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The World Around us
Europe

Location and Boundaries

Europe is the sixth largest continent in the world. Its total area is about 10,355,000 square kilometers (km^2) with a population of 762 million as of the year 2000. It is comprised of 46 countries and territories.

Boundaries

Europe, as a continent, is known to be a large peninsula since it is surrounded by water on three sides. The Ural Mountains in the east of Europe separate it from Asia.

Look at the following map and then fill in the blanks below:

Europe is surrounded by:

The _____ Sea and the _____ Sea from the South.

The _____ Sea from the southeast.

The _____ Ocean in the West.

The _____ Ocean; the _____ Sea and the _____ Sea in the North.

The _____ Mountains in the East.


Topography Map of Europe
Ural Mountains
Caspian Sea
Black Sea
Mediterranean Sea
Baltic Sea
North Sea
Atlantic Ocean

Landforms

Europe has diverse landforms, which include mountains, plains and plateaus.

Land form Map of Europe

Mountains

There are many mountains and mountain chains in Europe, such as:

• The Ural Mountains in the east, which are 2,540 kilometers (km) long. These mountains are the natural border between Europe and Asia.

• The Alps, which link France, Austria, Italy, Switzerland and Germany.

The highest peak of the Alps is Mount Black, located in Switzerland.

• The Kjolen Mountains link all of Norway and part of Sweden, whereas the Balkan Mountains link Bulgaria and Serbia.

• The Carpathian Mountains, which extend south through the Ukraine and into Romania, are the natural border between Slovakia and southern Poland.

• The Caucasus Mountains extend from the Black Sea to the Caspian Sea.

• The Pyrenees Mountains are a natural border between France and Spain.

Plains

Plains can be found throughout Europe. The most important plains are:

• The Great Hungarian Plain, which is surrounded by mountains.

• The North European Plain, which extends from the Alps in the south to the Baltic Sea in the north and from southern Denmark, Finland and Norway in the west to the Russian Federation in the East for almost 4,000 km.

Plateaus

Meseta's central plateau covers nearly half of Spain, and the Massif central plateau is spread throughout the southeastern part of France.

Did You Know?

- Europe and Asia are not separate pieces of land; together they are referred to as Eurasia.

- The highest point in Europe is Mount Elbrus in European Russia. It is 5,633 meters (m) high, whereas the lowest point is on the surface of the Caspian Sea at 28 m below sea level.

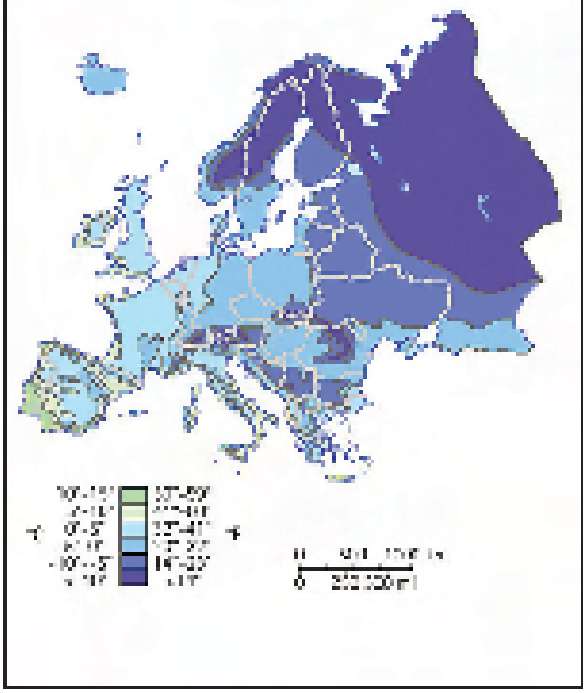
Climate and Rivers

Climate is the pattern of weather over a long period of time.

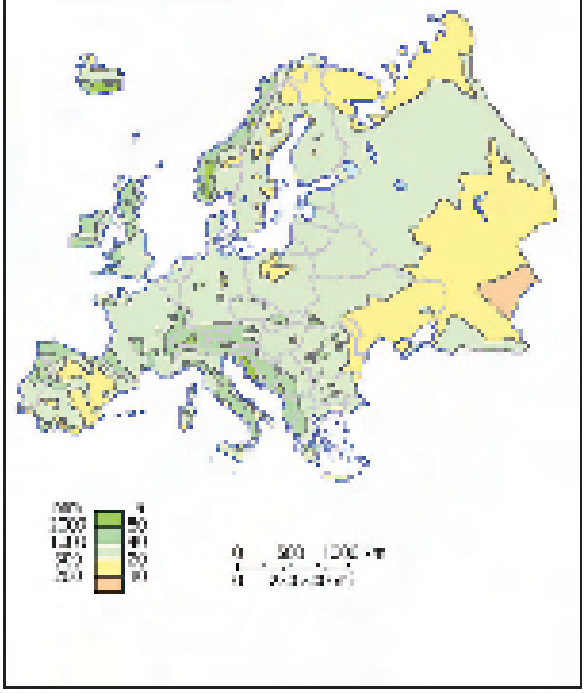
The most important elements in climate are rainfall and temperature.

Europe has a diverse climate, especially with respect to rainfall and temperature.

European Temperatures (January)



Rainfall Map of Europe



How does temperature change from the south to the north?

_____

How does rainfall change from the south to the north?

_____

In general, Northern Europe has longer, colder winters and shorter, cooler summers than Southern Europe. In addition, winters are longer and colder and summers are shorter and hotter in the east than in the west.

For example, Glasgow, Scotland, has an average temperature of 3° Celcius (C) in January. But Moscow, which lies at the same latitude, has an average January temperature of -10°C.

Most of Europe receives 20 to 60 inches (50 to 150 centimeters [cm]) of precipitation each year.

There are many rivers in Europe, and the largest rivers in Europe are:

- The Volga, which drains into the Caspian Sea.
- The Danube and the Dnieper, which drain into the Black Sea.
- The Rhine and the Elbe, which drain into the North Sea.
- The Vistula, which drains into the Baltic Sea.

• The Loire and the Tagus, which drain into the Atlantic Ocean.

• The Rhone, which drains into the Mediterranean Sea.

Did You Know?

Volga is the longest river in Europe with a total length of 3,690 km.

The Economy of Europe

Europe has long been a world leader in economic activities. It acquired technological superiority over the rest of the world in the 19th century and is still strong today.

Mining and Manufacturing

Many people settled in the British Midlands, the Ruhr District of Germany and the Ukraine to work in factories, because substantial amounts of coal, iron ore, copper, manganese, nickel and potash are extracted from these areas, as well as the production of petroleum and natural gas from the offshore fields in the North Sea.

Explain why?
Many people settled in the industrial cities of Europe.

_____

_____

_____

_____

_____

The early centers of manufacturing in Europe were northern and central England, the Ruhr and Saxony regions of Germany, northern France, Silesia in Poland, Italy and the Ukraine.

These centers produce iron, steel, metals, textiles, clothing, ships, vehicles and railroad equipment, in addition to chemicals, electronics and high-technology items.

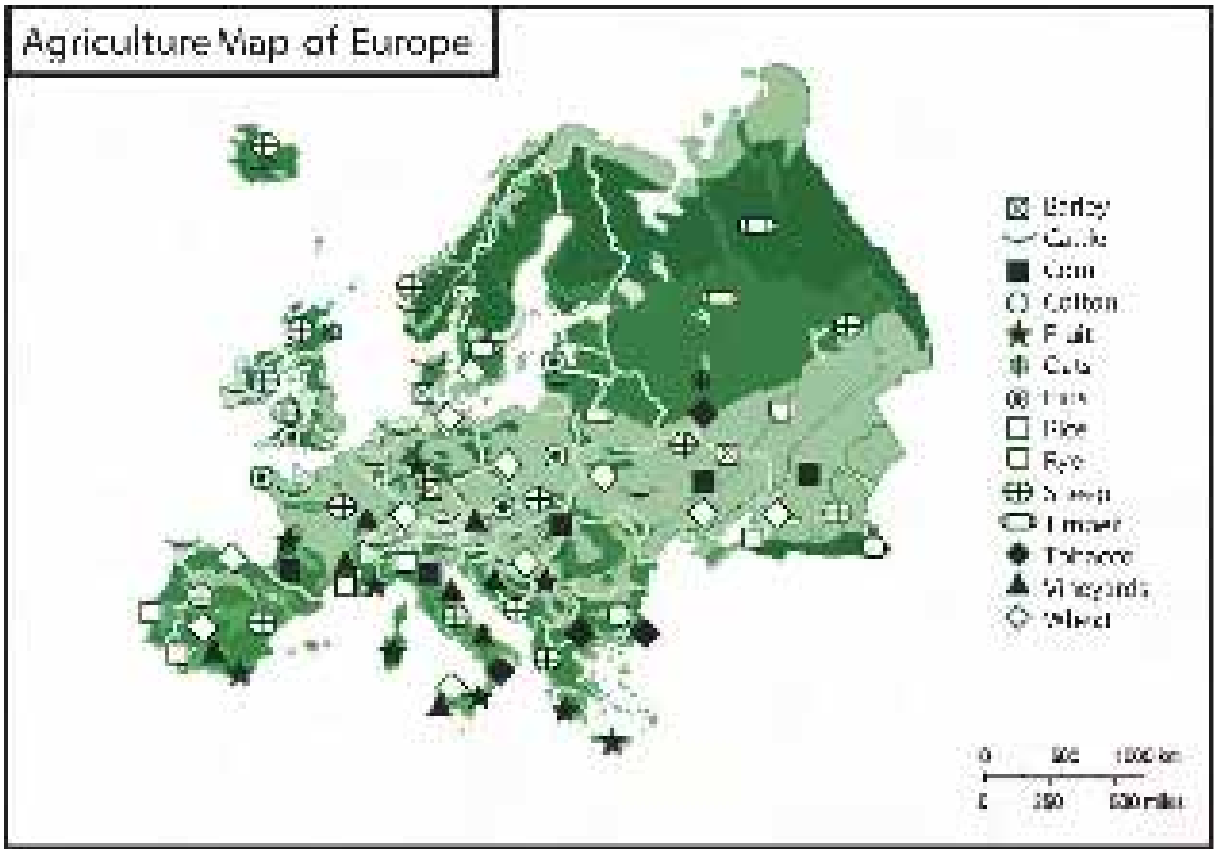
Did You Know?

The G8 is a group of the most developed industrial countries in the world. It is comprised of the United States of America, Germany, Japan, France, Italy, the United Kingdom, Canada and Russia.

Farming and Raising Livestock

Europeans grow wheat, barley, oats, corn, potatoes, peas and sugar beets. They raise beef, cattle, sheep, goats, pigs and poultry in order to produce dairy products, eggs and meat.

Farming in Europe is known as mixed farming, since a variety of crops and animal products are produced in the same region with the use of technology.



The Mediterranean area in the south of Europe produces wheat, olives, grapes and citrus fruits.

Agriculture makes a great contribution to the national economy of these countries.

In Eastern Europe, crops such as potatoes and wheat grow in abundance, whereas dairying and meat production are major activities in Western Europe.

Forestry plays an important role in Europe. The main sources of forest products, such as pulpwood and wood for construction are found in the northern forests that extend from Norway through northern European Russia.

Norway, Denmark, Russia, Spain, Britain and Poland are known to be the major fishing nations in Europe.

The History of the European Union

Europe suffered from two world wars during the twentieth century.

These wars resulted in the deaths of millions of people. After the Second World War, the Europeans decided to overcome conflict by unifying their states' governments in one council to provide peace and harmony for their people.

The French foreign minister Robert Schuman was the first to put forward the idea of establishing the European Union on May 9, 1950. Ever since, May 9 is celebrated as the European Council's founding.

Did You Know?

- The First World War took place between 1914 and 1918. The Second World War took place between 1939 and 1945.

- The First and Second World Wars were called world wars because the battles took place in more than one country and many countries took sides and became involved.

Six countries established the European Council; they were Belgium, Germany, France, Italy, Luxembourg and the Netherlands. In 1973, the United Kingdom of Great Britain and Northern Ireland, Denmark and Ireland joined, followed by Greece in 1981, and Spain and Portugal in 1986. The reunification of Germany brought together East and West Germany.

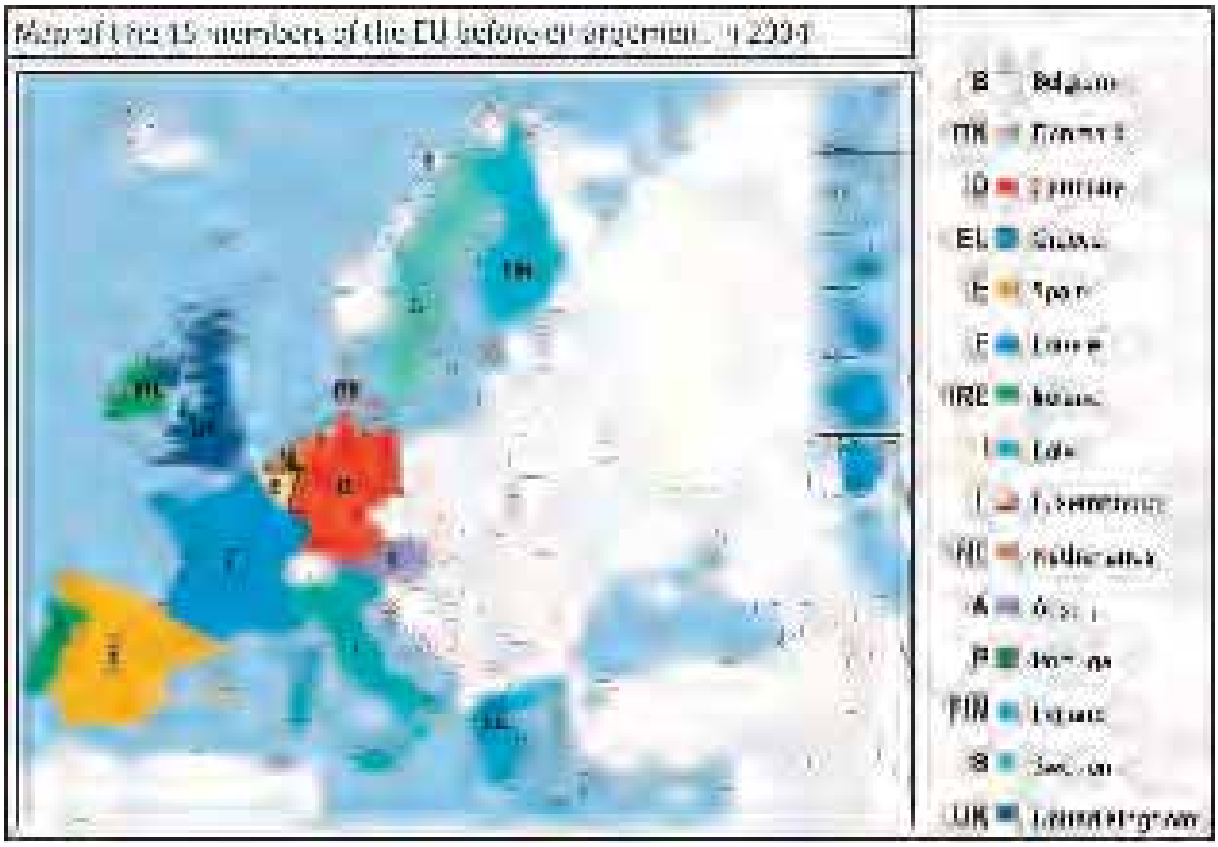
In the year 1992, the Maastricht Treaty gave new powers and responsibilities to the European Community's constitution and introduced new forms of cooperation, which resulted in the creation of the European Council as we know it today.

Did You Know?

Maastricht is the capital of the province of Limburg in the southeastern part of the Netherlands.

In the year 1995, the European Council was enlarged to include Austria, Finland and Sweden, bringing to 15 the number of countries comprising the European Council.

In 2002, 12 European countries began using Euro banknotes and coins.



Thereafter, the countries of Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovenia and Slovakia joined the European Union in 2004. Bulgaria and Romania joined the European Union in January 2007.

In 2009, The European Union is composed of 27 sovereign Member States: Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Sweden, and the United Kingdom.

EU member states have a standardised passport design given in the official language of the country.

The number of stars on the flag does not refer to the number of the member States in the European Union. The 12 stars in a circle symbolize the ideal of unity, solidarity and harmony among the people of Europe, since the number 12 traditionally is a symbol of perfection, completeness and unity in European culture.

Why does the European flag have 12 stars?

_____

Did You Know?

The European Union's national anthem comes from the Ninth Symphony of Beethoven. There are no words used, only music.

The European Union's Political System

The European Union's political system is comprised of three branches: executive, legislative and judicial.

Executive Branch

The European Council brings together the heads of State, the government and the President of the European Commission. They meet at least twice a year.

The European Commission is composed of 25 members, one representative from each member country. The headquarters of the European Commission is located in Brussels in Belgium.

The president of the European Commission is designated by member governments, and then he chooses the other Commission members. The European parliament confirms the entire Commission for a five-year term.

The last elections were held in November 2009.

Who is the President of the European Commission today?

_____

The European Commission also meets twice a year. Its aims are to provide the impetus to work on the major political issues related to European integration and to issue general policy guidelines.

Legislative Branch

The European parliament has 732 seats allocated among member States by proportion to population.

Members are elected for a five-year term. The last elections were held in June 2004.

The European parliament meets in Strasbourg, France.

The Council of the European Union, which consists of 25 member-state ministers totaling 321 votes, is the main decision-making body of the European Union.

Judicial Branch

The Court of Justice of the European communities ensures that the treaties are interpreted and applied correctly; 25 justices, one from each member state, are appointed for a six-year term.

The Court of Justice of the European communities meets in Luxembourg.

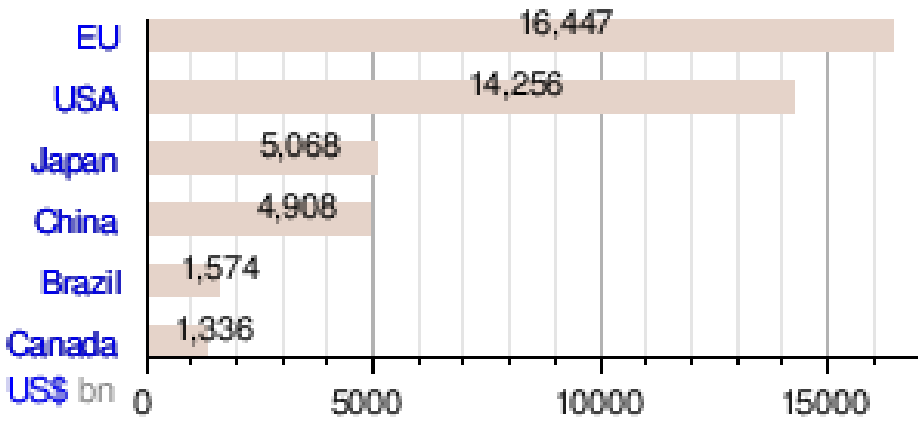
The European Union's Achievements

With its enlargement from 2004 to 2009, the European Union is grasping a historic opportunity by unifying a once-divided continent and creating a peaceful coexistence in a stable and democratic Europe.

This enlargement will also create a single market of nearly half a billion consumers with excellent growth potential and increasing prosperity since Europeans have access to high technology and have a high standard of living.

The European Union is now the world's leading exporter of goods (over 985 billion Euros in 2001), which makes up almost one fifth of the total world trade.

The EU and the next five largest economies in the world by nominal GDP in 2009.



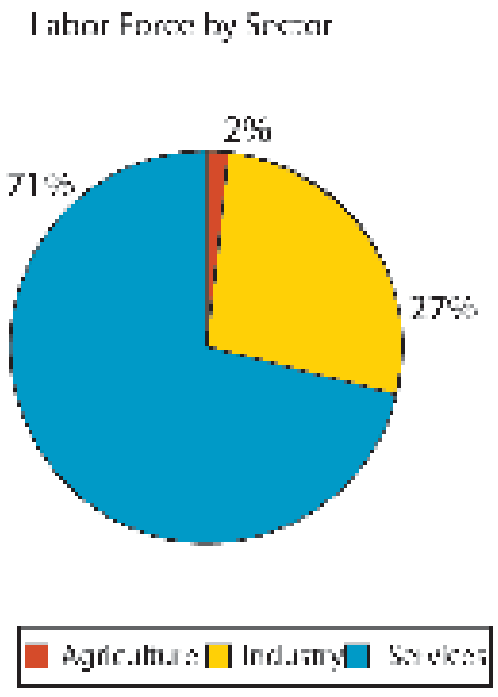
It is also the world's leading exporter of services (over 307 billion Euro in 2001), which makes up nearly a quarter of the total world services, including tourism, banking, insurance and transport.

Did You Know?

Between 1990 and 2000, the European Union's total trade with the rest of the world doubled in value.

Answer the following questions using the graph:

In the year 2002, 60% of the workforce in Europe were working in the service sectors compared with 20% in industry and only 4% in agriculture.



1. List the working sectors in order from the largest to the smallest.

_____

_____

2. Why do you think that about one fifth of the workforce are working in industry?

_____

_____

3. Where do you think these people live? *Why?*

_____

4. Is there a relationship between producing services and the standard of living of the Europeans? *Explain how?*

_____

_____

What are the requirements of any European country to be able to join the European Union?

A country can join the European Union if it has a stable system of democracy and government institutions that ensure the rule of law and the respect of human rights, as well as a functioning and competitive market economy and the commitment to unity. However, there is a lot of diversity among the member States.

GLOSSARY CHAPTER (2)

• **Ural Mountains:** It is a chain of mountains located to the east of Europe that separates it from Asia.

• **G 8:** It is the group of the most developed industrial countries in the world; it is comprised of the United States of America, Canada, Germany, France, Italy, The United Kingdom, Japan, and Russia.

Chapter 3

Living Together

OPEC and OAPEC

Lesson 1: What is OPEC?

Lesson 2: OPEC Structure

Lesson 3: How does OPEC function?

Lesson 4: Organization of Arab Petroleum Exporting Countries

Lesson 5: OAPEC’s Activities

Lesson 6: OAPEC’s Arab and International Relations

What is OPEC?

The Organization of the Petroleum Exporting Countries (OPEC) is an intergovernmental organization of 13 oil-exporting nations. OPEC coordinates and unifies the petroleum policies of its Member Countries. It was founded on September 1960 in Baghdad, Iraq, by five oil-producing countries: Iran, Iraq, Kuwait, Saudi Arabia and Venezuela.These countries are referred to as the Founder Members of the Organization. OPEC then was registered with the United Nations Secretariat on November 6th, 1962.

OPEC headquarters in Vienna, Austria

The goals of OPEC

The main goal of OPEC is to stabilize oil prices by eliminating unnecessary fluctuations. OPEC aims to ensure that the interests of oil-producing nations are taken into consideration. It oversees a regular supply of petroleum to consuming nations, and a return on capital to those investing in the petroleum industry.

The members of OPEC

Any country with a substantial net export of crude petroleum may become a Full Member of the organization, if accepted by Members. Membership is divided into three categories: Founder Member, Full Member and Associate Member.

Founder Members of the organization are those countries which were represented at OPEC's first Conference, held in Baghdad in 1960 and which signed the original agreement establishing OPEC.

Full Members are the Founder Members, plus those countries whose applications for membership have been accepted by the Conference: Venezuela, Algeria, Libya, Nigeria, Qatar, Saudi Arabia, Iran, Iraq, Kuwait, UAE and Indonesia.

An Associate Member is a country which does not qualify for full membership, but which is admitted under special conditions prescribed by the Conference.

OPEC Structure

Heads of Delegation

The Heads of Delegation to OPEC are normally the Ministers of Oil, Mines and Energy of Member Countries. They are the official representatives of each Member Country to the OPEC Conference.

Board of Governors

The Board of Governors directs the management of the organization, implements resolutions, draws up the budget and submits it to the Conference for approval.

It also nominates the Auditor of the organization for a duration of one year and approves the appointment of Directors of Divisions and Heads of Departments, upon nomination by Member Countries.

The first Board of Governors who met in Baghdad

The OPEC Secretariat

The OPEC Secretariat functions as the headquarters of OPEC. This position is responsible for carrying out the executive functions of the organization. The Secretariat consists of the Office of the Secretary General, the Research Division, and the Petroleum Market Analysis, Energy Studies, Data Services, and Administration and Human Resources Departments. The Secretariat was originally established in Geneva, Switzerland, in 1961, but was moved to Vienna, Austria, in 1965.

The Economic Commission Board

The Economic Commission Board (ECB) is composed of National Representatives from Member Countries, the Secretary General and a Commission Coordinator. It is a specialized body operating within the framework of the Secretariat. It assists the organization in promoting stability in the international oil market.

The Ministerial Monitoring Sub-Committee

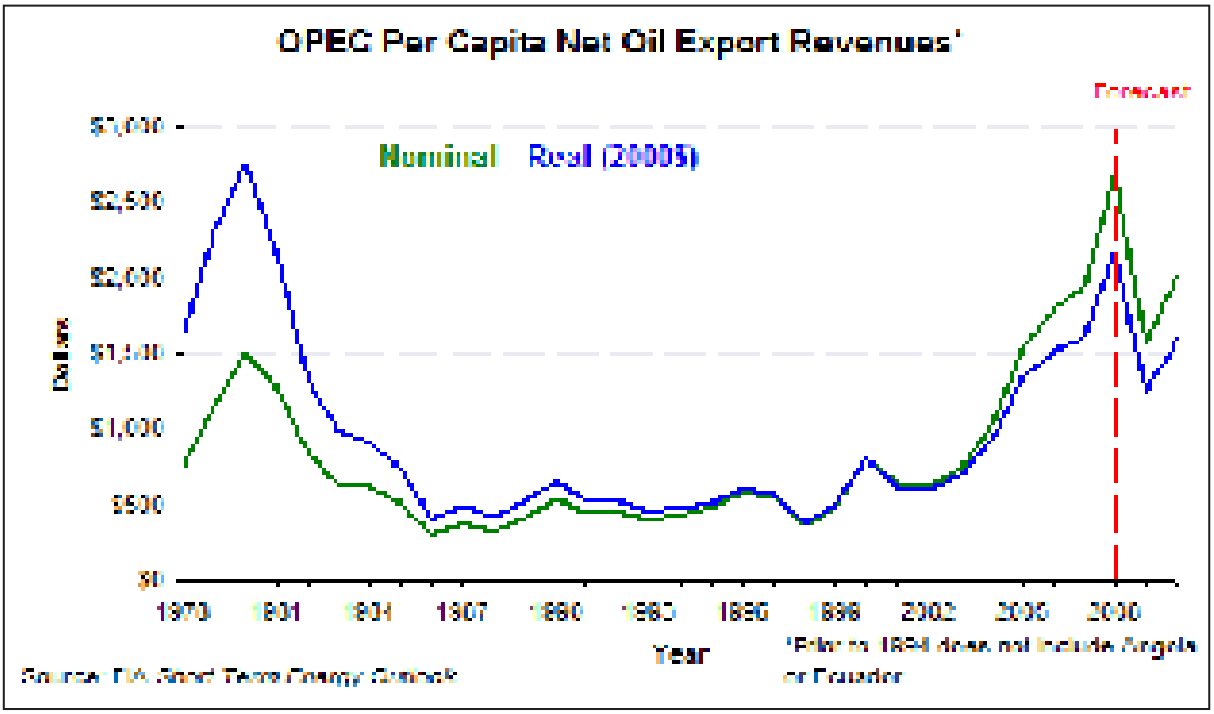
The Ministerial Monitoring Sub-Committee (MMSC) was established in February 1993 and was given the mandate to monitor oil production and exports by Member Countries. It comprises three Heads of Delegation and the Secretary General.

The OPEC Conference

The Conference is the supreme authority of the organization. The Conference generally meets twice a year - in March and September - and in Extraordinary Meetings whenever required. It is responsible for the formulation of the general policy of the organization and the determination of the appropriate ways and means of its implementation.

The Conference also decides on applications for membership to the organization. It approves the appointment of Governors from each Member Country and elects the Chairman of the Board.

The Conference directs the Board to submit reports or make recommendations on any matter of interest to the organization, and considers and decides upon the organization's budget.



How does OPEC function?

The OPEC Member Countries coordinate their oil production policies in order to help stabilize the oil market and to help oil producers achieve a reasonable rate of return on their investments. This policy is also designed to ensure that oil consumers continue to receive stable supplies of oil.

The Heads of Delegation meet at the OPEC Conference. They consider the current oil market situation and the economic growth rates and petroleum demand and supply. The Heads consider raising or lowering collective oil production in order to maintain stable prices and steady supplies to consumers.

Did You Know?

The OPEC Secretariat is a permanent inter-governmental body which has been based in Vienna since 1965. The official language of the OPEC Secretariat is English.

The Ministers of Energy and Hydrocarbon Affairs meet twice a year to review the status of the international oil market and to agree upon appropriate actions which will promote stability in the oil market.

Oil production quotas:

In order to pursue stability in the petroleum market, OPEC Members respond to market developments by coordinating their petroleum policies. OPEC Member Countries produce about 40 percent of the world's crude oil and 15 percent of its natural gas. However, OPEC's oil exports represent about 55 percent of the oil traded internationally. Therefore, OPEC can have a strong influence on the oil market.

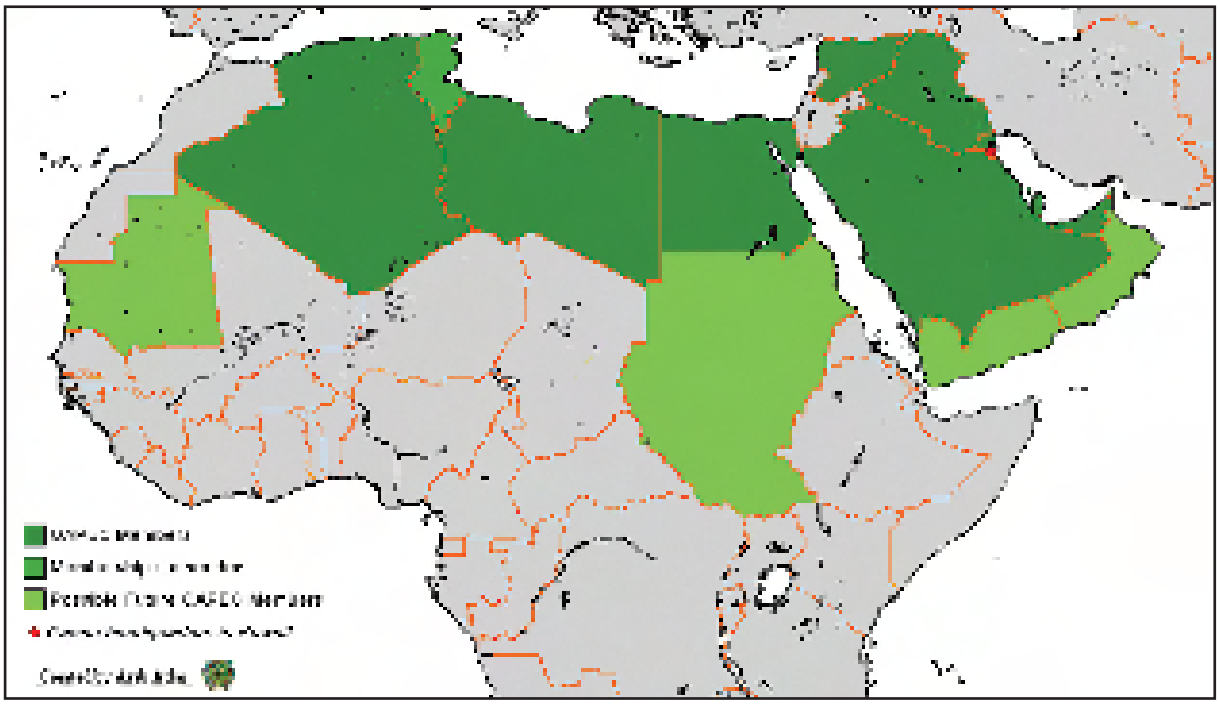
If demand grows, or some oil producers produce less oil, OPEC can increase its oil production to prevent a sudden rise in prices or shortfall in supply. OPEC might also reduce its oil production in response to market conditions as a means of countering falling prices.

The Gulf War in 2003 and Hurricanes Katrina and Rita in 2005 demonstrated OPEC's ability to keep the market well-supplied in the face of natural disasters and geopolitical crises.

According to current estimates, more than three-quarters of the world's oil reserves are located in OPEC countries. The bulk of OPEC oil reserves is located in the Middle East, with Saudi Arabia, Iran and Iraq contributing 55% to the OPEC total. OPEC countries have made significant contributions to their reserves in recent years by adopting best practices in the industry. As a result, OPEC proven reserves currently stand well above 900 billion barrels.

Organization of Arab Petroleum Exporting Countries

The Organization of Arab Petroleum Exporting Countries (OAPEC) is a regional inter-governmental organization concerned with the development of the petroleum industry by fostering cooperation among its members.



Map of OAPEC Members and their status

OAPEC was established on January 9, 1968, by Kuwait, Libya and Saudi Arabia. By 1982, the number rose to eleven countries: Algeria, Bahrain, Egypt, Iraq, Kuwait, Libya, Qatar, Saudi Arabia, Syria, Tunisia and United Arab Emirates.

OAPEC was originally intended to be a conservative Arab political organization. Its original aim was to control oil. Hence, OAPEC contributes to the effective use of the resources of member countries through the sponsorship of joint ventures. The organization believes in the importance of building an integrated petroleum industry. This industry is a cornerstone for future Arab economic integration.

OAPEC works through four organsations:

1. The Council of Ministers which is responsible for generating policy and directing activity.

The Council is composed of officials from each member country. The chairmanship of the Council rotates annually among the representatives in alphabetical order of their countries.

The Council convenes at least twice a year. Extraordinary sessions may be convened at the request of a member country or the Secretary General.

2. The Executive Bureau assists the Ministerial Council in supervising the Organization's affairs. It is composed of one representative from each of the member countries. The chairmanship rotates annually in the order followed by the Ministerial Council.

3. The General Secretariat plans, administers and executes the organization's activities. It is headed by the Secretary General who is also the official spokesman and legal representative of the organization and is accountable to the Council. The Secretary General may be aided by a number of Assistant Secretaries. The Secretary General directs the Secretariat and supervises all aspects of its activities.

4. The Judicial Tribunal was established in 1978. It stipulated that the Tribunal shall consist of an uneven number of judges of Arab citizenship.

OAPEC'S Activities

OAPEC's activities are guided by its Agreement. This agreement outlines:

I. Coordinating the Activities of Member Countries

The Organization promotes the exchange of information by holding international seminars. These seminars review the latest technological developments, and possible solutions to technical problems encountered in member countries.

2. Sponsoring Ventures

OAPEC has sponsored the creation of four companies and a training institute to form a solid economic foundation. These ventures are:

1. Arab Maritime Petroleum Transport Company (AMPTC) which covers marine transportation operations.

2. Arab Shipbuilding and Repair Yard Company (ASRY) covers the building, repair and maintenance of all types of ships related to the shipping of hydrocarbons.

3. Arab Petroleum Investments Corporation (APICORP). The purpose of APICORP is to finance petroleum projects.

4. Arab Petroleum Training Institute (APTI) prepares qualified instructors to provide training in the technical aspects of the oil industry. It also performes research and conducts studies related to industrial organization.

5. Arab Petroleum Services Company (APSCO). The task of APSCO is to create subsidiaries which specialize in petroleum services.

APSCO has established three subsidiaries: The Arab Drilling and Workover Company (ADWOC), The Arab Well Logging Company (AWLCO), and The Arab Geophysical Exploration Services Company (AGESCO).

OAPEC's Arab and International Relations

OAPEC endeavors to strengthen its contacts and ties with institutions inside and outside the Arab world in order to solve energy problems. It explores possibilities of cooperation among its members as well as with the net oil importing industrialized and developing countries. The Organization also fosters contacts that facilitate access to new scientific and technological developments in the field of energy.

Arab Relations

OAPEC participates in meetings sponsored by the League of Arab States, and regional conferences and seminars on a wide range of oil industry-related topics. The General Secretariat organizes seminars on the oil and gas industry.

In order to enhance cooperation among institutions, the Ministerial Council instituted the Arab Energy Conference in May 1977. Consultations with the Arab Fund for Economic and Social Development led to an agreement that the organizations jointly sponsor the Conference, ensuring the representation of all Arab countries.

OAPEC also participates in the preparation of "The Joint Arab Economic Report" with the General Secretariat of the Arab League, Arab Fund for Economic and Social Development, and the Arab Monetary Fund.

International Relations

OAPEC maintains its international contacts through the following channels:

• Participation in the international conferences such as the World Energy Congress, and the World Conference.

• Fostering relationships with universities by conducting seminars on policies affecting resources and development.

• Sponsoring the annual Oxford Energy Seminar.

• Being a founding member of the Oxford Institute for Energy Studies (OIES). The Institute's focus is on the study of economic, social, and political aspects of energy issues.

GLOSSARY CHAPTER (3)

• **OPEC:** Intergovernmental organization of 13 oil-exporting developing nations which coordinates and unifies the petroleum policies of its Member Countries.

• **Founder Members:** Countries which were represented at OPEC's first Conference.

• **Full Members:** The Founder Members, plus those countries whose applications for membership have been accepted by the Conference.

• **Associate Member:** A country which does not qualify for full membership in OPEC, but which is admitted under special conditions prescribed by the Conference.

• **OAPEC:** An Arab inter-governmental organization concerned with the development of the petroleum industry by fostering cooperation among its members.

Chapter 4

Disasters

Drought

A drought is defined as an extended period of abnormally dry weather that causes water shortages and crop damage. Droughts start when total rainfall is well below average for several months. Other signs of drought include: unusually low river flows, low groundwater and reservoir levels, very dry soil and reduced crop yields or even crop failure.

Although droughts can persist for several years, even short, intense droughts can cause significant damage and harm local economies. Droughts have a significant impact on agriculture since they can lead to desertification, food shortages and overpopulation. Droughts have created ecological and political catastrophes in places like Darfur, Chad and Somalia.

Himalayan glaciers which source Asia's biggest rivers could disappear by 2035 due to global warming. This will affect 2.4 billion people living in India, China, Pakistan, Bangladesh, Nepal and Myanmar. These places expect to experience floods followed by droughts in the coming decades.

Fields in Australia which suffer from drought conditions

Did You Know?

The United Nations estimates that an area of fertile soil the size of Ukraine is lost every year because of drought, deforestation, and climate instability.

In 2005, parts of the Amazon basin experienced the worst drought in 100 years. Research shows that the forest in its present form could survive only three years of drought which is pushing the rainforest towards a "tipping point" where it would irreversibly start to die and turn into a desert. This may lead to catastrophic consequences for the world's climate.

Causes and Consequences of Drought

Causes of Drought

Rainfall is related to air containing water vapor and atmospheric water vapor. If either of these elements is reduced, the result is a drought.

Rainfall is reduced when winds carrying air masses contain less water. Or, ridges of high pressure form in a way that prevents the development of rainfall over a certain region. Additionally, there are oceanic and atmospheric weather cycles such as the El Niño-Southern Oscillation which makes drought a recurring feature in Australia.

Human activity such as over-farming, excessive irrigation, deforestation, and erosion adversely impact the ability of the land to capture and hold water which results in drought.

Activities resulting in global climate change are expected to trigger droughts with a substantial impact on agriculture throughout the world, especially in developing countries.

Consequences of Drought

Droughts have significant environmental, agricultural, health, economic and social consequences. Drought is the main cause of famine, migration and widespread poverty. Drought can also cause:

- Dust storms in areas with desertification and erosion.
- Famine due to lack of water for irrigation.
- Habitat damage, which affects wildlife.
- Malnutrition, dehydration and related diseases.
- Human migration, resulting in displacement and refugees.
- Diminished crop growth and capacity for livestock.
- Water shortages and reduced water quality.
- War over natural resources, including water and food.

Dry earth

Causes of Drought

Drought Mitigation Strategies

• Drought monitoring - continuous observation of rainfall levels and comparisons with current usage levels can help prevent man-made drought.

• Land use - carefully planned crop rotation can help to minimize erosion and allow farmers to plant less water-dependent crops in drier years.

• Rainwater harvesting - collection and storage of rainwater from roofs.

• Recycled water - former wastewater (sewage) that has been treated and purified for reuse.

• Cloud seeding - an artificial technique used to induce rainfall.

• Desalination of sea water for irrigation or consumption.

• Water restrictions - the regulation of water use.

Floods

A flood is an overflow of water that submerges land. Floods result from overflowing water from lakes or rivers when water escapes its normal boundaries. This process endangers land areas like villages and cities. River floods occur when rivers flow out of their channels, causing damage to homes and businesses.

Types of floods

• Riverside floods are either slow or fast. The slow kind is caused by heavy rains, winds and rapid snow melt. These actions can push river channel capacity. Fast floods include flash floods from intense thunderstorms, dam collapse, landslides, or glaciers.

• Estuarine floods are caused by a combination of oceanic tidal surges and storm-force winds.

• Coastal floods are caused by severe sea storms, tsunamis or hurricanes.

• Catastrophic floods are caused by significant and unexpected events like dam breakage, earthquakes or volcanic eruptions.

• Muddy floods are generated by runoff from crop land.

Consequences of Floods

Floods cause damage to bridges, cars, buildings, sewer systems, and roadways. They also result in the death of humans and livestock from drowning or diseases. Floods also lead to the contamination of drinking water, and a shortage of food crops. Floods result in economic hardship due to declines in tourism, rebuilding costs and increased food prices.

Clean-up activities following floods often pose hazards to workers and volunteers. Potential dangers include drowning, temperature extremes, exposure to hazardous materials, fire, animal and human remains and blood. In planning for and reacting to flood disasters, managers provide workers with life jackets, heavy work gloves, safety boots and hard hats.

Flood Control

While floods disrupt human settlements and economic activities, they can bring benefits. Soil becomes more fertile due to the receipt of nutrients. Ancient communities relied on floods along the Nile River to the keep soil fertile for farming.

Flood Prevention Defenses

In order to manage flood-prone areas, countries use defenses like:

• Levees: A levee or dyke is a natural or artificial slope or wall that regulates water levels. It is usually parallel to the river or coast. Prominent levee systems exist along the Mississippi River in the United States. Levees also exist at the Rhine and Loire rivers.

A levee on the Mississippi River

• Reservoirs: A reservoir is an artificial lake used to store water. Reservoirs are often created by building sturdy dams across rivers or streams.

• Weirs: A weir is a small overflow-type dam commonly used to raise the level of a river or stream.

When defenses fail, emergency measures such as sandbags or portable inflatable tubes are used. Flooding has been addressed in Europe and the Americas with various defenses such as:

A huge mechanical barrier across the River Thames was made to protect London from flooding. The barrier is raised when the water level reaches a certain point.

A flood facility was built in Russia to protect Saint Petersburg from storm surges. It comprises eleven dams that extend for 25.4 kilometers and stand eight meters above water level.

Pittsburg floods in 1936

The Delta Works at the Oosterschelde dam in the Netherlands is the largest and most elaborate flood defense found in Europe. These works were built in response to the North Sea flood of 1953 in the southwestern part of the Netherlands.

About 35% of The New Orleans Metropolitan Area, which sits below sea level, is protected by hundreds of miles of levees and flood gates. This system failed catastrophically during Hurricane Katrina. As a result, the American government offered to buy 25,000 flood-prone properties which were converted into wetlands. These wetlands act as a sponge in storms. In 1995, when floods returned, the government did not have to expend resources in that area.

Flooding near Snoqualmie, Washington, 2009.

As a result of suffering from catastrophic floods throughout the twentieth century, China has flood diversion areas which are rural areas deliberately flooded in order to protect cities.

In Egypt, the Aswan High Dam has controlled various amounts of flooding along the Nile River.

Famine

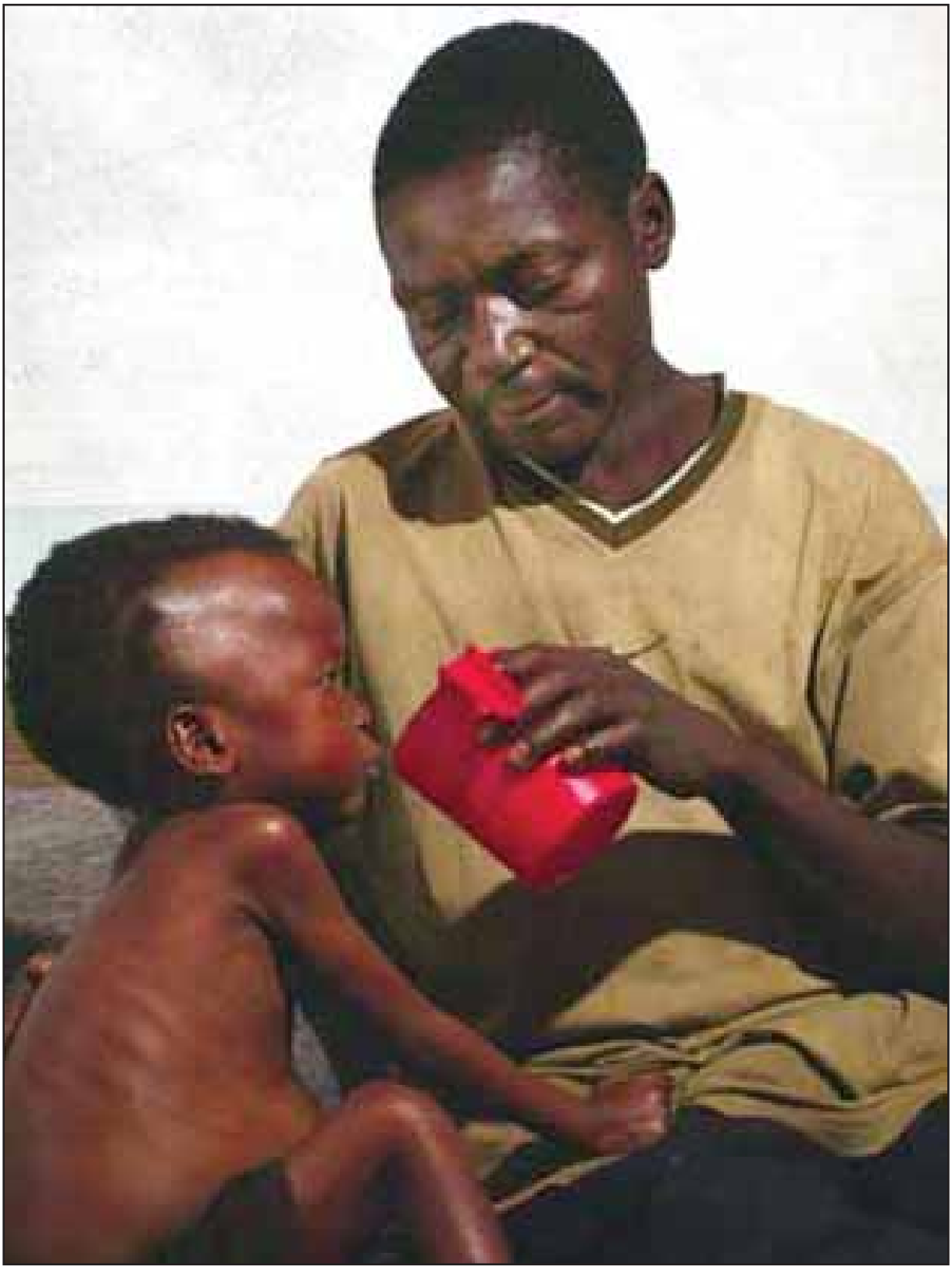
Famine is defined as an extreme shortage of food or lack of access to food by a population, accompanied by an increase in malnutrition, starvation and death.

As a result of malnutrition, infectious diseases occur.

Famine is a public health emergency. Unfortunately, famine has been a common human experience throughout history. Historically, famines have occurred among the poor because of agricultural problems such as drought, flood, crop failure, war and epidemic diseases. Most famines coincide with regional shortages of food. Famine has also occurred due to economic or military policies that have deprived populations of sufficient food to ensure survival.

There have been thousands of famines over the last several centuries, in spite of the fact that worldwide food production has improved in the past several decades, and that global food supplies are sufficient to feed the world′s current population. However, more than 800 million people in developing countries lack access to enough food on a regular and predictable basis. The number of countries experiencing severe food shortages has almost tripled since 1990. Compared to poverty, which is the most common cause of malnutrition worldwide, famine is preventable.

Access to food has been repeatedly recognized as a basic human right. Promotion of this right requires international cooperation and a coordinated effort.



Did You Know?

Epidemic diseases like the Black Death helped cause hundreds of famines in Europe during the Middle Ages.

The most notable famines of the 20th century are:

The 1942-1945 disaster in Bengal, Chinese famines in 1928, 1942, and 1958-1961 (30 million died.) Ethiopia had a famine between 1983-85 and North Korea had a famine in the 1990s.

Causes, Consequences and Responses to Famines

Causes of Famines

Famines are caused by “natural” and “artificial” reasons. The “natural” causes are out of human control: floods, droughts, volcanic eruptions, earthquakes, and other such disasters which can lead to famines. On the other hand, wars, civil strife, population displacement, economic failure and a government’s poor resource management are viewed as the “artificial” causes which may develop famine within a region. These events, both natural and artificial, do not generally work in isolation from one another.

A drought coupled with overpopulated areas, widespread poverty, poor healthcare and sanitation facilities easily tips the scales towards the mass devastations which result from famines in many developing countries. Poor healthcare and sanitation facilities bring about additional problems of diseases such as meningitis, malaria, and cholera. However, droughts do not contribute to famines in many developed countries.

The greatest causes of famine are war and civil strife. Armies destroy crops and consume available food. Mass migration is common for those living in war zones. Famines due to war occurred in Holland in 1945, Sudan in 1988, Somalia in 1991, and in Zaire in 1991.

Consequences of Famine

Famines result in a catastrophic disruption of the social, economic, and institutional systems that provide for food production, distribution, and consumption.

The consequences of famine are physical, psychological, social, and economic. Malnutrition results from food shortage within weeks. Children fail to grow and cannot learn in school, and both adults and children experience weight loss, lack of energy, and decreased work ability. Diseases such as measles, malaria, pneumonia, and diarrhea are the most common causes of death during a famine. Psychological impacts result from fear and uncertainty about having enough to eat or to feed one's family. Moreover, famines have a very strong impact on demographics since mortality is concentrated among children and the elderly. Also, male mortality exceeds female mortality. Another long-term demographic impact is emigration: Ireland was chiefly depopulated after the famine of the 1940s by waves of emigration.

Did You Know?

During the 20th century, an estimated 70 million people died from famines across the world.

Responses to Famine

When famine strikes, both governments and non-governmental organizations are active in delivering humanitarian aid. However, resources are often limited, and food distribution is difficult. Everyone around the world has to be concerned for the health and well-being of all people throughout the world, so that people would find a way to produce and distribute sufficient food supplies and avoid the suffering of famine.

Responses at the government level depend upon how early an impending famine is detected and how prepared a government is to respond to the situation. For example, most of sub-Saharan Africa has little in the way of effective government antifamine plans and policies. Most countries do not have food stocks to distribute in case of emergency. Food must be imported, which is expensive, or countries become forced to rely on international food aid.

Many organizations provide food aid to countries and individuals during famines. The World Food Programme of the United Nations is the largest international mechanism for providing food aid where it is needed.

Preventing Famine

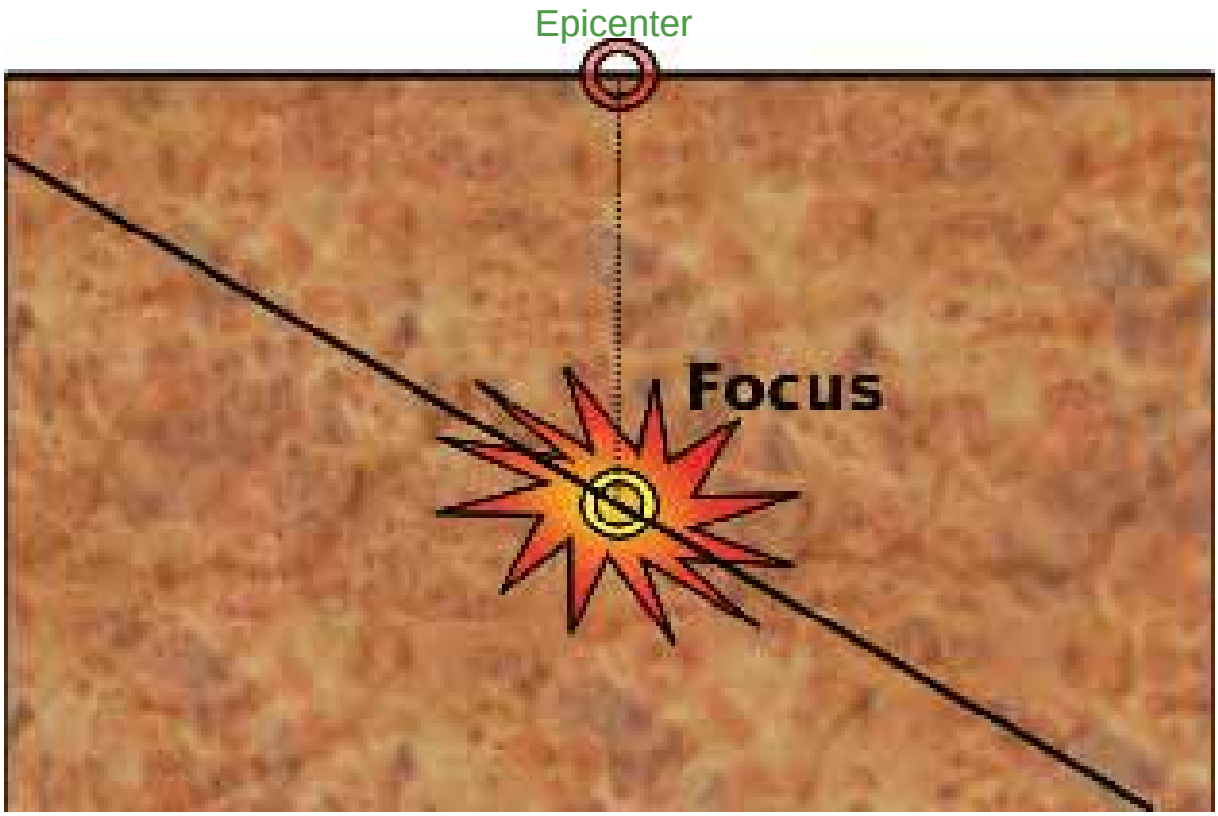
Many areas that suffered famines in the past have protected themselves through technological and social development. The first area in Europe to eliminate famine was the Netherlands, which saw its last peacetime famines in the early 17th century. There are also several parts of the world where famines occur on a regular basis such as Africa and Southeast Asia in spite of the much greater technological and economic resources of the modern world.

Famine can be prevented in several ways. One strategy is to pay more attention to environmental issues, such as the rotation of crops to help to keep the soil rich in nutrients. Using new agricultural technologies, including new fertilizers and pesticides and genetically improved crops, can also help avoid famine. Storing food during years of good harvest is another way of maintaining a food reserve. Finally, communication and coordination among communities and governments in need is essential to help prevent famine.

Earthquakes

An earthquake is a sudden release of energy in the Earth′s crust that creates seismic waves.

Each earthquake has an epicenter which is the point on the Earth′s surface that is directly above the hypocenter, or focus, of an earthquake.

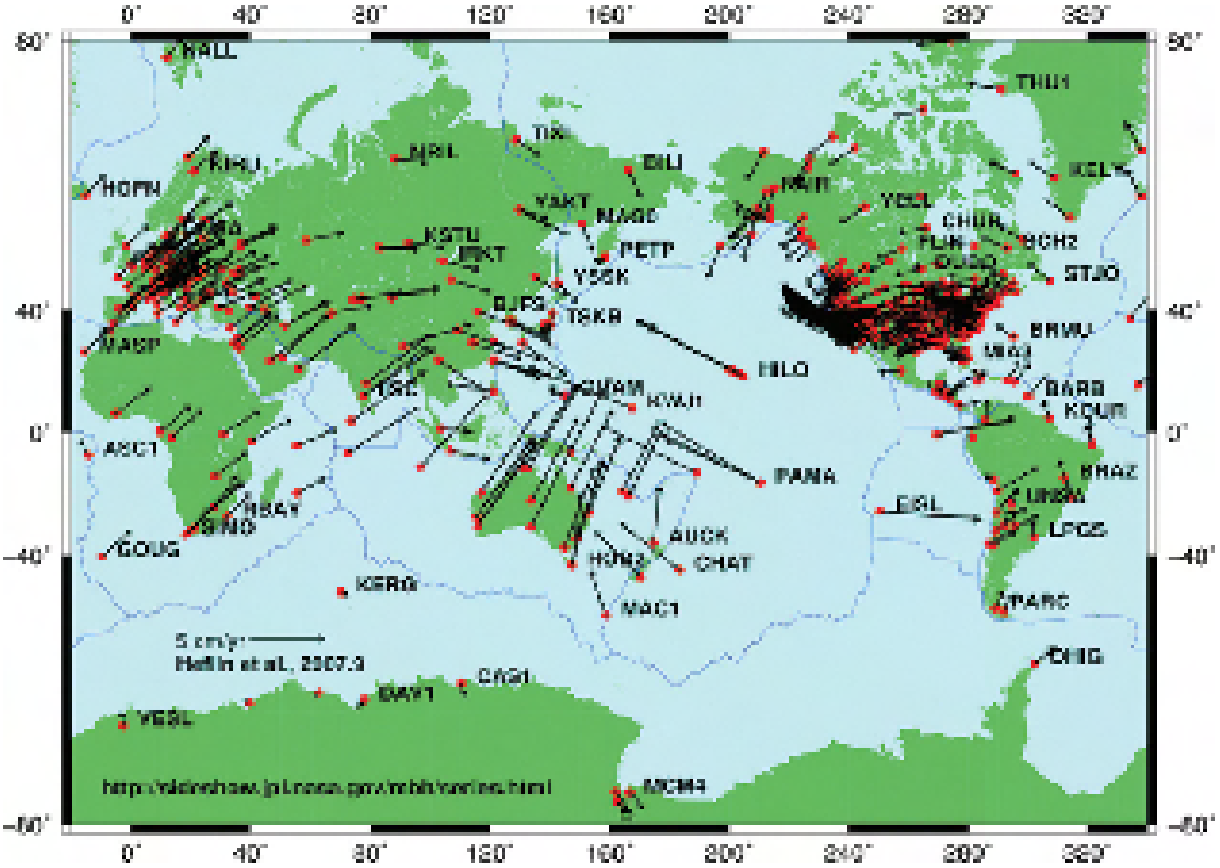


The epicenter is directly above the earthquake′s focus.

Earthquakes are recorded with a seismograph. Seismometers can be recorded up to great distances, because seismic waves travel through the Earth′s interior. The magnitude of a quake is reported by numbers on a Richter scale. A Magnitude 7 earthquake

causes serious damage over large areas. A magnitude 3 earthquake is considered extremely mild.

According to the Gutenberg-Richter law , earthquakes larger than magnitude 4 occur ten times more than earthquakes larger than magnitude 5 in a particular time period.



Global plate tectonic movement

The Worst Earthquakes in History

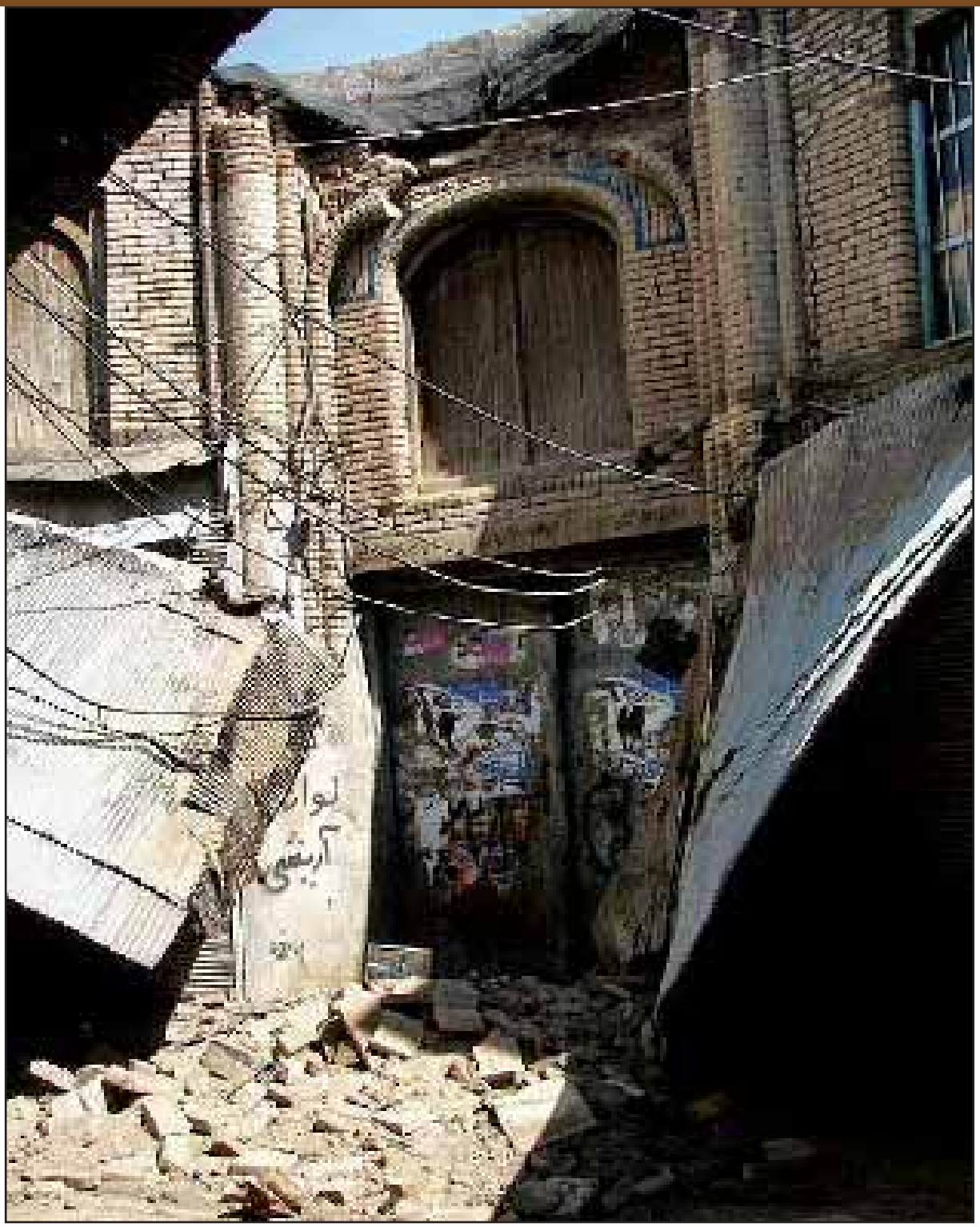
China

The worst earthquake in recorded history happened in Hausien, China in 1556. The magnitude of the earthquake has been estimated to have been from 8.0 to 8.3 on the Richter scale.

The earthquake devastated 98 counties and eight provinces of central China. About 830,000 people lost their lives, most of them from the collapse of poorly constructed houses.

San Francisco

In 1906, a strong earthquake shook the San Francisco Bay area. The earthquake was felt from southern Oregon to south of Los Angeles and inland as far as central Nevada. The earthquake caused a fire that spawned in San Francisco. Shaking damage was severe in many other places along the fault rupture. 700 people in San Francisco lost their lives. Additioally, there were 189 deaths elsewhere.



Iran

In 2003, a major earthquake hit the southeastern province of Kerman. The earthquake was 6.5 on the Richter scale and it affected the ancient city of Bam. More than 43,000 people lost their lives. 30,000 people were injured and up to 75,000 people were left homeless.

Bam before the earthquake

Bam after the earthquake

Causes of Earthquakes

Most earthquakes are caused by movement of the Earth's tectonic plates. Earthquakes form part of a sequence, related to each other in terms of location and time. Earthquake clusters consist of small tremors which cause little to no damage.

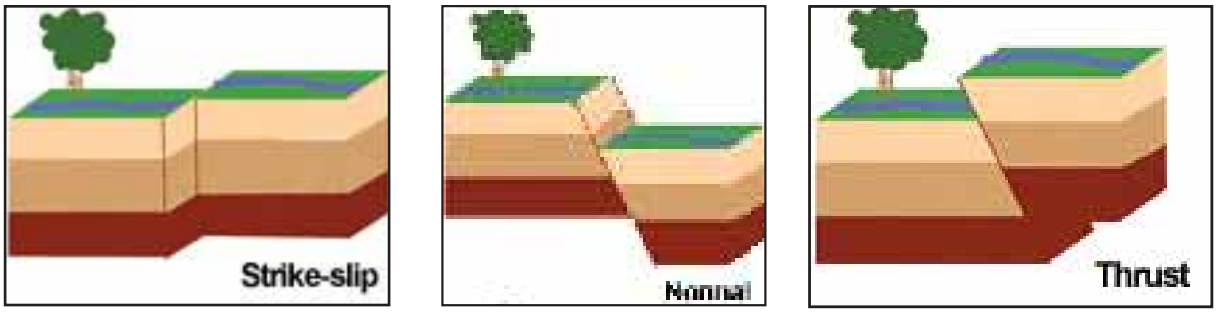
Fault Types

Main types of fault that may cause an earthquake:

• Dip-slip Faults

Dip-slip faults are called normal or reverse faults. A normal fault occurs when the crust is extended. The hanging wall moves downward, relative to the footwall. On the other hand, in a reverse/ fault, the hanging wall moves up relative to the footwall.

Normal Fault



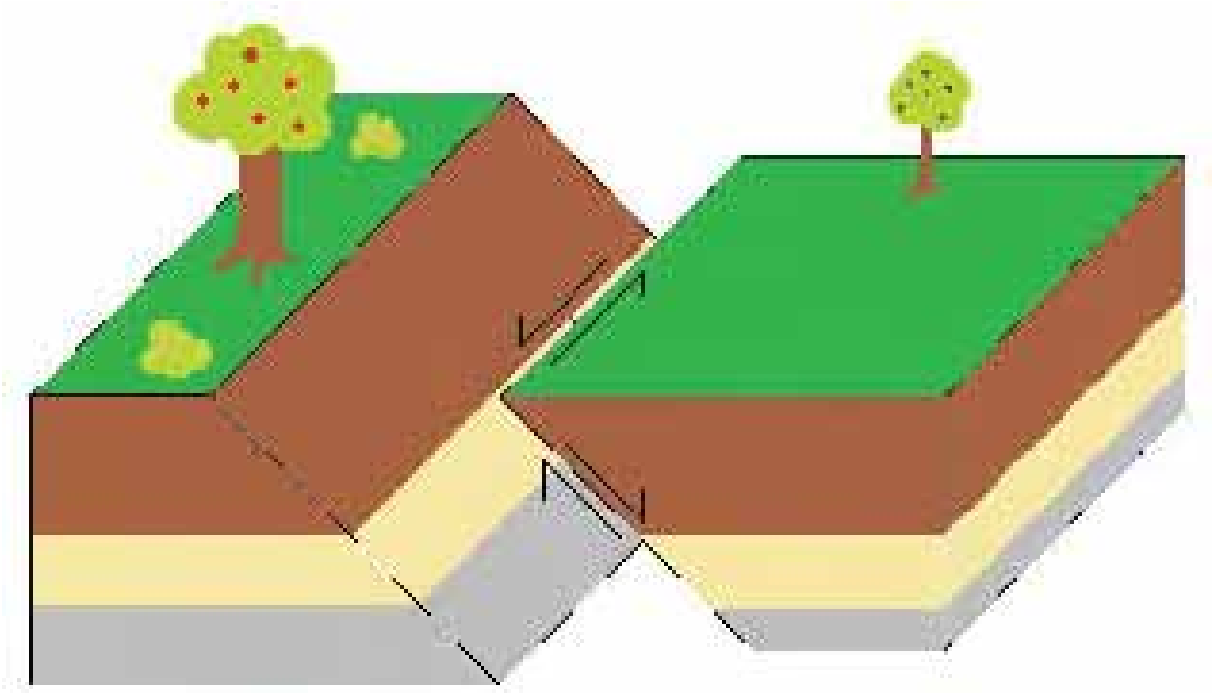
• Strike-slip Faults

A strike-slip fault's surface is usually vertical and the footwall moves either left, right or laterally with very little vertical motion. Transform faults are strike-slip faults with a plate tectonics feature.

The San Andreas Fault which caused the massive 1906 San Francisco Earthquake.

Oblique-slip faults

A mixture of a dip-slip fault and a strike-slip fault is known as an oblique-slip fault. If both dip and strike components are measurable and significant in a fault, the fault is considered an oblique-slip fault.



an oblique-slip fault

Human Activity

Human activity can also produce earthquakes. Constructing large dams and buildings, drilling and injecting liquid into wells, coal mining and oil drilling are all human causes. For example, Many scientists argue that the construction of the Zipingpu dam resulted in the 2008 Sichuan earthquake in China.

The Zipingpu dam holds 315 million tons of water and lies three miles from the epicentre of the Sichuan earthquake. Scientists believe the weight of water could have affected the pressure on the fault line underneath, possibly unleashing a chain of ruptures that led to the quake. Approximately 68,000 people died.

Destroyed buildings in the China earthquake

Consequences of Earthquakes

There are several consequences of earthquakes. For example, many earthquakes are followed by aftershocks. An aftershock is an earthquake that occurs after a previous earthquake. foreshock occurs prior to an earthquake.

Sometimes, earthquakes are followed by a series of aftershocks. This type of earthquake is known as a swarm. Earthquake swarms are sequences of earthquakes that strike in a specific area within a short period of time.

Aerial photo of the San Andreas Fault in the Carrizo Plain.

Sometimes a series of earthquakes occur in a sort of earthquake storm, where earthquakes strike a fault in clusters. These earthquake storms occur over the course of years. This pattern was observed in a sequence of 12 earthquakes that struck the North Anatolian Fault in Turkey in the 20th century.

Other effects of earthquakes include:

• Shaking and ground ruptures. These are the main effects created by earthquakes. Severe damage can happen to buildings and other rigid structures. The transfer of seismic motion from hard deep soils to soft superficial soils causes shaking on the ground surface.

Ground rupture is a major risk for dams, bridges and nuclear power stations.

• Landslides and avalanches are also caused by earthquakes, along with severe storms, volcanic activity, coastal waves, and wildfires.

• Earthquakes can cause fires by damaging electrical power or gas lines. More deaths in the 1906 San Francisco earthquake were caused by fire than by the earthquake itself.

Fires of the 1906 San Francisco earthquake

• A devastating effect of earthquakes is soil liquefaction which occurs when the shaking, water-saturated sand loses its strength and transforms from a solid to a liquid. Soil liquefaction may cause buildings and bridges to sink into the liquefied deposits and collapse upon themselves.

• Tsunamis are caused by large earthquakes offshore. Earthquakes under magnitude 7.5 on the Richter scale do not cause tsunamis. Most destructive tsunamis are caused by earthquakes of magnitude 7.5 or more.

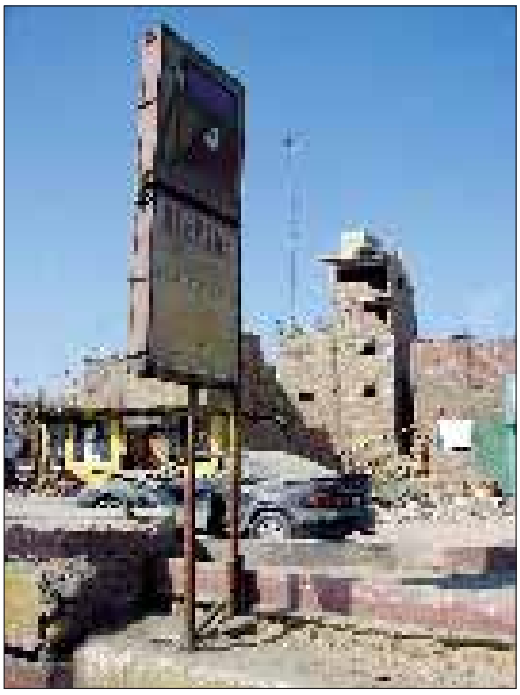
Tsunamis are long-wavelength, long-period sea waves produced by the sudden or abrupt movement of large volumes of water. The seabed sometimes suffers displacement when a large earthquake epicenter is located offshore. Tsunamis can travel thousands of kilometers across the ocean and wreak destruction on far shores.

The tsunami of the 2004 Indian Ocean earthquake

The second largest earthquake ever recorded on a seismograph is the 2004 Indian Ocean earthquake tsunami. It had a magnitude that measured between 9.1 and 9.3. It triggered a series of devastating tsunamis along the coasts of areas bordering the Indian Ocean, killing nearly 230,000 people in fourteen countries. It was one of the deadliest natural disasters in recorded history. Indonesia, Sri Lanka, India, and Thailand were the hardest hit.

• Floods may be secondary effects of earthquakes, if dams are damaged. Earthquakes can dam rivers. When dams collapse, floods can occur.

• Earthquakes have a disastrous impact on humans. They lead to diseases, lack of basic necessities, loss of life, higher insurance premiums, general property damage, road and bridge damage, and collapse or destabilization of buildings. Earthquakes can also precede volcanic eruptions.



Damaged infrastructure, one week after the 2007 Peru earthquake.

Earthquakes Mitigation Strategies

Today, there are ways to protect and prepare possible sites of earthquakes from severe damage such as:

• Earthquake prediction, which is a prediction that an earthquake of a specific magnitude will occur in a particular place at a particular time.

• Earthquake preparedness which means designing a variety of measures to help individuals, businesses, and governments in earthquake prone areas to prepare for significant earthquakes. These measures are part of the emergency management cycle.

• Earthquake engineering which is the study of the behavior of buildings and structures. Modifying existing structures to make them more resistant to seismic activity, ground motion, or soil failure is one of the major concerns of earthquake engineering.

GLOSSARY CHAPTER (4)

• Drought: An extended period of abnormally dry weather that causes water shortages and crop damage.

• **Desertification:** The transformation of arable or habitable land to desert.

• **Glacier:** A huge mass of ice formed from compacted snow in an area where snow accumulation exceeds melting and sublimation.

• **Flood:** An overflow of water that submerges land.

• **Deforestation:** The clearance of naturally occurring forests by the processes of logging or burning of trees in a forested area.

• **Tipping Point:** The point in which global climate changes irreversibly from one state to a new state.

• **Famine:** An extreme shortage of food or lack of access to food by a population resulting in malnutrition, starvation and death.

• **Malnutrition:** The condition that develops when the body does not get the right amount of the vitamins, minerals, and other nutrients it needs to maintain healthy tissues and organ function.

• **Levee:** A natural or artificial slope or wall that regulates water levels.

• **Reservoir:** An artificial lake used to store water.

• **Weir:** A small overflow-type dam commonly used to raise the level of a river or stream.

• **Epidemic:** A rapidly spreading disease by infection which affects many individuals in an area or a population at the same time.

• **Pneumonia:** An infection of the lung.

• **Earthquake:** Shaking and sometimes displacing of the ground as a result of a sudden release of energy in the Earth's crust that creates seismic waves.

• **Seismic Waves:** Waves of force that travel through the Earth or other elastic bodies.

• **Richter Scale:** A scale used for measuring the intensity of an earthquake.

• **Fault:** A planar fracture in rock in which the rock on one side of the fracture has moved with respect to the rock on the other side.

• **Epicenter:** The point on the Earth's surface that is directly above the hypocenter or focus.

• **Hypocenter:** The point where an earthquake or underground explosion originates.

• **Aftershock:** An earthquake that occurs after a previous earthquake.

• **Earthquake Storms:** A series of earthquakes where the earthquakes strike a fault in clusters. Each triggered by the shaking or stress redistribution of the previous earthquakes.

• **Soil Liquefaction:** It is the transformation of sand from a solid to a liquid as a result of the shaking and water-saturation of the sand.

• **Tsunamis:** Long-wavelength, long-period sea waves produced by the sudden or abrupt movement of large volumes of water.

• **Earthquake Prediction:** A prediction that an earthquake of a specific magnitude will occur in a particular place at a particular time.

• **Earthquake Preparedness:** Designing a variety of measures to help individuals, businesses, and governments in earthquake prone areas to prepare for significant earthquakes.

• **Earthquake Engineering:** The study of the behavior of buildings and structures subject to seismic loading through understanding the interaction between buildings or civil infrastructure and the ground.

Chapter 5

Histor

Lesson 1: The Development of Human Societies

Lesson 2: The Development of Agriculture

Lesson 3: Agriculture in Ancient esopotamia

Lesson 4: Ancient Egypt and the Nile

Lesson 5: Farming in the iddle Ages

The Development of Human Societies

What is a societ ?

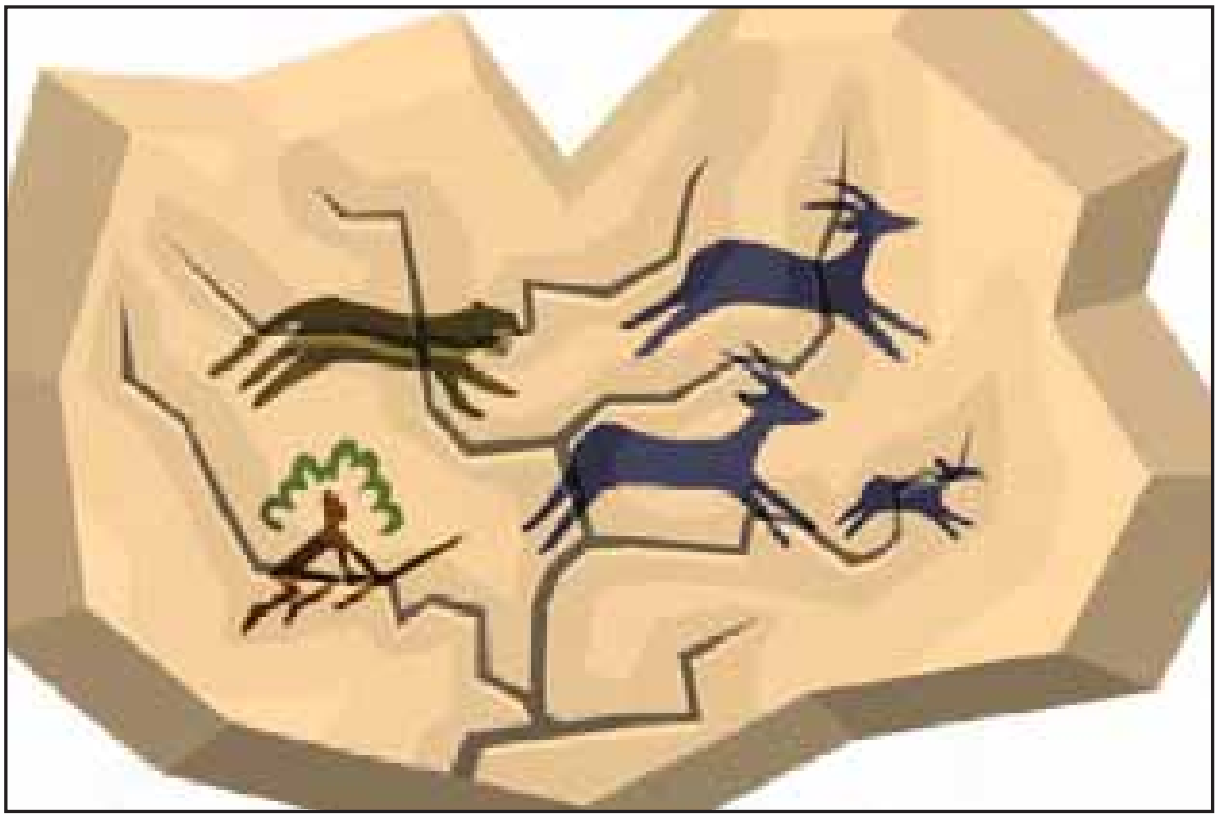
Society, according to sociologists, is defined as a group of people who share a common culture, interaction, and occupy a particular territorial area. Social groups consist of two or more people who interact and identify with one another.

Human societies have evolved slowly over many millennia. Throughout history, societies have changed in terms of relations between people and the forms and the conditions of their activities.
any changes have been based upon technological development.

In this unit, you will learn about different types of societies throughout different historical eras.

Hunting and Gathering Societies

Until about 12,000 years ago, all societies were hunting and gathering societies. The first humans lived in caves, or temporary structures, and spent their lives hunting and gathering in small groups. Gathering means collecting plants that grow wild for food. People gathered grain such as wheat and barley, fruit like apples and pears, olives, wild carrots and peas, lentils, mushrooms, and herbs.



The basic characteristics of hunting and gathering societies:

1- They were small, with fewer than fifty members. Many groups began building homes out of logs or stone. Smaller groups joined together to form larger groups. The larger groups lived in a small, personal world called bands, which seldom consisted of more than 250 people.

2- They were nomadic, moving to new areas when the food supply in a given area was exhausted. Hunter gatherers moved seasonally to optimize different sources of food as it became available.

3- Labor division was based on sex. In hunting and gathering cultures, women usually did most of the gathering, while the men specialized in hunting.

The Development of Agriculture

The development of agricultural societies followed a general sequence:

Wild animals were domesticated. Goats were utilized for their meat and milk, cattle, and chickens provided a steady source of food for the ancient people. Animals were also used to pull plows.

Larger areas of land could be cultivated. Grains such as wheat, barley, rice, and corn were grown in different parts of the ancient world.

There was plent of food for them to store. As long as there was plenty of food, people did not have to move.

Towns formed and then cities. Farming allowed people to build villages along rivers, or wherever the ground was fertile enough for crops to grow.

Agriculture as the Basis of Civilization

The term civilization basically means the level of development at which people live together peacefully in communities. The main factor that made it possible for mankind to settle in permanent communities was agriculture. After farming was developed in the iddle East in about 6500 BC, People began to found permanent communities in fertile river valleys. The first ancient civilizations arose in esopotamia and Egypt in the iddle East, in the Indus Valley region of modern Pakistan, in the Huang He (Yellow River) valley of China, on the island of Crete in the Aegean Sea, and in Central America. All of the major ancient civilizations-in esopotamia, Egypt, the Indus Valley, and China emerged in the 4th millennium BC.

There are many reasons why first civilizations settled in fertile river valleys. Large rivers afforded many benefits to the people of ancient civilizations.

Rivers provided water for drinking cooking and washing.

Rivers acted as the motorways of the ancient world, allowing people to travel towards coastal population centers for trade.

Food was also to be found in large quantities in river valleys, and marine life was a source of food. With the development of agriculture, the rivers were the source of irrigation for their farmlands.

In spite of regional and climatic differences, all of the ancient civilizations have common factors:

There were permanent communities in fertile river valleys.

Water supplies to irrigated the land.

Cities and towns were built.

People invented forms of writing which were different from one civilization to another.

People learned to make pottery and use metals.

ore work was created which led to the development of more complex social structures and class systems.

River Valleys were an important stepping-stone in the rise of civilization. Jericho on the river Jordan, a city that may be up to 8000 years old is an example of an ancient civilization.

Agriculture in Ancient Mesopotamia

Where was Ancient esopotamia located?

esopotamia was located in a piece of The Fertile Crescent, in what is now southern Iraq. It covered an area about 300 miles long and about 150 miles wide.

The Fertile Crescent

Ancient esopotamia is located inside the geographic region referred to as The Fertile Crescent. Today, The Fertile Crescent includes the countries of Iraq, Syria, Lebanon, Cyprus, Jordan, Palestine, Kuwait, the Sinai Peninsula, and Northern esopotamia.

The Lands

In Northern esopotamia, the land was fertile. There was seasonal rain. The plain in southern esopotamia was far more fertile than the north but there was little rainfall. The river beds of the Tigris and Euphrates would rise and fall with the seasons and changd course unpredictably. Southern Mesopotamia had flash floods which destroyed crops, livestock and village homes.
Communities developed in the north but since rainfall in that area was so unpredictable, by 5000 B.C. communities had moved south to the rich alluvial plain.

Wh did Civilization emerge in Mesopotamia?

any thousands of years ago, early settlers wandered into the land between two rivers. The rivers provided the people with fresh drinking water, and a place to bathe. The esopotamian people settled down, invented a system of irrigation, and began to farm their land. Natural vegetation and wildlife kept the people well fed.

Civilization emerged in esopotamia because the soil provided plenty of food. With the availability of food, people could settle down to village life and with these new settlements, towns and cities began to evolve into independent and nearly self-sufficient city-states. Village society in esopotamia was primarily agricultural and approximately 100-200 people lived in these permanently established villages.

ost cities evolved from smaller farming villages and with the practice of irrigation, which was necessary for villages distant from the Tigris and Euphrates, a stable food supply was produced. This, in turn, allowed increases in the number of people who inhabited each settlement.

Farming in Ancient Mesopotamia

esopotamia had low rainfall, and was supplied with surface water by only two major rivers, the Tigris and the Euphrates. There were dramatic spring floods, from snowmelt in the highlands of Anatolia. The plains of Mesopotamia were very flat, and poorly drained, so the region always had persistent problems with poor soil, drought, and catastrophic flooding.

The climate in Ancient esopotamia affected farmers. They faced problems such as:

The annual flood of the rivers was unpredictable; it came sometime between April and June.

Farmers did not know when to plant or how big flood would be.

There were periods without enough rain and snowfall. Lowered river levels made it hard to water crops; people starved if crops failed.

Irrigation

Irrigation had been an important base for agriculture in esopotamia. esopotamian engineers had to worry about water storage and flood control as well as irrigation.

By 6000 B.C, engineers built irrigation canals which carried water from rivers to fields. They also built dams to hold back floodwaters.

Sumer

Sumer was the world's first civilization. It was located in the southern area of esopotamia. The people who lived in this area were called Sumerians.

In order to control the destructive seasonal flooding of the Tigris and Euphrates Rivers, the ancient Sumerians constructed levees, or raised areas of earth, in order to hold back the floodwaters. Regulators were used to raise and lower the water levels in canals and ditches so the water could be used by farmers.

The ancient Sumerians irrigated, or watered, their crops by using a system of irrigation canals. By devising such an irrigation system, the ancient Sumerians were able to successfully establish a permanent civilization. Farmers in ancient Sumer grew crops like barley in land that had limited water.

How did the farmers water their fields?

During the growing season, each farmer was allowed only a certain amount of water. When it was a farmer's turn to water his fields, a regulator was adjusted so that water ran from canals into irrigation ditches which ran alongside a farmer's fields. Farmers could then water their fields.

Farming steps that ancient farmers used:

1. Local officials decided when to let water flow onto crops.

2. Farmers let animals graze in soil to trample and eat weeds.

3. Farmers broke up soil using hand tools.

4. People spread seeds and plowed the land. Later, plants were harvested.

The land of Ancient Eg pt

Desert covers more than ninety percent of Egypt. The desert called the Red Land supported only small settlements in wadis and oases. The Egyptians lived on the banks of the River Nile or beside canals. This place was called Kemet, or the Black Land, named after the rich silt on which the farmers grew their crops.

The River ile

About two thousand five hundred years ago, Herodotus, who was a visitor from Greece, called Egypt “the gift of the Nile”. The Nile River, which is the longest river in the world, is the lifeline of Ancient Egypt. Without it, the land would be nothing but desert. Without the river’s fertility, there would have been no civilization in Egypt. The Nile travels more than four thousand miles from Lake Tana in the Ethiopian high land to the editerranean Sea.

The Egyptian people sang special hymns to the river. The hymn below was written down during the period of time called the New Kingdom (which was from about 1570 to 1070 B.C.).

Hail to thee O Nile that issues from the earth and comes to keep Egypt alive He that waters the meadows which Ra created.

Everything depended on the river in ancient times. It is quite simply Egypt's lifeblood.

The gift of the Nile enabled the Egyptians to cultivate wheat, barley, beans, lentils, peas, leeks and onions, as well as fruits such as dates, figs, grapes and melons.

The Nile was also a source of food. There were many varieties of fish in the river. Cattle, sheep and goats were plentiful also. Geese and birds of all types populated the delta region.

The river was also the main means of transport between places in ancient times. The Egyptians built boats out of wood or papyrus and soil up and down the river. Goods went to and from Egypt down and up the Nile, which had its mouth at the editerranean Sea. Harbors were built to cater for the ever-increasing numbers and sizes of vessels. An example of this the harbor at edinet Hatu in Thebes, built by Amenhotep III (1390 - 1353 BC).

A plant called papyrus which is the symbol of Lower Egypt, in ancient days, its reeds and flowers grew everywhere along the banks of the Nile. The Egyptians harvested papyrus and made lots of different things with it like: baskets, sandals, boats, and material to write on. The word paper. that we use comes from the word papyrus The Nile also provided protection from attack. People wanting to invade Egypt would have to first cross the river, which was very wide in places. Here in this land of fertile riverbanks the Egyptian people used the precious gifts of the Nile extremely wisely and managed to build one of the most amazing civilizations in history.

The Annual Flood Management

Unlike the situation in Ancient Mesopotamia, the annual flood of the Nile was predictable. It usually started in mid June and lasted until mid October.

At first, the Egyptians lost their crops, their houses, and (in some cases) their lives. But the Egyptian people noticed after a time that the floods came about the same time every year, in June. So they planned ahead. Since the floods came at predictable times in Egypt farming was much easier than it was in ancient esopotamia. The Egyptian people needed less cooperation than the Sumerians to get their work done. As a result they did not develop cities until a much later time. At first they would make sure nothing important was on the banks of the river when it was time for the floods. Then, after the water level went back down, they would quickly plant new crops. Crops would be ready for harvesting from February to June, when the river was at its lowest.

pper Eg pt

Upper Egypt was the southern areas of ancient Egypt.

Lower Eg pt

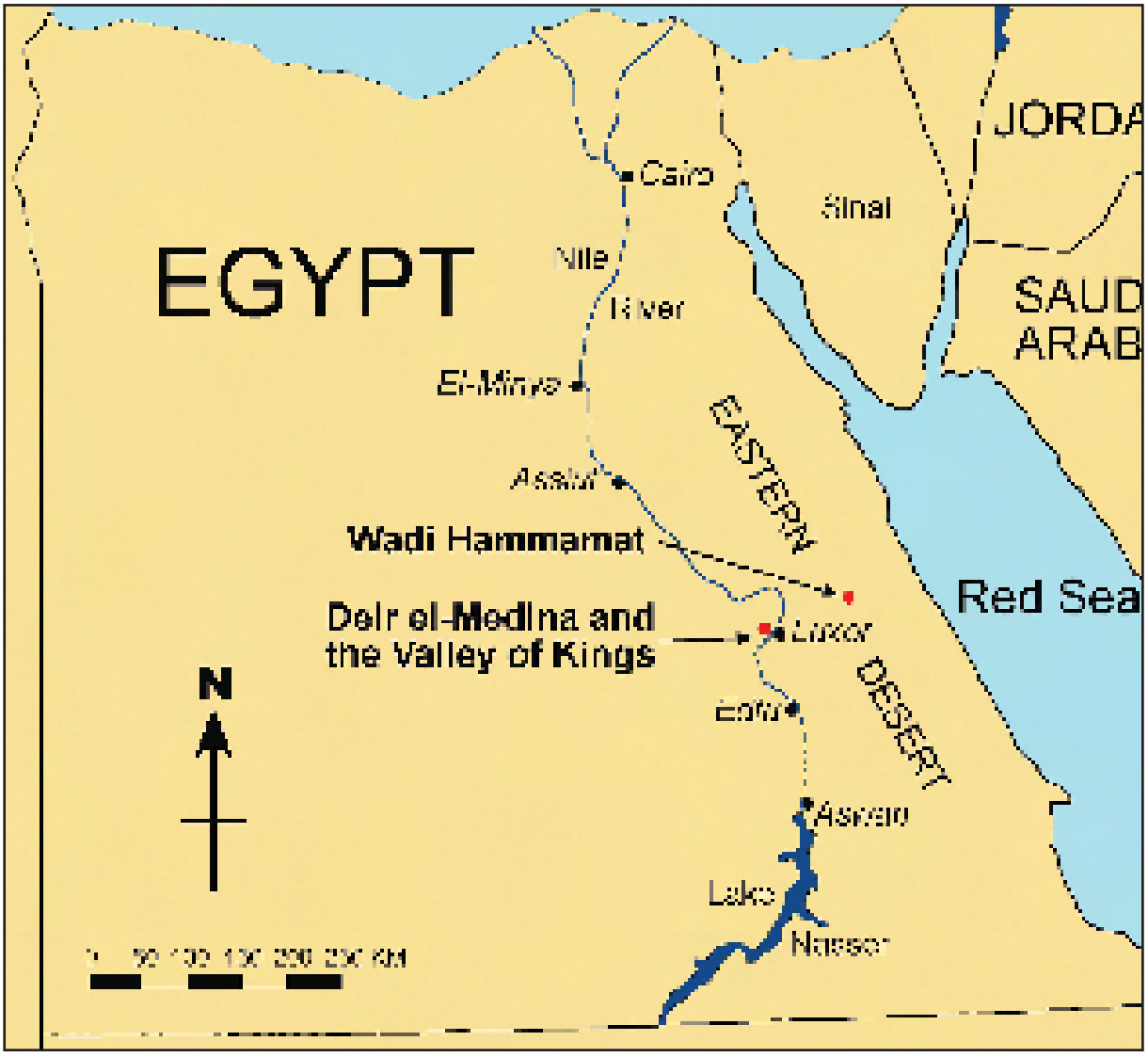
Lower Egypt is the northern area of Egypt.

1-What sea does the Nile River flow into?

2-What continent is the Nile River on?

3-What month is the Nile River at it's lowest?

4-How long is the Nile River?



Farming in the Middle Ages

Farming was an important part of medieval life. The success or failure of a harvest could mean the difference between prosperity and starvation. Feudalism was based on the land. The lord, his family, his servants, and his retainers were supported by the income from landed property.

The Manors

During the middle ages the main economic units were the manors. These were self-contained economic units which ate most of the food that was raised. They sold the surplus food only in good years. There were basically two levels of people in this society; the peasant and the lord or priest. A manor varied in size, according to the wealth of its lord. Every noble had at least one manor; great nobles might have several manors, usually scattered throughout the country; and even the king depended on his many manors for the food supply of the court.

The Medieval Peasants

Serfs were peasant farmers who were neither fully free nor slaves. The peasants or serfs were the people who raised the food. any medieval people didn't actually own the land which they farmed because it belonged to their lord of the manor. They could not even leave the village, or marry without the lord of the manor's permissions. A peasant would pay rent to his lord and was sometimes required to forfeit some of his harvest as part of a rent payment. any peasants were expected to work the lord's land for a certain number of days a week. Peasants also paid a tithe, which was a tenth of their income or produce, to the parish church. In times of hardship, the church would have amassed stocks of grain with which they could feed starving villagers.

Strip Farming

Strip farming is a characteristic aspect of medieval farming. The strip was defined by the acre. The acre was the amount one could plow in one days work .The lord's land was called his "demesne," or domain. The rest of the land he allotted to the peasants .Each worker farmed several strips of land, often scattered over several different fields, which he worked alongside the strips of his neighbor. The reason for the intermixture of strips seems to have been to make sure that each peasant had a portion both of the good land and of the bad.

The strips were only regarded as owned by the serf during the time of crop growing. After the crop was harvested the land would revert to common land for cattle grazing. Each serf would have to pay to work a strip of land.

The Rotation S stem

During the middle ages, they used a three or four crop rotation in their fields. Manor lands were therefore farmed using the three-field system of agriculture. The rotation might be wheat the first year, barley the next, and the third year the land would lay fallow with nothing growing in it. Because the soil was rested every third year, it never became overworked.

GLOSSARY CHAPTER ( )

Societ : A group of people who share a common culture, interaction, and occupy a particular territorial area.

Gathering: Collecting plants that grow wild for food.

Mesopotamia: Refers to the land between the Tigris and the Euphrates Rivers.

Feudalism: The system of political organization that prevailed in Europe from the 9^{th} to the 15^{th} centuries.

Manor: It is a self-contained economic unit which ate most of the food that it had raised.

Serfs: They were peasant farmers who were neither fully free nor slaves.

Tithe: It is a tenth of the income or produce which is paid to the church.

Strip farming: It is to farm different strips of land scattered over several different fields.

Chapter 6

Global Issues

Lesson 1: Air ollution

Lesson 2: utdoor Air ollution

Lesson 3: ater ollution

Lesson 4: ater: An ssue of Life

Lesson 5: he ater Scarcit in the Ara Region

Air Pollution

Air is what we reathe. Air supplies us with o gen which is essential for our odies to li e. reathing clean air helps us sta health . ollution is ecoming a serious pro lem all o er the world. Air pollution can threaten the health of human eings, trees, lakes, crops, and animals. n the following two lessons, ou will learn a out things that cause air pollution and what ou can do to keep the air clean.

Ha e ou e er seen air pollution

How do ou know

as there smoke coming out of a smokestack, or tailpipe Could ou smell it

What is Air Pollution

Air pollution is the material chemicals, particulates, or iological materials that is introduced into the atmosphere humans or human products (burned fuels or smoke from fires) which causes harm to humans and other li ing organisms.

Ho can air pollution hurt your health

Do ou think human eings are affected air pollution How

Air pollution affects our short term and long term health.

Consequences of pollution e posure ar from one person to another depending on se eral factors such as:

a he le el of e posure.

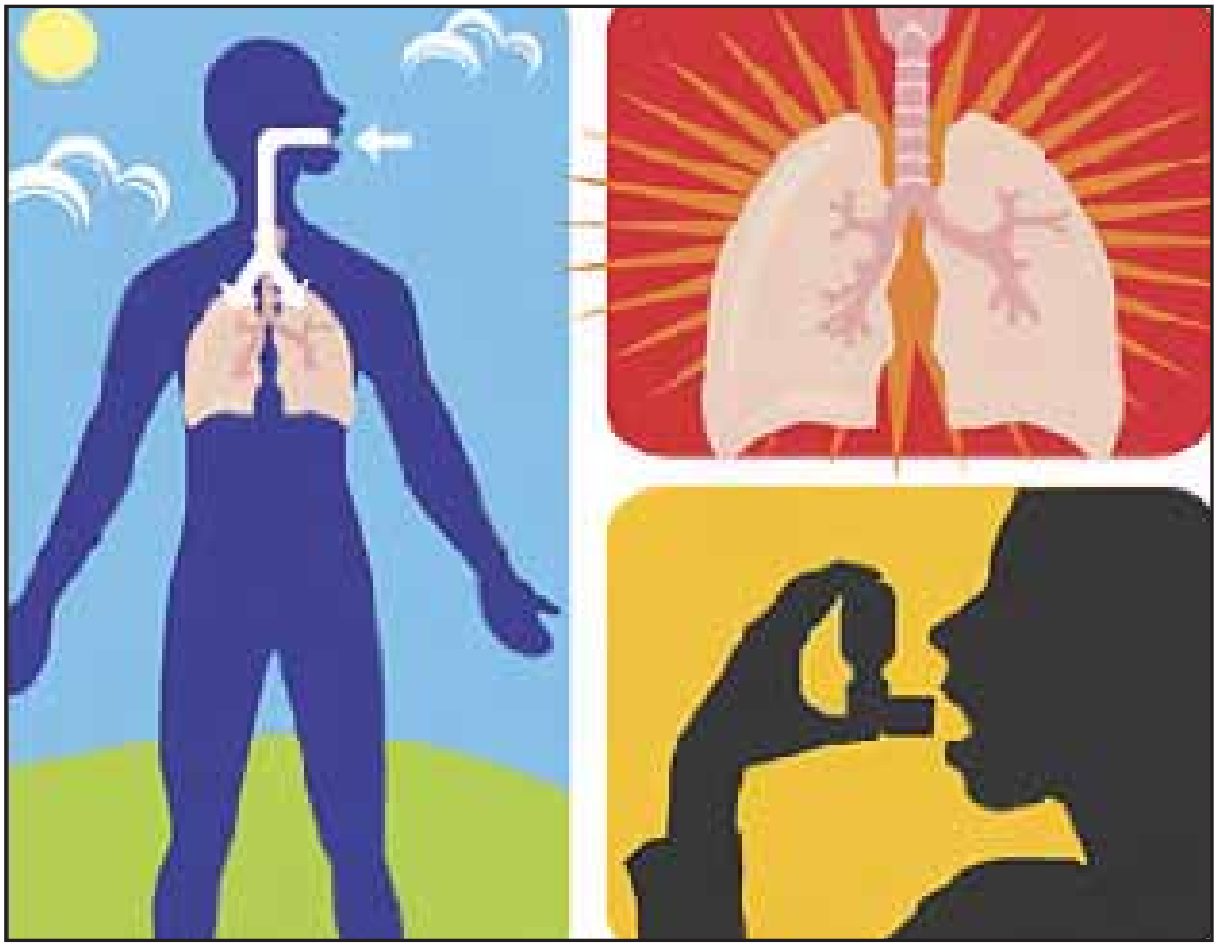
he length of e posure.

c he treatment recei ed. Long term health effects can include lung cancer, heart disease, and rain, li er and kidne damage.

Short term health effects can include allergies, dizziness and e e, nose and throat irritation.

Air pollution is a problem e have to orry about

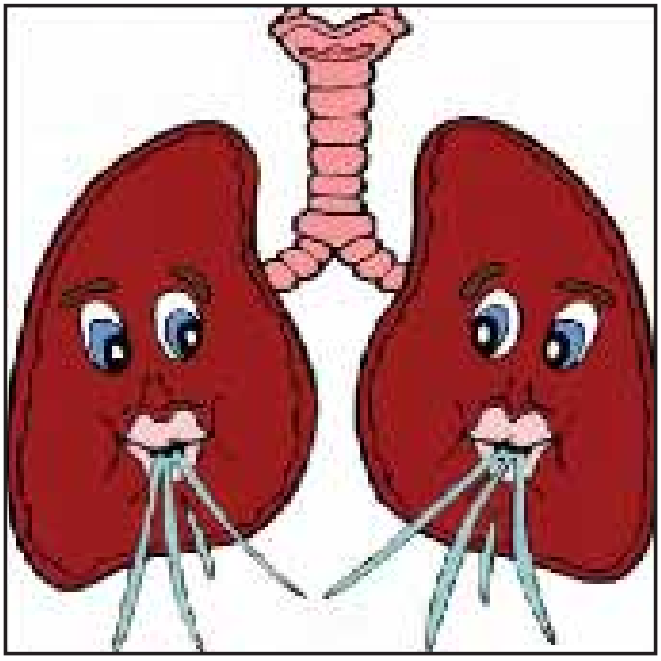
he chemical aspect of air pollution could ecome the largest contri utor to premature death in the world, higher than the rate of cancer, A DS, automo ile accidents, or an other cause of unnatural or premature death.



What else do you think might be affected by air pollution

It s a real problem

Some sources claim that o er 2 million people can die each ear from the respirator pro lems associated with air pollution.



Causes of Air Pollution

hen people think a out air pollution, the usuall think a out outdoor air pollution such as factories, power plants, dr cleaners, cars, buses, trucks, dust and wildfires. Air pollution is separated into two ma or categories:

ndoor Air ollution.

utdoor Air ollution.

ndoor Air ollution

hat is indoor air pollution

e spend a out 8 9 of our li es indoors. e work, stud , eat, drink and sleep in enclosed en ironments. Some e perts feel that more people suffer from the effects of indoor air pollution than outdoor pollution.

hat do ou think causes indoor air pollution Look at the pictures elow and guess.

here are man sources of indoor air pollution such as:

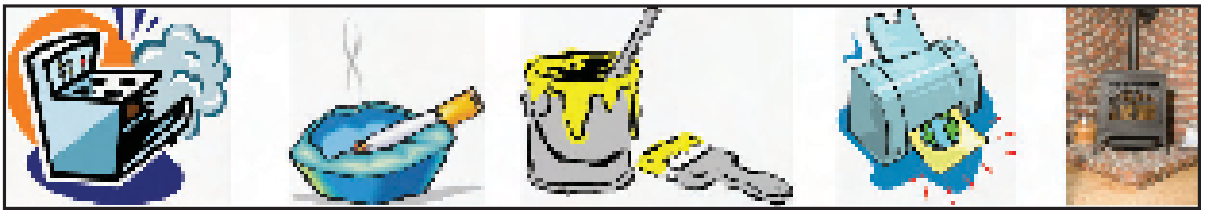
o acco smoke.

Cooking and heating appliances.

apors from uilding materials, paints, furniture, etc.

rinters.

Residential wood sto es.



Outdoor Air Pollution

hat is outdoor air pollution

Air pollution is released into the en ironment stationar sources which are responsible for producing a significant amount of air pollutants e er da .

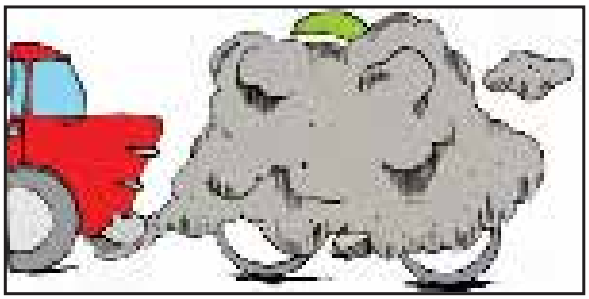
hat do ou think causes outdoor air pollution

utdoor air pollution comes from different pollutants such as:

ower plants

Chemical production facilities

- Oil refineries



Manufacturing plants

Dr cleaners

Mo ile sources such as cars, trucks, uses, et skis, oats, snowmo iles, planes and all terrain ehicles.

Construction equipment

ho can help pre enting the damaging effects of air pollution

Scientists:

Scientists can stud the damaging effects on plant, animal and human life and the can gi e solutions.

he go ernment:

n man countries in the world, steps are eing taken to stop the damage to our en ironment from air pollution. Man different countries and nations ha e regulator policies where air pollution is concerned.

Auto manufacturers:

he can help producing ehicles that do not emit as man harmful gases.

Educators and teachers:

he can help teaching students a out the effects of air pollution.

Ho Can You Help

ur Earth is our home so make it a cleaner place to li e here are man small things that ou can do to help cut down on air pollution. Here are some things that ou can do to clean the air.

1 nstead of using a car, ou can walk to near destinations.

2 lant a tree.

3 Conser e electricit energ .

Electrical generation is a source of air pollution. ou can help conser ing energ following some rules such as:

a urn the lights out when ou lea e a room.

se fans the use less energ than air conditioners.

4 Read and learn a out air pollution.

5 now how air pollution affects our health.

Air Pollutants

Air pollutants result from chemicals or other materials that get into the air.

Sources of Air Pollutants:

• Tobacco Smoke:

• A combination of smoke from the burning end of a cigarette, pipe or cigar, and e haled smoke from the smoker.

• Industrial Sources:

Manufacturing operations, oil and gas refineries, food processing plants, and energ generating facilities all emit su stances into the atmosphere.

• Mobile Sources:

Automo iles, motorc cles, trucks, off road ehicles, oats, and airplanes.

• Stationary Sources:

Power plants, refineries, and manufacturing facilities which emit air pollutants.

Water Pollution

hat is ater ollution

ollution is the result of en ironmental contamination and manmade waste. Land, water, and air can all e polluted. ater pollution is the result of en ironmental contamination of lakes, streams, ri ers, oceans, and ground water. ollution is caused to ic su stances which come from microorganisms, chemicals, industrial waste, or sewage.

The Sources of Water Pollution

he sources of water pollution are categorized as eing a point source or a non point source of pollution. oint sources of pollution occur when the polluting su stance is emitted directl into the waterwa pollution from industrial and sewage treatment plants . A non point source occurs when there is runoff of pollutants into a waterwa pollution caused rainfall or snowmelt mo ing o er and through the ground .

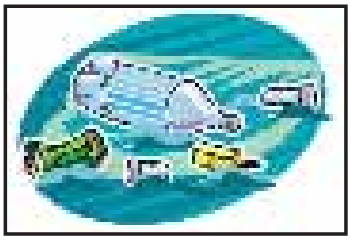
Specific Sources of Water Pollution.

e all pla a part. e contri ute to the pro lem practicing ariet of acti ities.

n our Homes

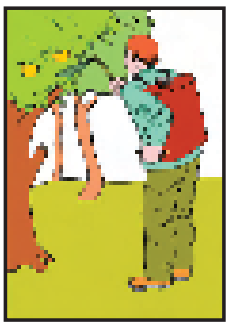
• Domestic sewage (generated by houses or runoff from septic tanks into near waterwa s , introduce organic pollutants that cause water pollution. Domestic sewage is also er likel to contain disease causing micro es. rganic materials include food and egeta le waste, chemicals, soaps, and washing powders. he arious su stances that we use for keeping our houses clean add to water pollution ecause the contain harmful chemicals.

Harmful ractice



Man people dump their cans, ottles, plastics, and other household products into streams, lakes, ri ers, and seas. hese affect th health of all forms of life in the water.

Farming:



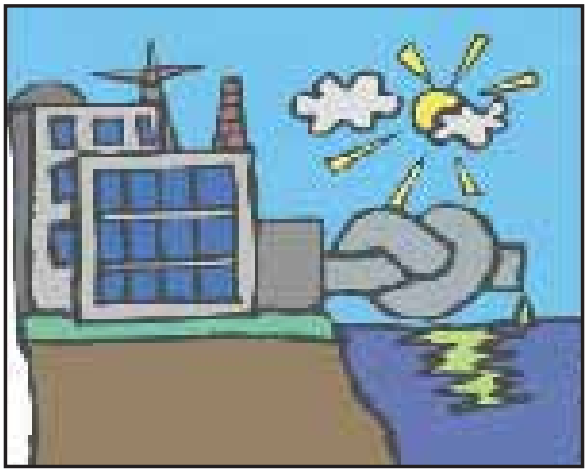
• Farms often use large amounts of herbicides and pesticides, oth of which are to ic pollutants. hese su stances are particularl dangerous to life in ri ers, streams and lakes, where to ic su stances can uild up o er a period of time.

• Farmers also frequently use large amounts of chemical fertilizers that are washed into waterwa s and damage the water suppl and the life within it.

• Farmers allow livestock to graze near water sources which often cause organic waste products to e washed into waterwa s.

Fertilizers and pesticides used for agriculture are increasingl being recognized as significant sources of water pollution.

usiness



• Land clearing leads to soil erosion into ri ers.

• Waste water from manufacturing or chemical in industries contri utes to water pollution. Sewage generated industr can get into the water suppl , introducing large organic pollutants into the ecos stem. Effects of water pollution are serious for human, animal, and plant sur i al. o od can escape the effects of water pollution. olluted water is unsuitable for drinking, recreation, agriculture, fisheries, industry, and wildlife.

Did You Know?

Four hundred million tons of soil are carried the Mississippi Ri er to the ulf of Me ico each ear. E cessi e amounts of sediment in waterwa s can lock sunlight, pre enting aquatic plants from photos nthesizing. t can also suffocate fish clogging their gills.

e can all work together

he indi idual and the communit can help minimize water pollution.

Farmers:

● Manage animal waste to minimize organic waste products eing washed into the waterwa s.

● Use fewer pesticides and fertilizers to protect drinking water.

Local go ernment:

● Control soil erosion by planting ground cover and constructing erosion sediment control.

● Keep litter, pet wastes, leaves, and debris out of street gutters and storm drains.

● Develop legislation to protect water.

Dri ers:

● Not hosing brake fluid, oil, grease, and antifreeze into the street where it can reach local streams and lakes.

Families:

● Use non-toxic chemicals in the home wherever possible.

● Never pour unwanted chemicals on the ground.

Water: An Issue of Life

The Global Problem

ater is essential for all socio economic de elopment and for maintaining health ecos stems. he amount of water in the world is finite. The number of people is growing fast and water use is growing e en faster.

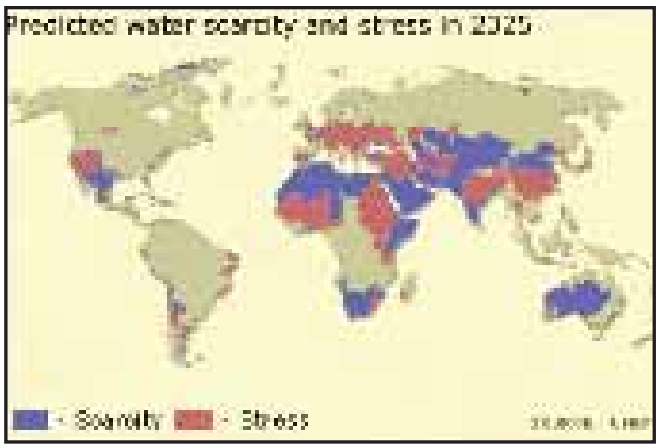
Read the following facts to realize the size of the pro lem.

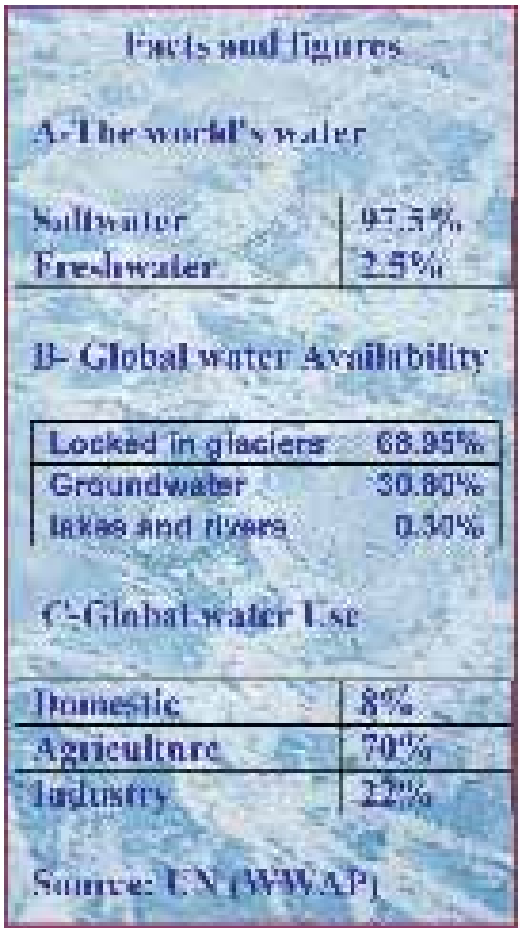
● Water use has been growing at more than twice the rate of population increase in the last centur .

● A third of the world's population lives in water-stressed countries now. 2 25, this is e pected to rise to two thirds. Africa and Asia are alread hard hit water stress. ncreasing populations will create more pressure in the coming decades.

● The United Nations Organization recommends that people need a minimum of 5 litres of water a da for drinking, washing, cooking and sanitation. f all the freshwater on the planet were di ided equall among the glo al population, there would e 5 6 m^3 of water a aila le for e er one, e er ear.

● The amount of water on Earth is fixed. Less than 0.01% of the planet's 1.4 billion cubic kilometers is easily accessible freshwater in lakes and ri ers.





Do ou think that the world is facing a water crisis

What does ater scarcity mean

ater scarcit is a relati e concept and might e different from one country to another. It might be defined as a shortage of water, or the qualit or quantit of water a aila le to meet the demands of households, farms, industr and the en ironment.

Regions of the orld mainly affected by ater scarcity:

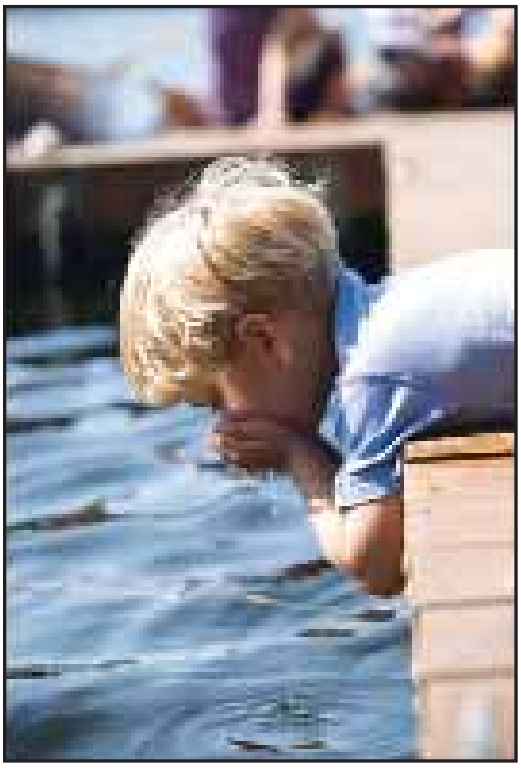
Regions in the world with water scarcit include Africa, the Middle East, South Asia, and North America. More specifically, North and East Africa, ndia, China, Me ico, the Middle East, and the southern region of the former So iet states and the western part of the nited States are amongst the most directl affected regions.

Causes of Water Scarcity

ater scarcit has arious causes:

- Population growth.
- Climate change.
- Inappropriate Land Use.
- Poverty.
- Water Resource Management.
- International Disputes.
- Pollution and Poor Water Quality.

he Results of water scarcit



Fact 1

ater scarcit forces people to rel on unsafe sources of drinking water. t also means that people cannot athe or clean their clothes or homes properl .

Fact 2

oor water qualit can increase the risk of such diarrhoeal diseases as cholera, t phoid fe er and d senter , and other water orne infections. ater scarcit can lead to diseases such as trachoma an e e infection that can lead to lindness , plague and t phus.

Fact 3

ater scarcit encourages people to store water in their homes. his can increase the risk of household water contamination and pro ide reeding grounds for mosquitoes which are carriers of dengue fe er, malaria and other diseases.

Fact 4

A lack of water has dri en up the use of wastewater for agricultural production in poor ur an and rural communities. More than 1 of people worldwide consume foods irrigated wastewater that can contain chemicals or disease causing organisms.

Source: ater, 2 6

ater Scarcit affects oth humans and the en ironment and causes acute pro lems such as:

Human problems:

- Food shortages
- Health problems
- International conflict

Environmental Problems:

- Erosion
- Waste disposal problems
- Polluted water

Water Scarcity in the Arab Region

he total surface area of the Ara region is appro imatel 14 million km^2 co ering southwest Asia and orth Africa. Most of the Ara countries are located in arid and semi arid zones. Most of the Ara region suffers from water scarcit . he Middle East is one of the most water poor and water stressed regions of the glo e. hile the region is home to 5 of the people of the world, the Ara countries contain onl .5 per cent of glo al water resources. n 1955, three Middle Eastern states, including ahrain, ordan, and uwait were listed international agencies as water scarce countries. 199 , Algeria, emen, Saudi Ara ia, Qatar, United Arab Emirates, Somalia, Tunisia and Palestine were added to the list. . . studies anticipate another se en Middle Eastern countries will e added to the list 2 25 including Eg pt, ran, Li a, Morocco, man, S ria, and Ethiopia.

Are ou Aware

17 of the 22 states in the Ara League will e struck a se ere water shortage 2 25.

Factors contributing to water scarcit in the Arab Region

● There is strong competition for water in the Middle East. Water conflicts arise in water stressed areas among local communities and between countries because sharing a very limited and essential resource is extremely difficult. The major water resources of the Arab world are jointly shared among different countries inside and outside the region (Turkey and Africa). Read the following Examples:

The River ile

The Nile is very important to the survival of 160 million people in 10 countries who share the basin in which the Nile flows.
To Egypt in particular, the river Nile is the source of life as Egypt has almost no other source of water.

A 1929 treaty between Britain and Egypt said no work would be done on the river that would reduce the volume of water reaching Egypt. Tensions have been rising, however, with Egypt's neighboring countries. Tanzania, for example, is building a pipeline to extract drinking water and Ethiopia is planning to use the river water for irrigation. Egypt wants to protect its access to the 7,000 km-long river. Talks took place in 2004, but an agreement regarding water usage was not reacted.

The Palestinians

Israeli settlers in the West Bank use several times more water than the Palestinians. Palestine's water supply is controlled by Israel and the underground water has become depleted and damaged through overuse.

● The surface and ground water in Arab countries is not sufficient enough to meet the drinking needs of the population.

● The population growth rate in the Arab World adds a great pressure on water resources.

The Arab world has an annual population growth rate of 2.5 per cent, topping the world average of 1.7 percent.
From 300 million inhabitants in 2001, population projections indicate that an estimated 375 million people will inhabit the Arab world in 2010. That number will exceed 500 million by the year 2025.

● Most of the water reserves in Arab countries come from rain.
The rainfall in Arab lands is not sufficient enough to meet the drinking needs of the population.

● Climate change also has an impact on water supply. Some areas will probably benefit from increased rainfall, but others are likely to suffer.

● High rates of evaporation.

● According to the rainfall regime, the Arab region can be divided into three sub-regions:

1. The editerranean (northern) sub-region: rainfall is high over the coastal mountains of Lebanon (1500 mm year) and decreases southwards to about 400-500 mm year in Jordan. In orocco, the annual rainfall is 1800 mm year. Rainfall measures just 100-200 mm year on the slopes adjacent to the Sahara.

2. The Arabian Peninsula: Rainfall is low in this area. The average annual rainfall ranges from 70-130 mm year.

GLOSSARY CHAPTER ( )

- **Air Pollution:** Chemicals, particulates or biological materials that are introduced into the atmosphere by humans which cause harm to all living organisms.

- **Water Pollution:** The action of water contamination caused by toxic substances.

- **Water Scarcity:** The shortage of quality and quantity of water available to meet the demands of people.

Chapter 6

Global Issues

Air Pollution

Air is what we breathe. Air supplies us with oxygen which is essential for our bodies to live. Breathing clean air helps us stay healthy. Pollution is becoming a serious problem all over the world. Air pollution can threaten the health of human beings, trees, lakes, crops, and animals. In the following two lessons, you will learn about things that cause air pollution and what you can do to keep the air clean.

Have you ever seen air pollution?

How do you know?

Was there smoke coming out of a smokestack, or tailpipe? Could you smell it?

What is Air Pollution?

Air pollution is the material (chemicals, particulates, or biological materials) that is introduced into the atmosphere by humans or human products (burned fuels or smoke from fires) which causes harm to humans and other living organisms.

How can air pollution hurt your health?

Do you think human beings are affected by air pollution? How?

Air pollution affects our short-term and long-term health.

Consequences of pollution exposure vary from one person to another depending on several factors such as:

a- The level of exposure.

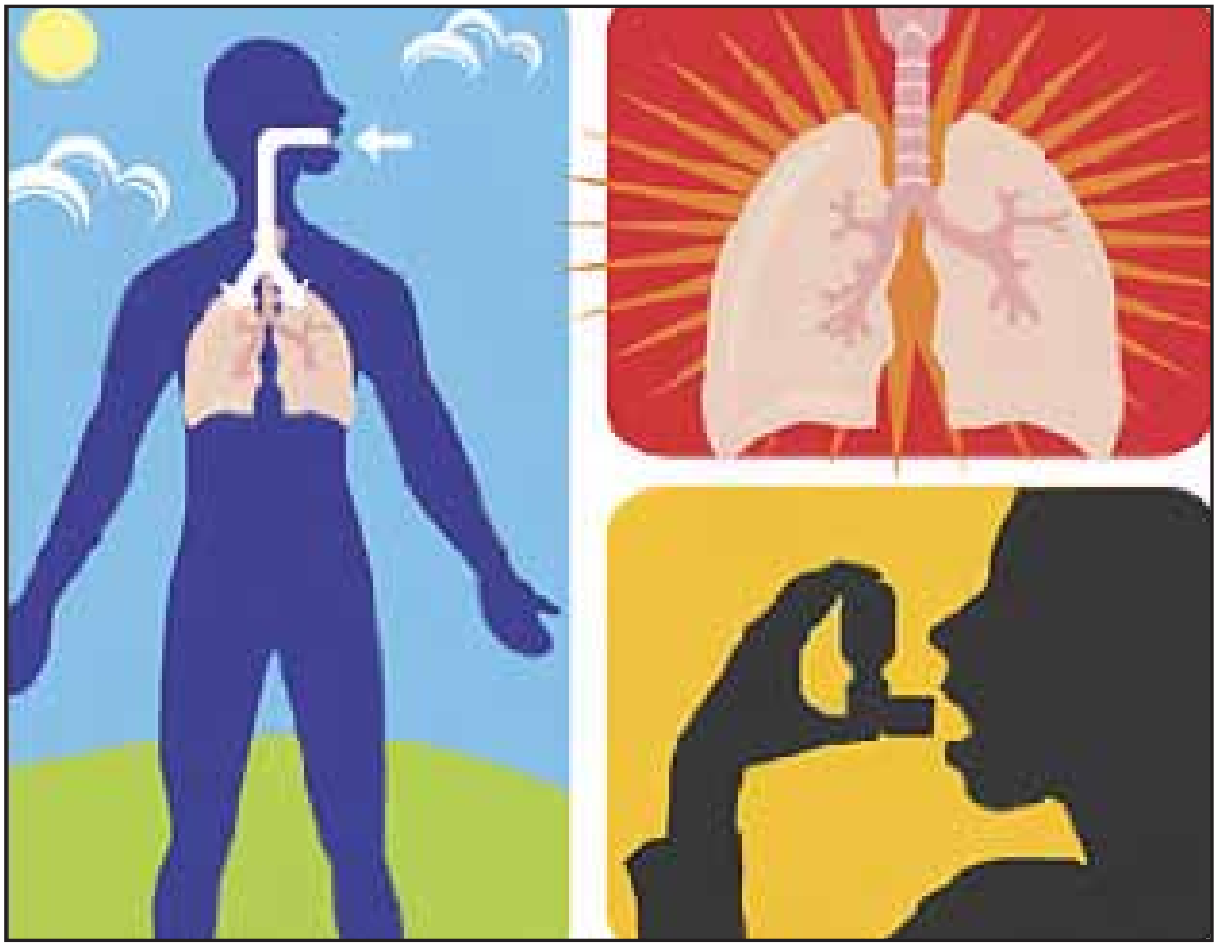
b- The length of exposure.

c- The treatment received. Long term health effects can include lung cancer, heart disease, and brain, liver and kidney damage.

Short-term health effects can include allergies, dizziness and eye, nose and throat irritation.

Air pollution is a problem we have to worry about!

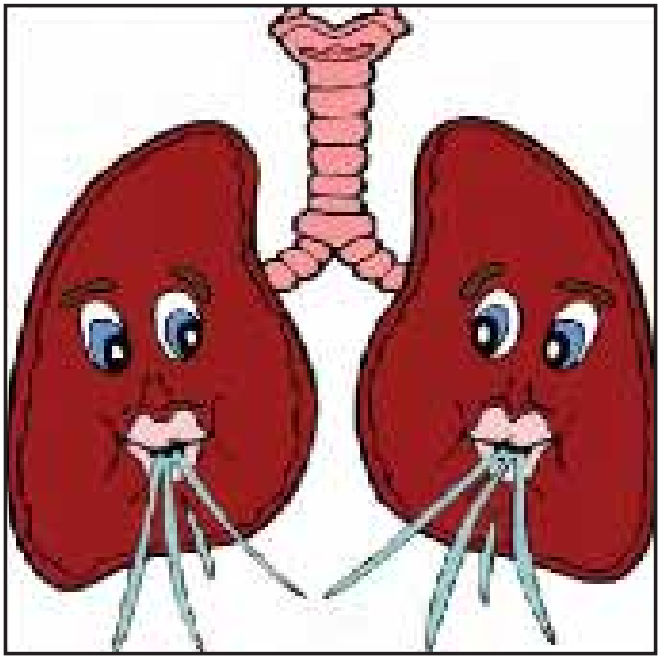
The chemical aspect of air pollution could become the largest contributor to premature death in the world, higher than the rate of cancer, AIDS, automobile accidents, or any other cause of unnatural or premature death.



What else do you think might be affected by air pollution?

It's a real problem

Some sources claim that over 2 million people can die each year from the respiratory problems associated with air pollution.



Causes of Air Pollution

When people think about air pollution, they usually think about outdoor air pollution such as factories, power plants, dry cleaners, cars, buses, trucks, dust and wildfires. Air pollution is separated into two major categories:

- Indoor Air Pollution.

- Outdoor Air Pollution.

Indoor Air Pollution

What is indoor air pollution?

We spend about 80-90% of our lives indoors. We work, study, eat, drink and sleep in enclosed environments. Some experts feel that more people suffer from the effects of indoor air pollution than outdoor pollution.

What do you think causes indoor air pollution? Look at the pictures below and guess.

There are many sources of indoor air pollution such as:

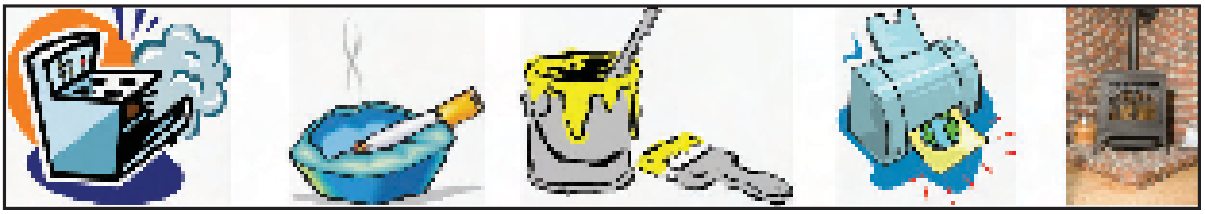
- Tobacco smoke.

- Cooking and heating appliances.

- Vapors from building materials, paints, furniture, etc.

- Printers.

- Residential wood stoves.



Outdoor Air Pollution

What is outdoor air pollution?

Air pollution is released into the environment by stationary sources which are responsible for producing a significant amount of air pollutants every day.

What do you think causes outdoor air pollution?

Outdoor air pollution comes from different pollutants such as:

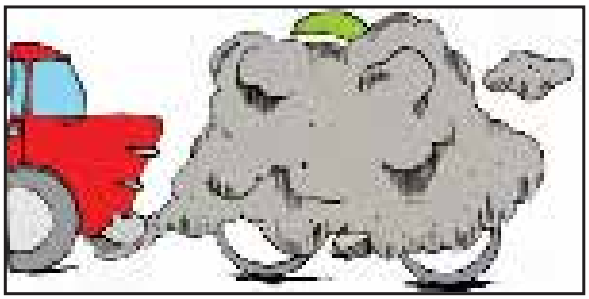
- Power plants

- Chemical production facilities

- Oil refineries

- Manufacturing plants

- Dry cleaners



- Mobile sources such as cars, trucks, buses, jet skis, boats, snowmobiles, planes and all-terrain vehicles.

- Construction equipment

Who can help preventing the damaging effects of air pollution?

Scientists:

Scientists can study the damaging effects on plant, animal and human life and they can give solutions.

The government:

In many countries in the world, steps are being taken to stop the damage to our environment from air pollution. Many different countries and nations have regulatory policies where air pollution is concerned.

Auto manufacturers:

They can help by producing vehicles that do not emit as many harmful gases.

Educators and teachers:

They can help by teaching students about the effects of air pollution.

How Can You Help?

Our Earth is your home so make it a cleaner place to live! There are many small things that you can do to help cut down on air pollution. Here are some things that you can do to clean the air.

1- Instead of using a car, you can walk to nearby destinations.

2- Plant a tree.

3- Conserve electricity energy.

Electrical generation is a source of air pollution. You can help conserving energy by following some rules such as:

a- Turn the lights out when you leave a room.

b- Use fans they use less energy than air conditioners.

4- Read and learn about air pollution.

5- Know how air pollution affects your health.

Air Pollutants

Air pollutants result from chemicals (or other materials) that get into the air.

Sources of Air Pollutants:

• Tobacco Smoke:

• A combination of smoke from the burning end of a cigarette, pipe or cigar, and exhaled smoke from the smoker.

• Industrial Sources:

Manufacturing operations, oil and gas refineries, food processing plants, and energy generating facilities all emit substances into the atmosphere.

• Mobile Sources:

Automobiles, motorcycles, trucks, off-road vehicles, boats, and airplanes.

• Stationary Sources:

Power plants, refineries, and manufacturing facilities which emit air pollutants.

Water Pollution

What is Water Pollution?

Pollution is the result of environmental contamination and manmade waste. Land, water, and air can all be polluted. Water pollution is the result of environmental contamination of lakes, streams, rivers, oceans, and ground water. Pollution is caused by toxic substances which come from microorganisms, chemicals, industrial waste, or sewage.

The Sources of Water Pollution

The sources of water pollution are categorized as being a point source or a non-point source of pollution. Point sources of pollution occur when the polluting substance is emitted directly into the waterway (pollution from industrial and sewage treatment plants). A non-point source occurs when there is runoff of pollutants into a waterway (pollution caused by rainfall or snowmelt moving over and through the ground).

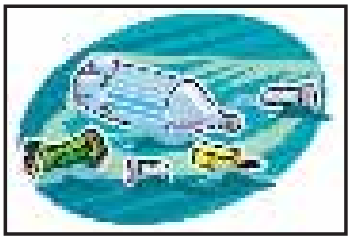
Specific Sources of Water Pollution.

We all play a part. We contribute to the problem by practicing variety of activities.

In our Homes

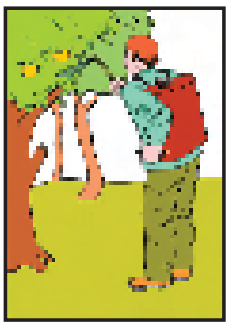
• Domestic sewage (generated by houses or runoff from septic tanks into nearby waterways), introduce organic pollutants that cause water pollution. Domestic sewage is also very likely to contain disease-causing microbes. Organic materials include food and vegetable waste, chemicals, soaps, and washing powders. The various substances that we use for keeping our houses clean add to water pollution because they contain harmful chemicals.

Harmful Practice



Many people dump their cans, bottles, plastics, and other household products into streams, lakes, rivers, and seas. These affect th health of all forms of life in the water.

Farming:



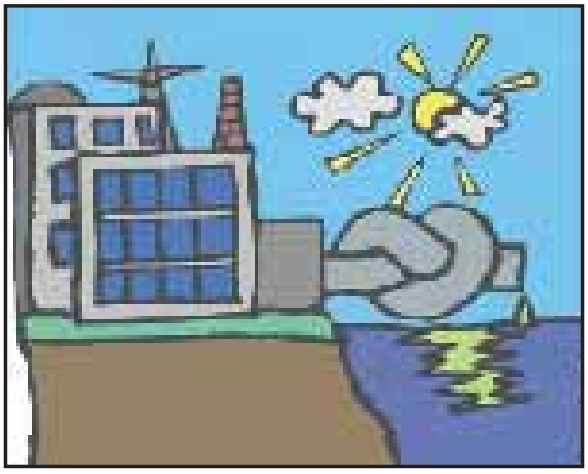
• Farms often use large amounts of herbicides and pesticides, both of which are toxic pollutants. These substances are particularly dangerous to life in rivers, streams and lakes, where toxic substances can build up over a period of time.

• Farmers also frequently use large amounts of chemical fertilizers that are washed into waterways and damage the water supply and the life within it.

• Farmers allow livestock to graze near water sources which often cause organic waste products to be washed into waterways.

Fertilizers and pesticides used for agriculture are increasingly being recognized as significant sources of water pollution.

- Business



• Land clearing leads to soil erosion into rivers.

• Waste water from manufacturing or chemical in industries contributes to water pollution. Sewage generated by industry can get into the water supply, introducing large organic pollutants into the ecosystem. Effects of water pollution are serious for human, animal, and plant survival. Nobody can escape the effects of water pollution. Polluted water is unsuitable for drinking, recreation, agriculture, fisheries, industry, and wildlife.

Did You Know?

Four hundred million tons of soil are carried by the Mississippi River to the Gulf of Mexico each year. Excessive amounts of sediment in waterways can block sunlight, preventing aquatic plants from photosynthesizing. It can also suffocate fish by clogging their gills.

We can all work together

The individual and the community can help minimize water pollution.

Farmers:

● Manage animal waste to minimize organic waste products being washed into the waterways.

● Use fewer pesticides and fertilizers to protect drinking water.

Local government:

● Control soil erosion by planting ground cover and constructing erosion/sediment control.

● Keep litter, pet wastes, leaves, and debris out of street gutters and storm drains.

● Develop legislation to protect water.

Drivers:

● Not hosing brake fluid, oil, grease, and antifreeze into the street where it can reach local streams and lakes.

Families:

● Use non-toxic chemicals in the home wherever possible.

● Never pour unwanted chemicals on the ground.

Water: An Issue of Life

The Global Problem

Water is essential for all socio-economic development and for maintaining healthy ecosystems. The amount of water in the world is finite. The number of people is growing fast and water use is growing even faster.

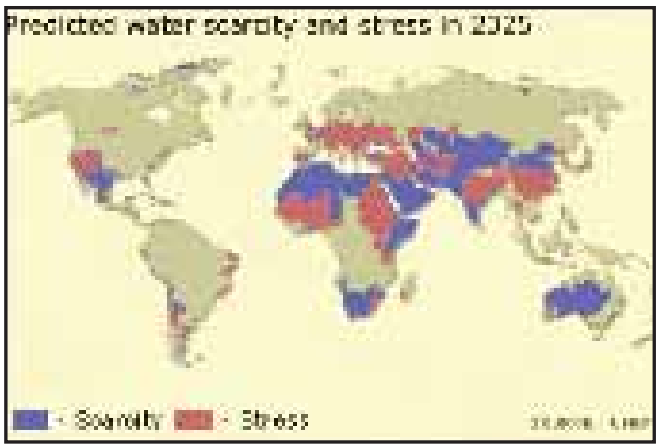
Read the following facts to realize the size of the problem.

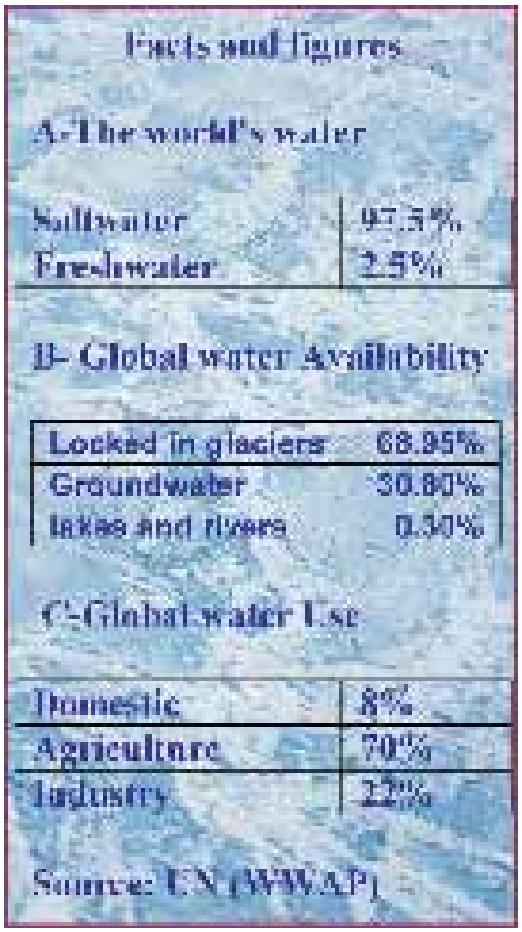
- Water use has been growing at more than twice the rate of population increase in the last century.

- A third of the world's population lives in water-stressed countries now. By 2025, this is expected to rise to two thirds. Africa and Asia are already hard-hit by water stress. Increasing populations will create more pressure in the coming decades.

● The United Nations Organization recommends that people need a minimum of 50 litres of water a day for drinking, washing, cooking and sanitation. If all the freshwater on the planet were divided equally among the global population, there would be 5000 – 6000 m^3 of water available for everyone, every year.

● The amount of water on Earth is fixed. Less than 0.01% of the planet's 1.4 billion cubic kilometers is easily accessible freshwater in lakes and rivers.





Do you think that the world is facing a water crisis?

What does water scarcity mean?

Water scarcity is a relative concept and might be different from one country to another. It might be defined as a shortage of water, or the quality or quantity of water available to meet the demands of households, farms, industry and the environment.

Regions of the world mainly affected by water scarcity:

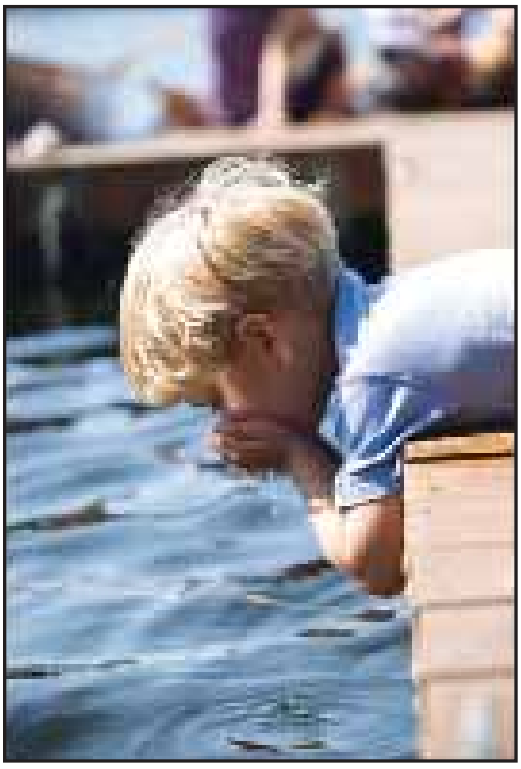
Regions in the world with water scarcity include Africa, the Middle East, South Asia, and North America. More specifically, North and East Africa, India, China, Mexico, the Middle East, and the southern region of the former Soviet states and the western part of the United States are amongst the most directly affected regions.

Causes of Water Scarcity

Water scarcity has various causes:

- Population growth.
- Climate change.
- Inappropriate Land Use.
- Poverty.
- Water Resource Management.
- International Disputes.
- Pollution and Poor Water Quality.

The Results of water scarcity



Fact 1

Water scarcity forces people to rely on unsafe sources of drinking water. It also means that people cannot bathe or clean their clothes or homes properly.

Fact 2

Poor water quality can increase the risk of such diarrhoeal diseases as cholera, typhoid fever and dysentery, and other waterborne infections. Water scarcity can lead to diseases such as trachoma (an eye infection that can lead to blindness), plague and typhus.

Fact 3

Water scarcity encourages people to store water in their homes. This can increase the risk of household water contamination and provide breeding grounds for mosquitoes - which are carriers of dengue fever, malaria and other diseases.

Fact 4

A lack of water has driven up the use of wastewater for agricultural production in poor urban and rural communities. More than 10% of people worldwide consume foods irrigated by wastewater that can contain chemicals or disease causing organisms.

Source: UN-Water, 2006

Water Scarcity affects both humans and the environment and causes acute problems such as:

Human problems:

- Food shortages
- Health problems
- International conflict

Environmental Problems:

- Erosion
- Waste disposal problems
- Polluted water

Water Scarcity in the Arab Region

The total surface area of the Arab region is approximately 14 million km^2 covering southwest Asia and North Africa. Most of the Arab countries are located in arid and semi-arid zones. Most of the Arab region suffers from water scarcity. The Middle East is one of the most water poor and water stressed regions of the globe. While the region is home to 5% of the people of the world, the Arab countries contain only 0.5 per cent of global water resources. In 1955, three Middle Eastern states, including Bahrain, Jordan, and Kuwait were listed by international agencies as water-scarce countries. By 1990, Algeria, Yemen, Saudi Arabia, Qatar, United Arab Emirates, Somalia, Tunisia and Palestine were added to the list. U.N. studies anticipate another seven Middle Eastern countries will be added to the list by 2025 including Egypt, Iran, Libya, Morocco, Oman, Syria, and Ethiopia.

Are you Aware?

17 of the 22 states in the Arab League will be struck by a severe water shortage by 2025.

Factors contributing to water scarcity in the Arab Region

● There is strong competition for water in the Middle East. Water conflicts arise in water stressed areas among local communities and between countries because sharing a very limited and essential resource is extremely difficult. The major water resources of the Arab world are jointly shared among different countries inside and outside the region (Turkey and Africa). Read the following Examples:

The River Nile

The Nile is very important to the survival of 160 million people in 10 countries who share the basin in which the Nile flows.
To Egypt in particular, the river Nile is the source of life as Egypt has almost no other source of water.

A 1929 treaty between Britain and Egypt said no work would be done on the river that would reduce the volume of water reaching Egypt. Tensions have been rising, however, with Egypt's neighboring countries. Tanzania, for example, is building a pipeline to extract drinking water and Ethiopia is planning to use the river water for irrigation. Egypt wants to protect its access to the 7,000 km-long river. Talks took place in 2004, but an agreement regarding water usage was not reacted.

The Palestinians

Israeli settlers in the West Bank use several times more water than the Palestinians. Palestine's water supply is controlled by Israel and the underground water has become depleted and damaged through overuse.

● The surface and ground water in Arab countries is not sufficient enough to meet the drinking needs of the population.

● The population growth rate in the Arab World adds a great pressure on water resources.

The Arab world has an annual population growth rate of 2.5 per cent, topping the world average of 1.7 percent.
From 300 million inhabitants in 2001, population projections indicate that an estimated 375 million people will inhabit the Arab world in 2010. That number will exceed 500 million by the year 2025.

● Most of the water reserves in Arab countries come from rain.
The rainfall in Arab lands is not sufficient enough to meet the drinking needs of the population.

● Climate change also has an impact on water supply. Some areas will probably benefit from increased rainfall, but others are likely to suffer.

● High rates of evaporation.

● According to the rainfall regime, the Arab region can be divided into three sub-regions:

1. The Mediterranean (northern) sub-region: rainfall is high over the coastal mountains of Lebanon (1500 mm/year) and decreases southwards to about 400-500 mm/year in Jordan. In Morocco, the annual rainfall is 1800 mm/year. Rainfall measures just 100-200 mm/year on the slopes adjacent to the Sahara.

2. The Arabian Peninsula: Rainfall is low in this area. The average annual rainfall ranges from 70-130 mm/year.

GLOSSARY CHAPTER (6)

- **Air Pollution:** Chemicals, particulates or biological materials that are introduced into the atmosphere by humans which cause harm to all living organisms.

- **Water Pollution:** The action of water contamination caused by toxic substances.

- **Water Scarcity:** The shortage of quality and quantity of water available to meet the demands of people.