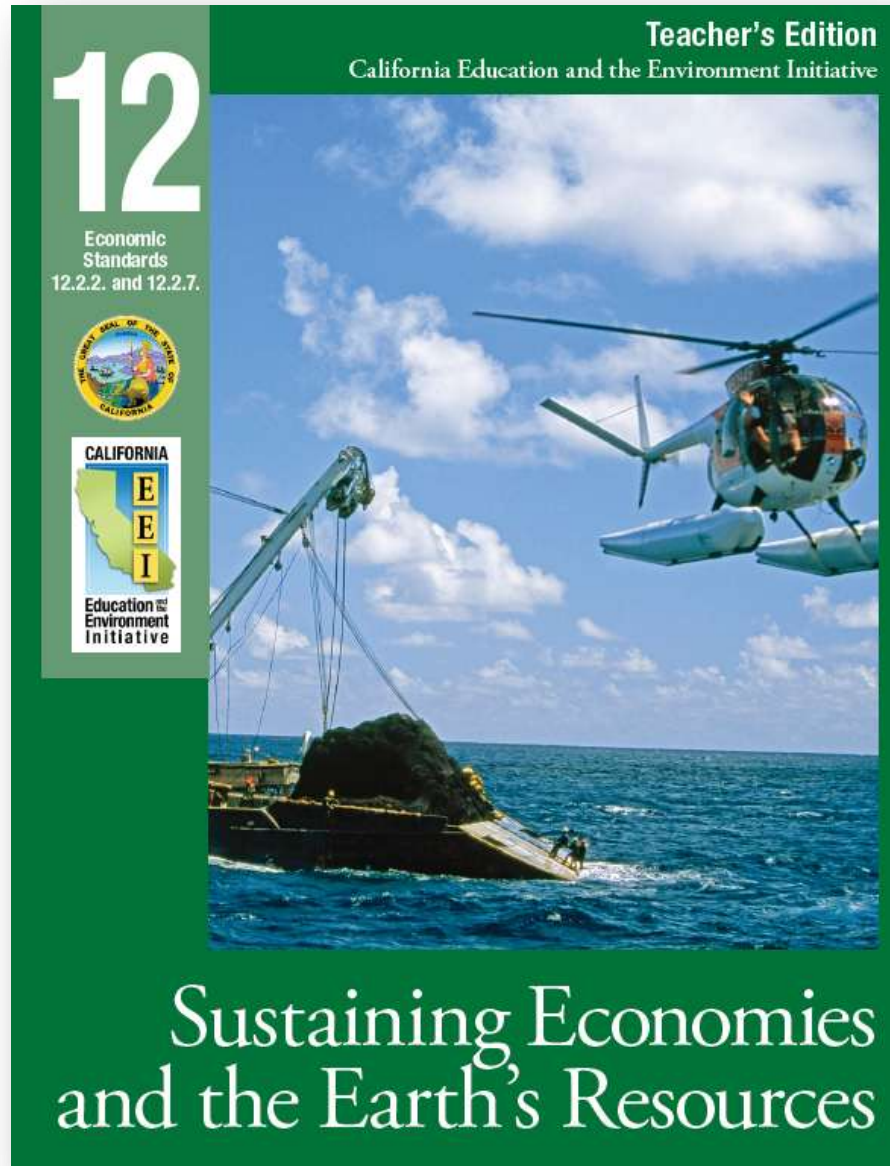
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A Closer Look Inside a Teacher's Edition



Offers Extensive Background ... Explains the Standards-based Focus

Overview

California Content Standards

12.2. Students analyze the elements of America's market economy from a global context.

12.2.2. Discuss the effects of changes in supply and/or demand on the relative scarcity, price, and quantity of particular products.

12.2.7. Analyze how domestic and international competition in a market economy affects goods.



California Content Standards

12.2. Students analyze the elements of America's market economy from a global context.

At a Glance



Economic Forces
Participate in a simulation as either producers or consumers, to learn about market forces.



The Global Fish Market
Examine the fishing industry to learn about global markets and the laws of supply and demand.



The Effects of Market Forces on Natural Systems
Explore how supply, demand, and scarcity relate to the connection between economic health and ecosystem health.

Economic Forces
Participate in a simulation as either producers or consumers, to learn about market forces.

The Global Fish Market
Examine the fishing industry to learn about global markets and the laws of supply and demand.

The Effects of Market Forces on Natural Systems
Explore how supply, demand, and scarcity relate to the connection between economic health and ecosystem health.

One Ocean, Many Mouths
Analyze economic data on fisheries and discuss the "byproducts" of market forces.

Regulating the Market
Evaluate regulatory measures by governments and international organizations as a means of influencing market forces.

California Connections

Sustaining Economies and the Earth's Resources

California Connections

Fishing the World's Oceans

With over 700 miles of coastline, it should be no surprise that a large part of the California economy includes the buying and selling of fish. Because seafood is an excellent source of lean protein, it is growing in popularity around the world.



For developing countries, fish represents a key source of dietary protein. China has the largest fishing industry, feeding the demand of its own people and markets elsewhere.

China's domestic consumption of fish has grown five-fold since the 1970s, as its population has grown.

And Americans are eating more seafood now than ever—over 16 pounds of fish and shellfish per person in 2006. But our domestic supply of fish can only satisfy about 20% of our demand; the rest of the 4.9 billion pounds of seafood we consume each year must be imported.

After half a century of steady growth in the global “catch,” the United Nations projects a massive shortfall in seafood supply within

the next 50 years. Increased demand coupled with an increase in the use of fishing technology, has contributed to the decline in an overall supply of fish. One study found that almost a third of all fished species are already depleted. As fish prices rise, it becomes more attractive for the domestic industry to sell fish abroad than to send it “home.”

Several factors contribute to the problem: overfishing, pollution and habitat damage, and even possibly climate change. The United States is the world's fourth largest exporter of fish (behind China, Norway and Thailand) and the second largest seafood importer (behind Japan). Our domestic fisheries are working with those of other nations to address the looming supply problem soon to hit the global fish market.

The Global Fish Market

Almost half the fish on the global fish market come from marine ecosystems in the open ocean. As the demand for fish rises, supply tightens and prices rise. Pressures of the market (prices and demand) encourage a rush to cash in, resulting in ecosystems being overfished, as too many fish are caught in too short a time period, before they can breed and mature to replenish the population. Some of the fish caught are the fish the market demands for human use. But another way an ecosystem

can be overfished is by an excess of bycatch—fish, mammals and other marine life caught unintentionally, as a byproduct of certain fishing technologies. The increasing use of technology and the size of fishing vessels have made bycatch a real problem. These marine animals are often returned to the ocean in great numbers, either dead or dying, no longer able to help keep the marine ecosystem functioning.

Increased competition for a declining resource, when coupled with increasing consumer demand, results in even higher global fish prices. The higher “catch value” draws additional fishing companies and fishing vessels into the ocean, looking to “cash in” on an already scarce resource.

But, in many cases, the “catch value” is not enough to allow the average fishing company to compete for the scarce resource. Some governments respond by giving money or other support, called subsidies, to their domestic fishing fleets, so that they can go after the scarce, higher-priced fish. Often this results in further scarcity of fish species, as too many boats chase too few fish.

Managing the Supply

Protecting the global fish supply is complicated: fish are a moving target! Since fish are in the open ocean, they are considered a “common good.” The National Oceanic and Atmospheric Association (NOAA) regulates our domestic fisheries. NOAA is a federal agency, part of the U.S. Department of Commerce. Established less than 200 years ago (in 1807), it is responsible for preserving the health of coastal and marine ecosystems. The National Marine Fisheries Service (NMFS) is part of NOAA and it monitors over two-hundred fish populations in the United States’ “exclusive economic zone,” (EEZ). The U.S.’s EEZ is the ocean anywhere between 3 to 200 miles

offshore of the continent—one of the largest EEZ areas in the world.

The NMFS creates fishery management plans that dictate the types and quantity of fish that can be caught in the EEZ, or when they can be caught, depending on the fish population's health.

Past attempts by NMFS to control the seafood supply and industry practices have not always worked. For instance, restricting the fishing season for a certain species can cause a fishing frenzy, where large quantities of that fish are “dumped” onto the global market all at once, driving the price down. This quickly puts smaller fisheries out of business and can result in populations being overfished. More success has been had by limiting or eliminating certain kinds of fishing technology with extremely high (or damaging) catch rates (such as bottom-trawling), establishing protected areas (marine sanctuaries) that serve as “safe zones” for marine species thus allowing them to grow and reproduce; keeping the ocean's ecosystems healthy; and finally, transferable quotas, which are a type of quotas allocated to individual fishermen or vessel owners, which can be sold or leased to others.

And whatever NMFS does has little to no effect on the fishing practices of other countries. Worldwide, national fisheries are self-governed by individual countries. However, 99% of the countries that fish are members of the World Trade Organization (WTO). The WTO helps to form agreements between the member nations, some of which relate to fishing. In addition, the UN created a Code of Conduct for Responsible Fisheries in 1995. This code encourages member nations to adopt responsible fishing practices, such as: using technology that reduces or eliminates bycatch; enforcing proper licensing to fish and registration of fishing vessels; and ensuring

that active vessels are less-polluting (low emissions).

But not everyone upholds the UN “code” or honors WTO agreements. This creates disparities in the market, making it more difficult for fishing companies in those nations that are following regulations to compete against those from nations that do not regulate their fisheries.

Meeting Future Demands

The United Nations recognized the potential fish supply problem as early as the 1990s and began a dialogue with member nations to address the issue. Today, national and international regulations encourage responsible fishing and free trade, with the goal of maintaining a healthy ocean and a healthy economy. But market forces continue to drive fisheries to catch more and more fish in order to make ends meet, exacerbating the supply problem. Regulation alone cannot protect or replenish the global fish supply.

From scarcity often comes economic opportunity. Many see aquaculture as one solution, while others point to the environmental costs and hazards of farming fish. California has the most diverse fish farming industry in the nation, raising everything from catfish to caviar. Investing in aquaculture has created jobs and economic opportunities for many of our coastal towns. But is it the answer to satisfying the world's growing demand for fresh seafood? Will it ensure that the ocean's ecosystems remain healthy and vibrant? Can it help sustain an industry that has been a part of our cultures and economies for thousands of years? With time and careful monitoring, we may be able to answer these questions.



Chinese fishing boat unloads catch

Offers Extensive Background ... Explains the Standards-based Focus



Teacher's Background

Corn field

Humans interact with the environment every day. Whether it is eating an apple, filling up a car with gas, or turning on the lights, humans and their social systems interact with natural systems in direct and indirect ways. Ecosystems make available ecosystem goods and ecosystem services to our human communities.

These ecosystem goods are often tangible materials, produced by processes found within natural systems. These processes are what we consider ecosystem "services," since they result in the materials or other resources that are vital to our lives—and our economies. Ecosystem goods are often also **economic goods**, or tangible materials, such as medicine created from ecosystem goods, that have a monetary value as a product produced with labor and capital. Economics is the study of how human behavior is affected by scarcity of these resources. Although

the study of economics is heavily weighted toward a mathematical understanding of patterns of production and consumption, the larger focus of economics is on consumer and producer behaviors around supply, demand, scarcity, and price of goods and services. But these goods and services generally come from our natural systems, so understanding the processes within these natural systems, as well as the ways in which human social systems interact with natural systems, is essential to making informed choices about the ecosystem goods and



Deforestation

ecosystem services upon which we depend. Keeping our natural systems healthy and sustainable will also keep our **human social systems**, and specifically our economies, thriving

Glossary

Byproduct: Something, such as waste materials or chemicals, produced when something else is manufactured or consumed.

Demand: (noun) Quantity of a good or service that consumers are interested in purchasing from producers and suppliers at a given price.

Economic goods: Tangible materials, produced with labor and capital, which have a monetary value as products.

Ecosystem goods: Tangible materials,

Human social systems: The functions, processes, and interactions among individuals, human communities, and societies including political, social, cultural, economic, and legal systems.

Natural system: The interacting components, processes, and cycles within an environment, as well as the interactions among organisms and their environment.

Regulation: A specific rule created by a government agency or other legislative authority to implement and enforce



Petroleum pipeline

Planning Ahead with the Unit Planner



Unit Planner

Lesson	Learning Objectives	Summary of Activities
1 Economic Forces Preparation Time: 30 min.	<ul style="list-style-type: none"> Provide contemporary examples of the effects of changes in supply and/or demand on the relative scarcity, price, and quantity of particular ecosystem goods and ecosystem services. 	Students participate in a market simulation and graph supply and demand to discuss how price and scarcity affect the production and consumption of goods. Students then brainstorm other factors that can affect the supply of and demand for commodities.
2 The Effects of Market Forces on Natural Systems Preparation Time: 20 min. Instructional Time: 50 min.	<ul style="list-style-type: none"> Describe the direct natural systems of supply and demand for specific ecosystem goods and ecosystem services. Describe the direct and indirect effects of rates of the extraction, harvest, transportation, and consumption of natural resources. 	Students participate in a market simulation and graph supply and demand to discuss how price and scarcity affect the production and consumption of goods. Students then brainstorm other factors that can affect the supply of and demand for commodities.
3 The Effects of Market Forces on Natural Systems Preparation Time: 20 min. Instructional Time: 50 min.	<ul style="list-style-type: none"> Describe the direct natural systems of supply and demand for specific ecosystem goods and ecosystem services. Describe the direct and indirect effects of rates of the extraction, harvest, transportation, and consumption of natural resources. 	Students participate in a market simulation and graph supply and demand to discuss how price and scarcity affect the production and consumption of goods. Students then brainstorm other factors that can affect the supply of and demand for commodities.

Summary of Activities

Students participate in a market simulation and graph supply and demand to discuss how price and scarcity affect the production and consumption of goods. Students then brainstorm other factors that can affect the supply of and demand for commodities.

Lesson Learning Objectives

Provide contemporary examples of the effects of changes in supply and demand on the relative scarcity, price, and quantity of particular ecosystem goods and ecosystem services that are provided by natural systems.

Prentice Hall: Economics: Principles and Tool (2001) Pages 77, 81–84, 89–90, 92–94

Economics: Principles in Action (2003) Pages 85, 86, 116, 120

12.2.7.
AMSCO: Economics: Institutions and Analysis Pages 127–130

Economics For Everybody Pages 20, 36, 377–388

EMC: Economics: New Ways of Thinking Pages 41–53, 394–419, 426–427

Lesson Toolboxes identify lesson-specific needs.

Shows Connections to Adopted Materials

All Materials Needed

A-V Equipment:

- projection system, screen

Class Supplies:

- chart paper
- colored markers
- pencils or pens
- scissors
- tape or thumbtacks
- yard or meter stick

Provided Separately: Student Edition

Student Workbook

Teacher's Masters

Visual Aids

Summary of Activities

Students participate in a market simulation and graph supply and demand to discuss how price and scarcity affect the production and consumption of goods. Students then brainstorm other factors that can affect the supply of and demand for commodities.

Students discuss goods and resources with high market value and the distinction between renewable and nonrenewable resources. They read and analyze an article about the global fish market and complete a graphic organizer identifying economic forces that influence it.

Students explore the components and processes of the ocean ecosystem, read about the history of byproducts created in, the fishing for Atlantic cod, and participate in a class discussion about the effect of human consumption on natural systems

natural resources.

Textbook Alignment

Glencoe: Economics: Principles & Practices (2005) Pages 142–148

Holt: Economics (2003) Pages 32, 83–84, 117, 119–126, 129, 136–137

McDougal Littell: Economics: Concepts and Choices Pages 150–151, 164–166, 178–179, 189, 206–211, 213, 220–223, 360–361, 516–519, 533–535, 540–541

Prentice Hall: Economics: Principles and Tool (2001) Pages 45, 54, 59–61, 662–666

Economics: Principles in Action (2003) Pages 31–32, 51, 55, 444, 447

Sustaining Economics and the Earth's Resources



	All Materials Needed	Textbook Alignment
<p>economic indicators to U.S. economy. need for choices.</p>	<p>A-V Equipment:</p> <ul style="list-style-type: none"> ■ projection system, screen <p>Class Supplies:</p> <ul style="list-style-type: none"> ■ chart paper ■ colored markers ■ pencils or pens ■ scissors ■ tape or thumbtacks ■ yard or meter stick <p>Provided Separately: Student Edition</p> <p>Student Workbook</p> <p>Teacher's Masters</p> <p>Visual Aids</p>	<p>12.2.2. AMSCO: Economics: Institutions and Analysis Pages 58–66</p> <p>Economics For Everybody Pages 52–65</p> <p>EMC: Economics: New Ways of Thinking Pages 130–147, 150–151</p> <p>Glencoe: Economics: Principles & Practices (2005) Pages 89–92, 115–120</p> <p>Holt: Economics (2003) Pages 103–107, 114</p> <p>McDougal Littell: Economics: Concepts and Choices Pages 109–114, 124, 131, 146–181, 153–157, 160–161, 169–171, 173, 176–177, 183, 185, 208</p> <p>Prentice Hall: Economics: Principles and Tool (2001) Pages 77, 81–84, 89–90, 92–94</p> <p>Economics: Principles in Action (2003) Pages 85, 86, 116, 120</p> <p>12.2.7. AMSCO: Economics: Institutions and Analysis Pages 127–130</p> <p>Economics For Everybody Pages 20, 36, 377–388</p> <p>EMC: Economics: New Ways of Thinking Pages 41–53, 394–419, 426–427</p>
<p>and the relationship</p>		
<p>environmental</p>		
<p>and the need</p>		
<p>are determined by</p>		
<p>human activity or</p>		
	<p><i>Lesson Toolboxes identify lesson-specific needs.</i></p>	

Supports English Language Skills & Differentiated Instruction

English Language Development

Lessons in the EEI Curriculum are designed to support students' English language development. The strategies in these lessons are based on some of the practices identified in the Reading/Language Arts Framework for California Public Schools (California Department of Education 2007). Student ELD levels (CELDT) should be identified. Use of the strategies identified as effective for the students' level should be applied when building the history-social science concepts.

To establish successful instructional strategies for all students, the teacher should:

- **Use a wide variety of ways to explain a concept or assignment.** When appropriate, the concept or assignment may be depicted in graphic or pictorial form, with manipulatives, or with real objects to accompany oral and written instructions.
- **Provide assistance in the specific and general vocabulary prior to each lesson,** using reinforcement and additional practice afterward. Instructional resources and instruction should be monitored for ambiguities and language that could be confusing to students, such as idioms.
- **Ask each student frequently to communicate** his or her understanding of the concept or assignment. Students should be asked to verbalize or write down what they know, thereby providing immediate insight into their thinking and level of understanding. In addition, students should be encouraged to confer about each other's understanding of the concept being taught and the classwork or homework assignments, particularly if the students are not fully proficient in English.
- **Check frequently for understanding in a variety of ways.** When a student does not understand, analyze why.
- **Allow students to demonstrate their understanding and abilities** in a variety of ways while reinforcing modes of communication that are used on standardized tests.
- **Use pacing to differentiate instruction according to students' needs.** Reinforce the more difficult concepts for students experiencing difficulty in the language arts by providing additional time and using the visual aids provided. Accelerate the instructional pace for advanced learners if the assessments indicate mastery of the standard.



The California EEI Curriculum includes a variety of research-based English language development practices, such as:

Vocabulary Development

- Teach difficult vocabulary prior to and during the lesson
- Provide reading, speaking, and assessment tasks that reinforce new vocabulary

Reading Comprehension

- Use grade-level readers, articles, and reading assignments to build comprehension in the content area
- Engage students in meaningful interactions about text
- Provide activities that assess student comprehension and build decoding skills

Writing Strategies and Applications

- Provide opportunities for students to organize ideas and information in a written form including concept maps

- Use stories, articles, and other written materials to model good writing
- Provide assessment tasks that allow students to apply their grade-level writing skills

Listening and Speaking Strategies and Applications

- Ask questions to ensure comprehension
- Elicit responses from all students, encourage students to give elaborate responses, and give students time to respond to questions
- Incorporate students' responses, ideas, examples, and experiences into the lesson
- Model and teach language patterns needed to understand and participate in the study of the content areas
- Encourage a high level of response accuracy
- Use visual aids, manipulatives, and real objects to support content delivery

The language arts skills that have checkmarks are used by students as they participate in the lessons.

	V Vocabulary	R Reading	W Writing	L Listening	S Speaking
Lesson 1	✓	✓		✓	✓
Lesson 2	✓	✓	✓	✓	✓
Lesson 3	✓	✓	✓	✓	✓
Lesson 4	✓	✓	✓	✓	✓
Lesson 5	✓	✓	✓	✓	✓

Traditional and Alternative Assessments

Sustaining Economies and the Earth's Resources

Traditional Unit Assessment



Description

This traditional unit assessment is designed to parallel the structure and format of tests used in California's adopted instructional materials and statewide assessments.

Sustaining Economies and the Earth's Resources (Traditional Unit Assessment Matrix) is comprised of short answer and multiple choice questions that assess students' achievement of the unit's learning objectives. Successful completion of this work demonstrates competency with students' understanding of the unit's learning objectives. Successful completion of this work demonstrates competency with students' understanding of the unit's learning objectives. Successful completion of this work demonstrates competency with students' understanding of the unit's learning objectives.

Suggested Scoring

All Answer Key and Sample Answers for Sustaining Economies and the Earth's Resources are provided on pages 10-11. There are as total points possible.

Preparation Time

15 min.

Assessment Time

15 min.

Advanced Prep

- Gather and prepare materials
- Teacher's Manual
- One per student

Answer Key and Sample Answers

Sustaining Economies and the Earth's Resources
 Traditional Unit Assessment Matrix | Page 7 of 4

7. Bismuth is an example of a scarcity.
 a. A byproduct of industry practices
 b. A freely available resource
 c. An increased demand for both products
 d. A resource that is abundant

8. Price increases when supply declines.
 a. Competition
 b. Price
 c. Supply
 d. Demand

9. Supply limits the amount of a good or resource that can be produced or consumed.
 a. Supply
 b. Demand
 c. Subsidies
 d. Equilibrium

10. A law that suspends an activity for a certain period of time is called a quota.
 a. Subsidy
 b. Quota
 c. Tariff
 d. Importation

Part 2
 Instructions: Read the directions and complete the chart.

11. List three effects on human environments resulting from an increase in production (supply) and consumption (demand) of fish products. Then, list three effects on the fishing industry that would result from the effects on the ocean ecosystems. (2 points each, 12 points total)

Effects on the Ocean	Effects on the Fishing Industry
• Destruction of habitat	• Supply of certain fish is limited
• Fish populations decline	• Price of scarce fish goes up
• Destruction of the marine food web	• Fishing industry expands to other waters or begins fishing for other fish
	• Regulation
	• Loss of jobs, and fisheries may fail

Sustaining Economies and the Earth's Resources

Alternative Unit Assessment

Description

The assessment strategy described below offers students an alternative way to demonstrate their achievement of the unit's learning objectives and mastery of the standard. There are many other alternative assessment strategies that teachers may choose to develop for use with this unit. Additionally, some students may require assessment strategies that are adapted to their individual needs.

Preparation Time

15 min.

Assessment Time

15 min.

Advanced Prep

- Gather and prepare materials
- Economic Portfolio Teacher's Manual
- One per student

Materials Needed

- pen or pencil

Suggested Scoring

Use the Economic Portfolio Guide Scoring Tool provided on page 8 to assess students' work. There are 25 total points possible.

Preparation Time

15 min.

Assessment Time

15 min.

Economic Portfolio Guide

Sustaining Economies and the Earth's Resources
 Alternative Unit Assessment Matrix | Page 7 of 7

Name: _____

Economic Portfolio Scoring Tool

Component	4 points	3 points	2 points	1 point
Content Overall	Content topic in-depth with details and examples. Subject knowledge is excellent.	Includes accurate knowledge about the topic. Subject knowledge appears to be good.	Includes accurate information about the topic but there are a few detail errors.	Content is minimal or there are several detail errors.
Content Accuracy	All content throughout the portfolio is accurate. There are no factual errors.	Most of the content is accurate, but there is one piece of information that might be inaccurate.	The content is generally accurate, but one piece of information is clearly false or inaccurate.	Content is inaccurate or contains many factual errors.
Supply and Demand	Portfolio addresses supply and demand of the good with detail and accuracy.	Portfolio addresses supply and demand of the good but not with full detail or accuracy.	Portfolio addresses supply and demand but not in detail.	Portfolio addresses supply and demand but does not explain it.
Subproducts	Portfolio addresses subproducts related to the good with detail and accuracy.	Portfolio addresses subproducts related to the good but not with full detail or accuracy.	Portfolio addresses subproducts related to the good but not in detail or with several mistakes.	Portfolio addresses subproducts but does not give a clear definition of their effects.
Regulation	Portfolio addresses regulations related to the good with detail and accuracy.	Portfolio addresses regulations related to the good but not with full detail or accuracy.	Portfolio addresses regulations related to the good but not in detail or with several mistakes.	Portfolio addresses regulations but does not describe them or their effects.
Competition	Portfolio addresses economic competition of the good with detail and accuracy.	Portfolio addresses economic competition of the good but not with full detail or accuracy.	Portfolio addresses economic competition of the good but not in detail or with several mistakes.	Portfolio addresses competition but does not describe them or their effects.
Requirements	All requirements are met or exceeded.	All requirements are met.	One requirement was not completely met.	More than one requirement was not completely met.

Provides Students and Teachers with Added References

Sustaining Economies and the Earth's Resources

Extensions & Unit Resources



Extension Ideas

Students can further their learning by investigating the use of "sustainable" practices in agriculture, energy, or other industries. Have students conduct an Internet search of organizations that use "sustainable" approaches to the development of their goods and products. The students can create a presentation or brochure that illustrates these practices. The presentation should also address: supply and demand for the good; byproducts and regulations related to the good; and national or international competition for the good.

Another extension activity involves assigning students to research that compares fisheries in developing and developed countries. Students research the supply and demand of fish in a developing country, including fish typically imported and exported. Ask students to investigate whether or not the country has any regulations in place, whether they practice sustainable fishing, or whether they have invested in aquaculture. Each student can then report on their country to the class.

Resources for Students

California Department of Conservation. "Division of Land Resource Protection." <http://www.conservation.ca.gov/dlrp/Pages/Index.aspx>

California Department of Conservation. "Oil, Gas and Geothermal—About Us." <http://www.conservation.ca.gov/dog/Pages/aboutUs.aspx>

CIA. "The World Factbook." <https://www.cia.gov/library/publications/the-world-factbook/>

Environmental Literacy Council. "Supply & Demand: How Markets Work." <http://www.envirliteracy.org/article.php/1310.html>

Kurlansky, Mark. *Cod: A Biography of the Fish That Changed the World*. New York: Penguin Books, 1997.

Monterey Bay Aquarium. "Fishing Methods." http://www.mbayaq.org/cr/cr_seafoodwatch/sfw_gear.aspx

National Marine Fisheries Service. "Fish Watch: U. S. Seafood Facts." NOAA. <http://www.nmfs.noaa.gov/fishwatch/#>

Weber, Michael L., and Burr Heneman. *The Online Guide to California's Marine Life Management Act*. California Fish and Game Commission. <http://www.fgc.ca.gov/mlma/introduction.html>

Wild Chronicles. DVD. Segments: 125c "Zeb Hogan," 140c "Croatia Kayaking," and 224d "Bluefin Tuna." National Geographic Video.

Worldwatch Institute. "Worldwatch Reports and Papers." <http://www.worldwatch.org/taxonomy/term/40>

References for Teachers

American University. "The Trade & Environment Database (TED)." <http://www.american.edu/TED/ted.htm>

Cooper, Mary H. "Threatened Fisheries." *The CQ Researcher* 27 (August 2, 2002): 617–647.

Department of Geology, University of California, Davis. "Fishing and Overfishing." <http://www.geology.ucdavis.edu/~summer/teaching/gol11600/overfishing.html#OverfishCalif>

Environmental Literacy Council. www.envirliteracy.org

Food and Agriculture Organization of the United Nations (FAO). "Fisheries and Aquaculture Department." <http://www.fao.org/fishery/en>

Ingmanson, D. E., and W. Wallace. *Oceanography: An Introduction*. Belmont, CA: Wadsworth Publishing, 1989.

Kurlansky, Mark. *Cod: A Biography of the Fish That Changed the World*. New York: Penguin Books, 1997.

McGinn, Anne Platt. "Rocking the Boat: Conserving Fisheries and Protecting Jobs." Worldwatch Institute, 1998. <http://www.worldwatch.org/system/files/IWP142.pdf>

National Marine Fisheries Service: Office of Science and Technology. "Fisheries of the United States 2006." NOAA. http://www.st.nmfs.noaa.gov/st1/fus/fus06/fus_2006.pdf

National Marine Fisheries Service: Office of Science & Technology. "International Fisheries Organizations." NOAA. www.st.nmfs.noaa.gov/st1/International_National_Organizations.html

PBS Online. "Empty Oceans, Empty Nets: Alaskan Halibut." <http://www.pbs.org/emptyoceans/oon/halibut/casestudy.html>

Sumaila, U. R., A. Khan, R. Watson, G. Munro, D. Zeller, N. Baron, and D. Pauly. "The World Trade Organization and Global Fisheries Sustainability." *Fisheries Research* 88 (2007): 1–4.

Weeks, Jennifer. "Fish Farming." *The CQ Researcher* 27 (July 27, 2007): 625–648.

Instructional Support

The EEI curriculum lends itself to a wide variety of instructional connections to practices, such as outdoor education, field studies, community-based activities, and service-learning. Many agencies, institutions, and organizations throughout California have identified themselves as providing programs and materials that can be used in conjunction with this unit. Links to these resources are available at: <http://www.calepa.ca.gov/Education/EEI/Curriculum/Support.htm>



Sample Extension Resource



[Ocean Issues](#)

[Wild Seafood](#)

[Aquaculture](#)

[Seafood Report](#)

[Fishing & Farming Methods](#)

[What Consumers Can Do](#)

[What Businesses Can Do](#)

[Seafood Recommendations](#)

[What's New](#)

[Conservation Outreach Partners](#)

[Resources](#)

[Sustainable Recipes](#)

Fishing & Farming Methods

HOW WE FISH

Fishermen use a wide range of gear to land their catch. Every type has its own effects on the ocean. By selecting the right gear for the right job, the fishing industry can help minimize its impact on the environment.

[Pole/Troll](#)

[Purse Seining](#)

[Gillnetting](#)

[Longlining](#)

[Trawls and Dredges](#)

[Traps and Pots](#)

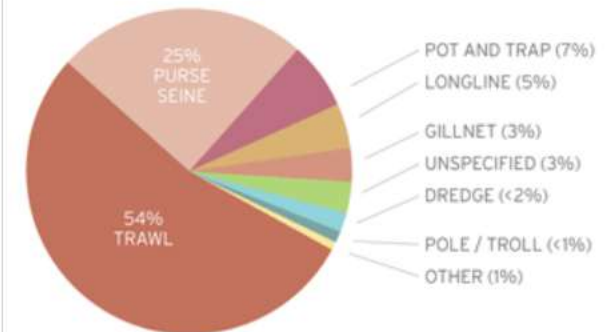
[Harpooning](#)

[Trolling](#)

HOW WE FARM FISH

In the next decade, the majority of fish we eat will be farm-raised, not wild. Global aquaculture includes over 100 species, farmed in everything from traditional earthen ponds to high-tech tank systems. Each farming

TYPES OF FISHING GEAR USED IN U.S. FISHERIES



Most seafood in the U.S. is caught using nets dragged behind boats, such as purse seines, trawls and dredges (NMFS, 2009).

Quick Look at an EEI Lesson

Learning Objective

Provide contemporary of the effects of change and/or demand on the scarcity, price, and quality of particular ecosystem and ecosystem services provided by natural systems.

Economic Forces

This lesson initiates a discussion about the economic price, scarcity, and price, to gauge how much students know about a free market in general, and to get them thinking about the systems and the market.

Students participate in a simulation in which they are either consumers or producers in the market for a particular product—an MP3 player. Students are given “limits” as to how much they can (and would) spend on producing

or making available such a device, or how much they would spend to purchase one. Students’ choices as consumers and producers are graphed during the simulation, and the class explores general trends in price and supply as demand changes.

Key Vocabulary

Consumer: In ecology, an organism that obtains energy or matter from a natural system, such as by eating other organisms. In economics, one who uses goods or services produced by natural or human social systems.

Economic goods: Tangible materials, produced with labor and capital, which have a monetary value as products.

Law of Demand: A principle that states the higher the price, the less consumer demand there will be for a good or service or, inversely, as the price of good or service decreases the consumer demand will increase.

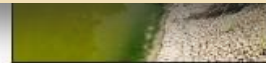
Background

Scarcity is what drives our economic transactions. If all the resources we

Law of Supply: A principle that states that as the price of a good or service increases, producers will make greater amounts of the good available.

Producer: In ecology, an organism (plant or alga) that converts light energy to chemical energy stored in carbohydrates. In economics, someone who cultivates or develops goods.

Scarcity: The condition wherein there is an insufficient supply or amount of something needed, such as goods or services.



Poluted river

a good or service or, inversely, as the price of good or service decreases the consumer demand will increase.

Quick Look at an EEI Lesson

Answer Key and Sample Answers

Economics Praxis
Lesson 1 | Page 7 of 7

Name: _____

Instructions: Use the terms in the Word Bank to complete the sentences below. (2 points each)

Word Bank

consumer	equilibrium	money	producer
demand	law of demand	market	scarcity
economic goods	law of supply	price	supply

- When I want to buy more things than I have the money to pay for, I am experiencing scarcity.
- Economic goods are materials that have a monetary value as products.
- When I buy something, I act as a consumer.
- Supply refers to the amount of a good or service that is available.
- Demand refers to the level of desire for a particular good at a given time and at a given price.
- A producer is someone who makes or cultivates goods that people buy or trade.
- The monetary value of a good or service is called its price.
- According to the law of supply, as the price of a good increases, the supply will increase.
- According to the law of demand, as the price of a good decreases, the demand for that good increases.

Key Unit Vocabulary

Lesson 1 | page 1 of 2

Aquaculture: The farming of freshwater or marine plants, algae, fish, and shellfish.

Bycatch: The fish or other marine organisms that are not the target species for fishermen but are accidentally caught in nets.

Byproduct: Something, such as waste materials or chemicals, produced when something else is manufactured or consumed.

Commodity: Goods, such as grain, livestock, and minerals (including oil), that are bought and sold.

Competition: In ecology, the struggle between organisms for limited resources. In economics, individuals or groups striving for a greater share of the market to sell or buy goods and services.

Producer: In ecology, an organism that obtains energy from a natural system, such as a plant or animal, who

Law of Demand: A principle that states that, all else being equal, the price, the less cost of a good or service will increase.

Law of Supply: A principle that states that, all else being equal, the price of a good or service will make greater amount.

Moratorium: Suspend or prohibit a waiting period set by a government.

Natural system: The processes, and cycles, as well as the interactions and their environment.

Producer: In ecology, an organism that obtains energy from a natural system, such as a plant or animal, who cultivates or develops a product.

Word Bank

consumer	equilibrium	money	producer
demand	law of demand	market	scarcity
economic goods	law of supply	price	supply

Quick Look at an EEI Lesson



Toolbox



Summary of Activities

Students participate in a market simulation and graph supply and demand to discuss how price and scarcity affect the production and consumption of goods. Students then brainstorm other factors that can affect the supply of and demand for commodities.



Instructional Support

See Extensions & Unit Resources, pages 28–29.

Prerequisite Knowledge



- Students should know about:**
- cost-benefit analyses and application of basic economic indicators to analyze the aggregate economic behavior of the U.S. economy.
 - the causal relationship between scarcity and the need for choices.
- Students should be able to:**
- create and interpret a multiple-line graph.
 - identify trends in data.

Advanced Preparation



- Gather and prepare Materials Needed:**
- Teacher's Masters:
 - **Supply and Demand Cards:** cut apart the cards and separate the "Producer" cards from the "Consumer" cards, creating two piles. Shuffle the cards in each pile and stack both piles, face down, on a desk. (Make sure you know which stack is which.)
- Gather and prepare A-V Materials.**
- Create Supply and Demand Graph Template:**
- On chart paper, create a **Supply and Demand Graph Template** based on the sample below Step 2 of the Procedures.
 - Post the **Supply and Demand Graph Template** in a location visible to all students and accessible during the lesson.

Materials Needed



- A-V Equipment:**
- projection system, screen
- Class Supplies:**
- chart paper
 - colored markers
 - pencils or pens
 - scissors
 - tape or thumbtacks
 - yard or meter stick
- Student Workbook:**
- Key Unit Vocabulary, pages 1–3
 - Economic Forces, pages 4–5
- Teacher's Masters:**
- Supply and Demand Cards, pages 2–6

Audio-Visual Materials



- Visual Aids:**
- Supply and Demand Activity, Visual Aid #1
 - Increase in Demand, Visual Aid #2
 - Decrease in Demand, Visual Aid #3
 - Increase in Supply, Visual Aid #4
 - Decrease in Supply, Visual Aid #5

Duration



Preparation Time
30 min.

Instructional Time
50 min.



Safety Notes
None

Quick Look at an EEI Lesson

Procedures

Vocabulary Development

Redistribute the students' individual **Student Workbooks** and use the **Key Unit Vocabulary** to introduce new words to students as appropriate.

Step 1

Tell students to imagine that they have been given an amount of money to invest in the market (say, \$1000). They are allowed to invest this money in anything that is traded on the market, but they have to invest it all in the same good or product, and that good or product must be a commodity.

Ask students what natural goods or resources they know about that have a high market value (*Answers should include petroleum, gold, uranium, and other minerals.*) Show or inform students about the latest commodities trading during the day, using **Data on Commodities Pricing**. Ask students to note which of the commodities on the list are renewable and which are nonrenewable resources. (*Answers will vary; depending on the commodities mentioned that day, but in general the fuels under "Energy" are nonrenewables, as are the materials under "Metals." The animals and plant products under "Livestock and Meat," "Grains," and "Other Commodities" are renewables.*)

Explain to students that an interesting point about commodities trading is that it is based on what is going to happen in the future. Tell students that the price of the goods being exchanged here is not based on what they cost to produce, but based on the estimated supply and demand for them in the future. For example, if the winter in the southern United States is expected to be very cold, that will affect the upcoming orange crop (supply). If the demand for orange juice remains the same, then the orange crop—whatever is left of it—will be in limited supply to meet the demand, and the growers of oranges charge more. This will cause the price for oranges on the commodities exchange to rise. The same goes for oil and other fuels—if the supply is expected to change, the "future" price will go up or down, depending on whether demand changes or stays the same. Tell students that this is why commodities trading is sometimes called "futures" trading.

Step 2

Tell students that they are about to read an article that shows how complex the market can be when it comes to goods and natural resources. Distribute a **Student Edition** to each student. Tell them to turn to **California Connections: Fishing the World's Oceans** (Student Edition, pages 2–5) and instruct students to read it independently, or read the article together as a class.

When done reading, review with students the effects of changes in supply, demand, price, and regulation on the global fish market using what was presented in the article. Ask students

- What did you learn about the supply of fish? (*Overfishing, pollution, and habitat destruction have all led to a decline in supply; scarcity and higher prices result from diminished supply.*)
- What did you learn from about the demand for fish? (*Fish is a key source of protein for many countries; fish is being consumed at higher rates than ever before by China and U.S.*)
- What did you learn about scarcity in the fishing industry? (*Scarcity is the limit of a good or resource; the fishing industry has limited supplies of fish. As this resource is depleted, scarcity causes prices to increase.*)
- What did you learn about competition in the fishing industry? (*Countries are searching for better fishing grounds since many traditional fishing grounds are depleted, competing with one another for this profitable resource.*)
- What did you learn about prices of fish? (*As supplies of fish decrease, they become more scarce, causing prices to rise. Demand is currently high for fish so consumers continue to buy the product.*)
- What are some of the regulations that govern the fishing industry? (*Limiting fishing seasons, limiting types of fishing activities, using a quota system, and proper licensing of vessels.*)



AGENDA



- **Part I – Introduction and Instructions**
Goals and Descriptions

- **Part II – Quick Tour of High School Curriculum**
Building 21st Century Skills

- **Part III – Walk Through an EEI Unit**
Structure and Components

- **Part IV - Conclusion**

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CA .GOV California Environmental Protection Agency
Education and the Environment Initiative

About EEI **Access EEI** Get Trained Surveys

Why Teach EEI What Is Taught In EEI How To Teach EEI EEI In Action History Of EEI Continuing Education Units EEI at Your School

EEI at Your School

Why Teach EEI

Welcome to the California Education and the

Use the EEI Curriculum to:



About EEI

Access EEI

Get Trained

Surveys

Why Teach EEI

What Is Taught In EEI

How To Teach EEI

EEI In Action

History Of EEI

Continuing Education Units

EEI at Your School

Curriculum Components

Using My Curriculum

Going Green With The EEI

Access Curriculum

Access the EEI Curriculum

Access all 85 EEI Curriculum units here! Check the boxes within the categories on the left to narrow the results displayed on the right.

The Teacher's Editions are password protected. Complete an online [request form](#) to obtain a password. Once submitted, you'll receive an email with your password, which can be used for all units.

Grade Level/Course

- Kindergarten
- First Grade
- Second Grade
- Third Grade
- Fourth Grade
- Fifth Grade
- Sixth Grade
- Seventh Grade
- Eighth Grade
- Earth Science
- Biology/Life Science
- World History
- U.S. History
- Economics
- Principles of American Democracy

Environmental Topic

- Air
- Climate Change

Your Selections:

[\[clear all selections \]](#)

[Earth Science]



Title: The Greenhouse Effect on Natural Systems

Description: Explore Earth's natural "greenhouse effect" and how this mechanism creates a climate that sustains life.

[Click for PDF List](#)



Title: Ocean Currents and Natural Systems

Description: This unit guides students in examining the correlation between the physical, chemical, and biological world.

[Click for PDF List](#)



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