MANAGEMENT OF NATURAL RESOURCES

- **Laws and Regulation**

Some natural resources ***like soil, air*** and ***water*** and various components are cycled over and over again in nature.

Soil

Air

Water

There are ***international laws and regulations***, and then there are our own *national laws* and acts for *environmental protection*.

There are also national and international organizations working towards protecting our environment.

Awareness about the problems caused by unthinkingly exploiting our resources has been a fairly recent phenomenon in our society.

And once this awareness rises, some action is usually taken.

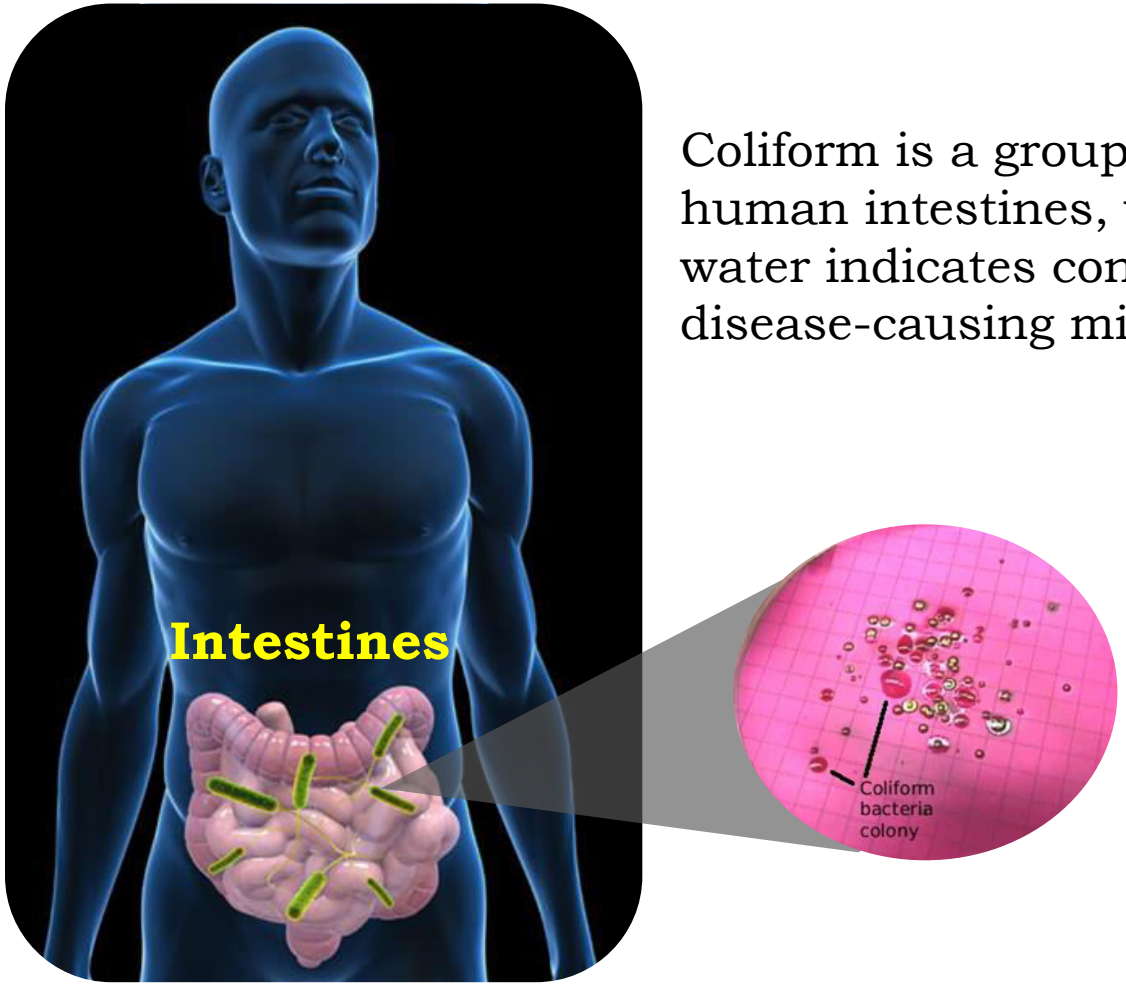
You must have heard about the Ganga Action Plan.

Thank You

MANAGEMENT OF NATURAL RESOURCES

- **Ganga Action Plan**

This multi-crore project came about in 1985 because the quality of the water in the Ganga was very poor.



Coliform is a group of ***bacteria***, found in human intestines, whose presence in water indicates contamination by disease-causing microorganisms.

Pollution of the Ganga

Pollution of the Ganga

The ***Ganga runs*** its course of over ***2500 km*** from ***Gangotri*** in the ***Himalayas*** to ***Ganga Sagar*** in the Bay of ***Bengal***.

Pollution of the Ganga

It is being turned into a drain by more than a hundred towns and cities in ***Uttar Pradesh***, ***Bihar*** and ***West Bengal*** that pour their ***garbage*** and ***excreta*** into it.

Pollution of the Ganga

Largely ***untreated sewage*** is ***dumped*** into the ***Ganges*** every day.

Pollution of the Ganga

In addition, think of the pollution caused by other human activities like bathing, washing of clothes and immersion of ashes or unburnt corpses.

And then, indust
effluents to the Gan
the toxicity ***kills fish*** in large sections of the river.

But we need not feel powerless or overwhelmed by the scale of the problems because there are many things we can do to make a difference.

Thank You

MANAGEMENT OF NATURAL RESOURCES

- **Reduce, Recycle, Reuse**

Students you must have come across the three R's to save the environment: ***Reduce, Recycle and Reuse***. Let us understand, What do they refer to?

Reduce	Recycle	Reuse

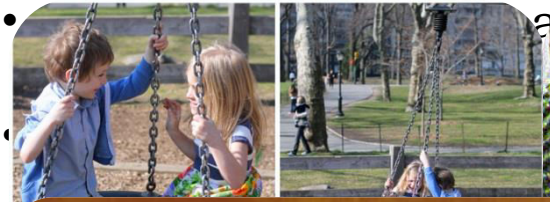
- Use less resources
- Save electricity by switching off unnecessary lights and fans
- Save water by repairing leaky taps
- Do not waste food

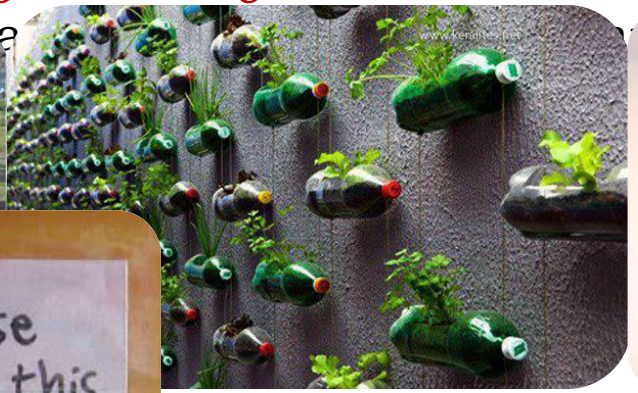
Reduce	Recycle	Reuse

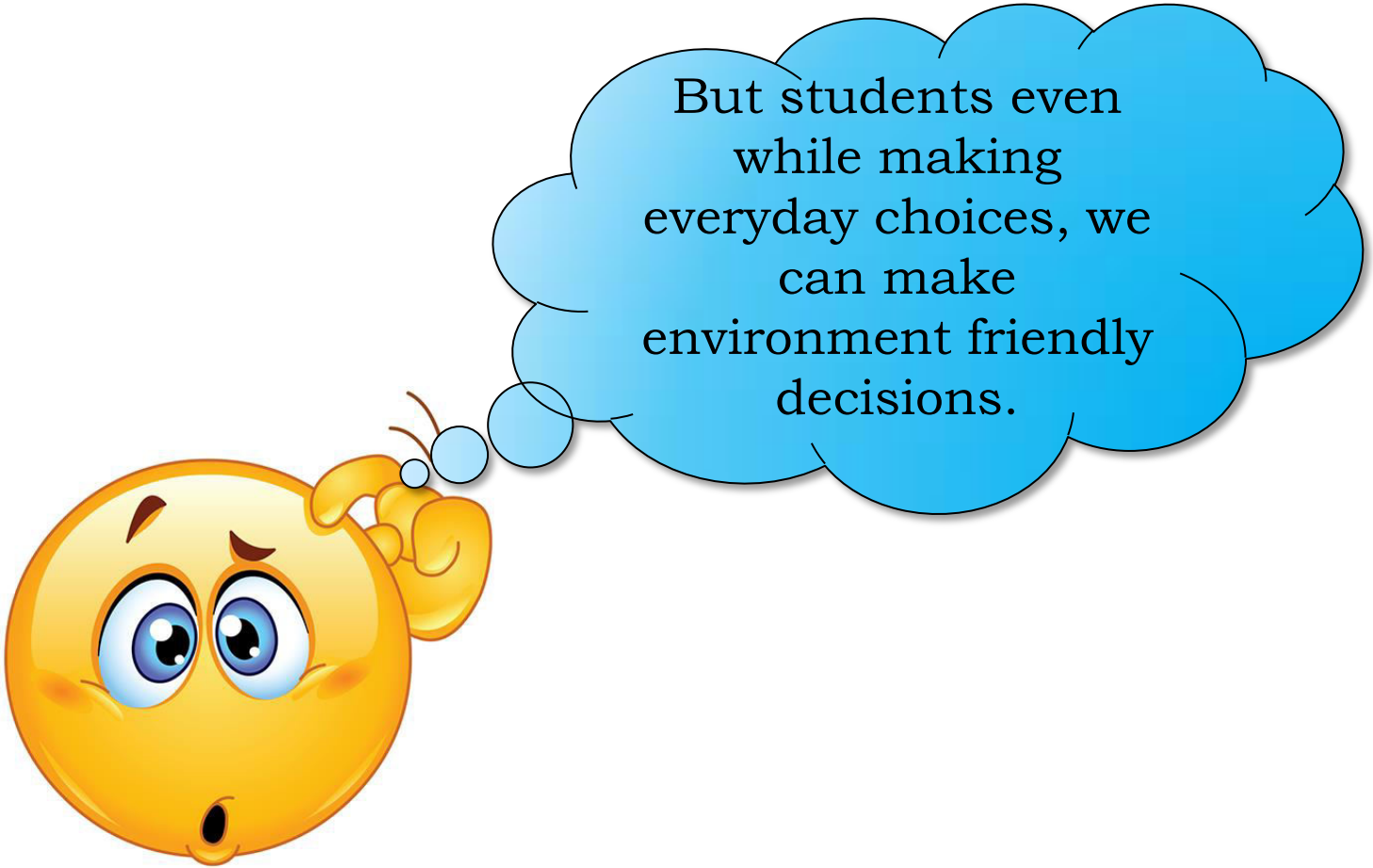
- Collect *paper, plastic, glass* and *metal items*
  required things *instead of synthesizing or*
  at

Reduce	Recycle	Reuse

- Simply *use* things *again and again*
- a
- it and use
- .






But students even while making everyday choices, we can make environment friendly decisions.

For doing this, we need to know more about how our choices affect the environment, these effects may be immediate or long term or long-ranging.

Thank You

MANAGEMENT OF NATURAL RESOURCES

- **Sustainable Developement**

The concept of sustainable development encourages forms of growth that meet current basic human needs, while preserving the resources for the needs of future generations.

Economic development is linked to environmental conservation.

Thus sustainable development implies a change in all aspects of life.

Sustainable development depends upon

The willingness of the people to change their perceptions of

Socio-economic conditions

Environmental conditions

s of each
heir present
sources.

Thank You

MANAGEMENT OF NATURAL RESOURCES

- **Management of Resources**

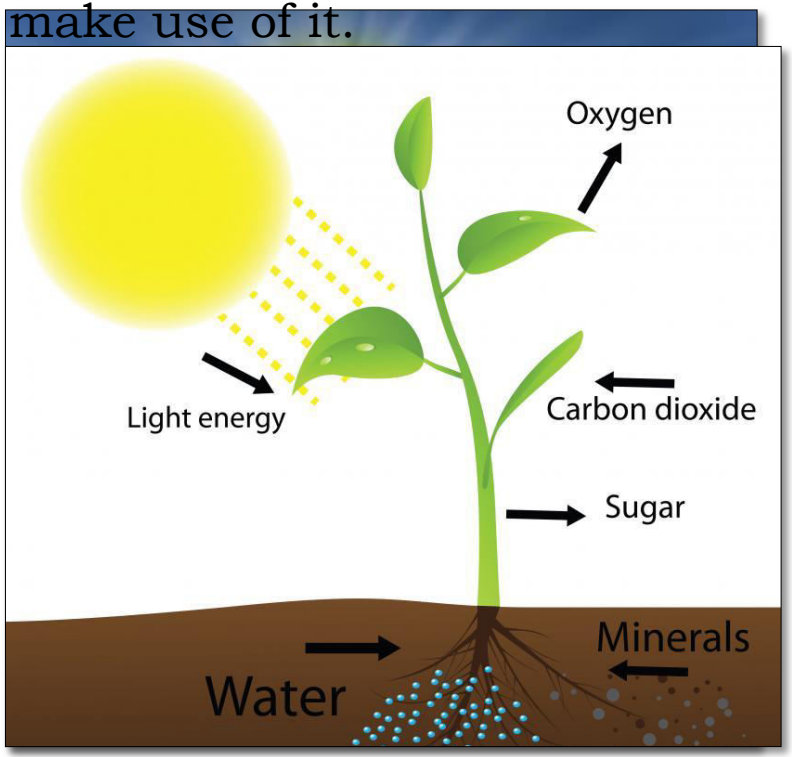
WHY DO WE NEED TO MANAGE OUR RESOURCES?

Not just roads and buildings,

clothes, books, toys,

om resources on this earth.

The only thing we get from outside is energy which we receive from the Sun. Even this energy is processed by living organisms and various physical and chemical processes on the earth before we make use of it.




Why do we need to use our resources carefully?

Because these resources are not unlimited

With the human population increasing at a tremendous rate due to improvement in health-care,

Non-Renewable Energy

Thank You

MANAGEMENT OF NATURAL RESOURCES

- **Management of Natural Resources**

Management of natural resources

Requi

so that these will la
ons to c e
tation
lt

for short term gains.

Management of natural resources

So that all, benefit from the development of these resources.

Should

Ensure equitable distribution of resources


Another factor
to be considered
while we exploit
these natural
resources is....

We cause damage to the environment while these resources are either extracted or used.

For example, mining causes pollution because of the large amount of slag which is discarded for every tonne of metal extracted.

Hence, sustainable natural resource management demands that we plan for the safe disposal of these wastes too.

Thank You

MANAGEMENT OF NATURAL RESOURCES

- **Saving the Biodiversity**

FORESTS AND WILD LIFE

However, the range of different life forms are also important.

Bacteria

Fungi

Ferns

Flowering plants

Nematodes

Insects

Birds

Reptiles

One of the main aims of conservation is to try and preserve the biodiversity we have inherited.

When we consider the conservation of forests, we need to look at the stakeholders who are

The people who live in or around forests are dependent on forest products for various aspects of their life.

Thank You

MANAGEMENT OF NATURAL RESOURCES

- **Stake Holders of Forest**

The Forest Department of the Government which owns the land and controls the resources from forests.

The industrialists – from those who use '***tendu***' leaves to make ***bidis*** to the ones with paper mills – who use various forest produce, but are not dependent on the forests in any one area.

Women plucking tendu leaves.

The wild life and nature enthusiasts who want to conserve nature in its pristine form.

The local people need large quantities of firewood, small timber and thatch.

Bamboo is used to make slats for huts, and baskets for collecting and storing food materials.

Implements for ***agriculture***, fishing and hunting are largely made of wood, also forests are sites for ***fishing*** and ***hunting***.

In addition to people gathering **fruits**, **nuts** and **medicines** from the forests, their cattle also graze in forest areas or feed on other fodder which is collected from forests.

Do you think such use of forest resources would lead to the exhaustion of these resources?

Thank You

MANAGEMENT OF NATURAL RESOURCES

- **Use of Forest Resources**

The Forest Department in independent India took over from the British the control of the forests but local knowledge and local needs continued to be ignored in the management practices.

सत्यमेव जयते

जहाँ है हरियाली
वहाँ है खुशहाली

A number of industries are based on forest for example **timber**, **paper**, **lac** and **sports equipment**.

Industries would consider the forest as merely a source of raw material for its factories.

The conservationists were initially taken up with large animals like lions, tigers, elephants and rhinoceros.

There have been enough instances of local people working traditionally for conservation of forests.

Thank You

MANAGEMENT OF NATURAL RESOURCES

- **Bishnoi Community and Chipko Andolan**

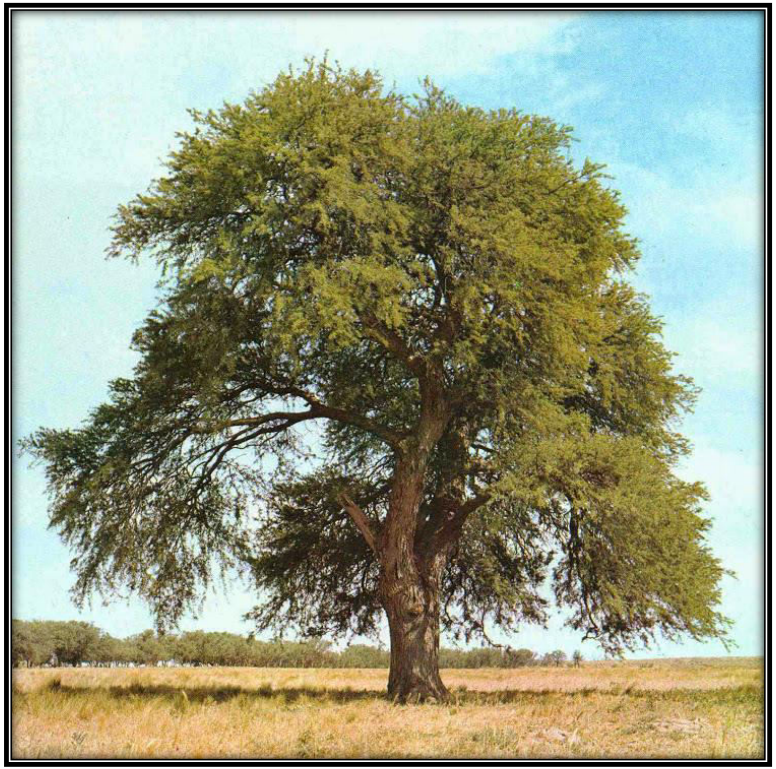
For example, the case of the Bishnoi community in Rajasthan, for whom conservation of forest and wildlife has been a religious tenet.

Bishnoi co

The Government of India has recently instituted an ***'Amrita Devi Bishnoi National Award for Wildlife Conservation'*** in the memory of Amrita Devi Bishnoi.

Amrita Devi Bishnoi

Amrita Devi Bishnoi in 1931 sacrificed her life along with 363 others for the protection of '***khejri***' trees in ***Khejrali village*** near ***Jodhpur in Rajasthan***.



Sustainable Management

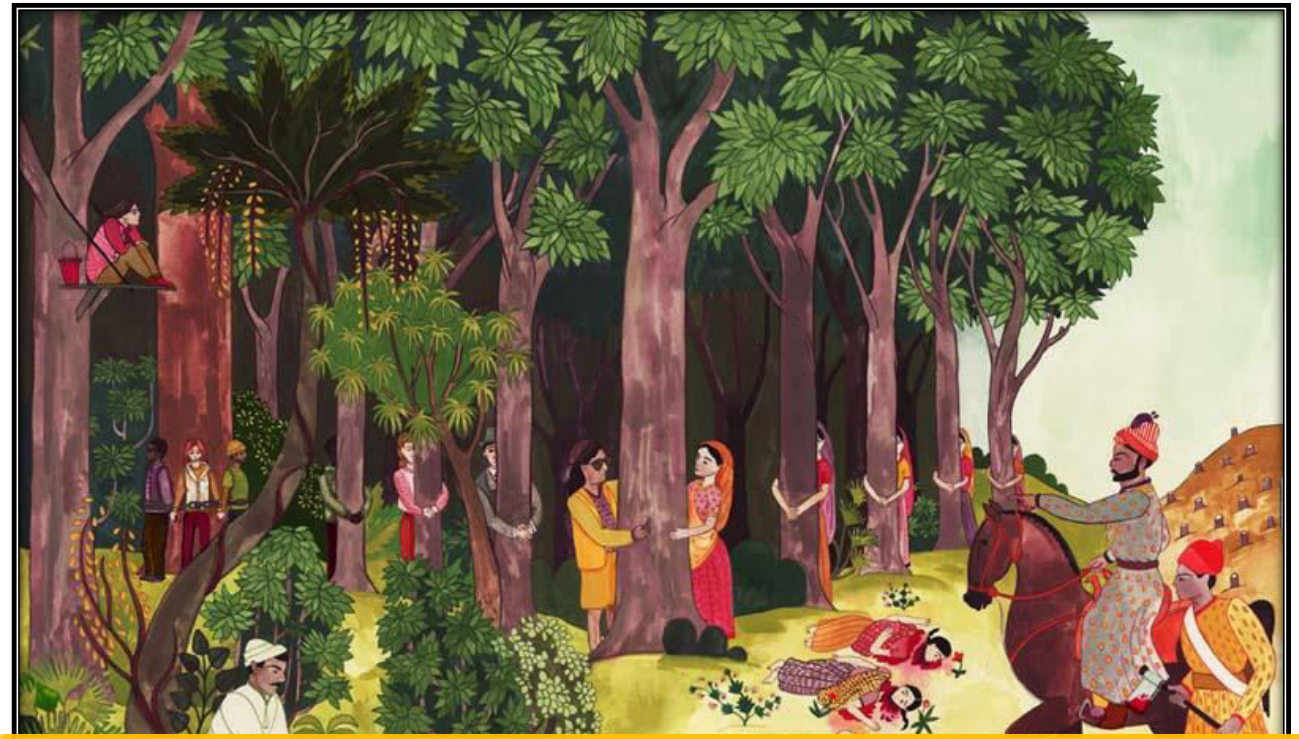
Forest resources are often made available for industrial use at rates far below the market value while these are denied to the local people.

Sustainable Management

The **Chipko Andolan** v… t level effort to end the alienation of people from their forests.

Hug the Trees Movement

The movement originated from an incident in a remote village called Reni in Garhwal, high-up in the Himalayas during the early 1970s.



There was a dispute between the local villagers and a logging contractor who had been allowed to fell trees in a forest close to the village.

Thank You

MANAGEMENT OF NATURAL RESOURCES

- **Water Conservation**

WaterForAll

WATER FOR ALL

Water is a basic necessity for all terrestrial forms of life.

WATER FOR ALL

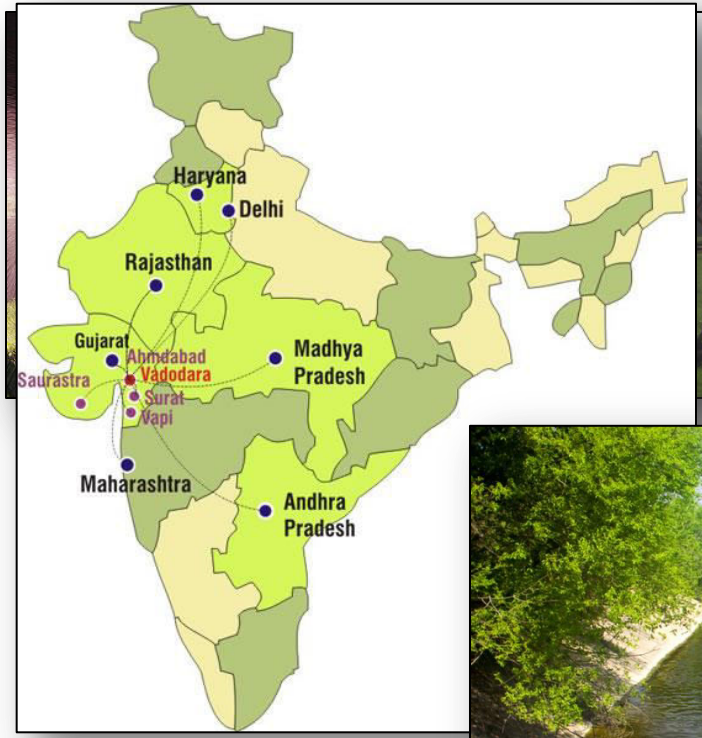
Water is a basic necessity for all terrestrial forms of life.

WATER FOR ALL

Human intervention also changes the availability of water in various regions. Rains in India are largely due to the monsoons.

This means that most of the rain falls in a few months of the year.

Irrigation methods like dams, tanks and canals have been used in various parts of India since ancient times.



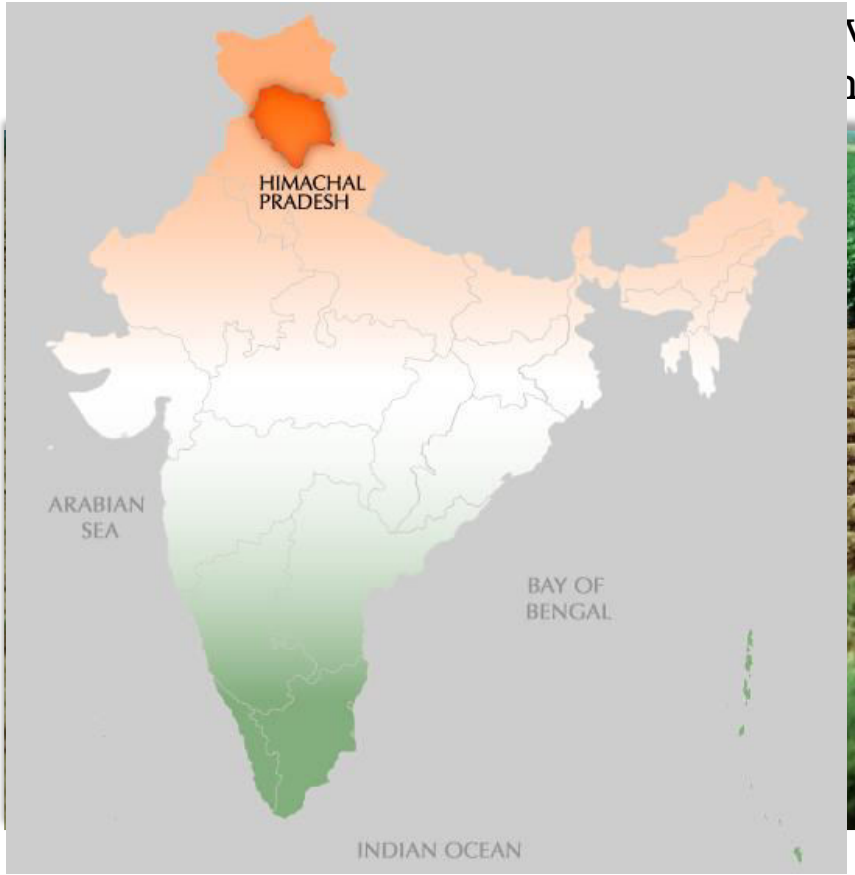
These were generally local interventions managed by local people and assured that the basic minimum requirements for both *agriculture* and *daily needs* were met throughout the year.

Thank You

MANAGEMENT OF NATURAL RESOURCES

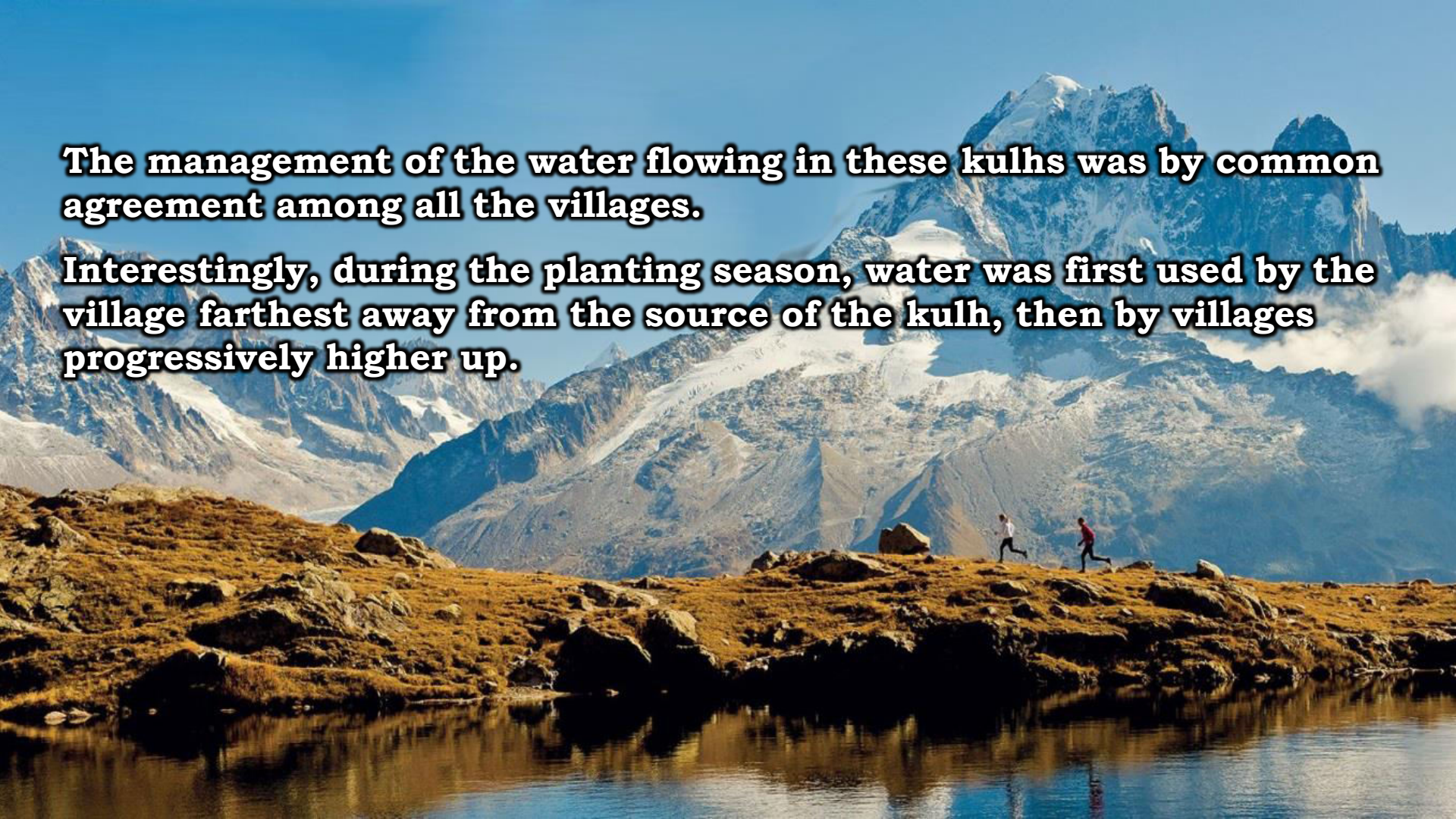
- **Kulhs in Himachal Pradesh**

Kulhs in Himachal Pradesh



ved a local system of canal
ndred years ago.

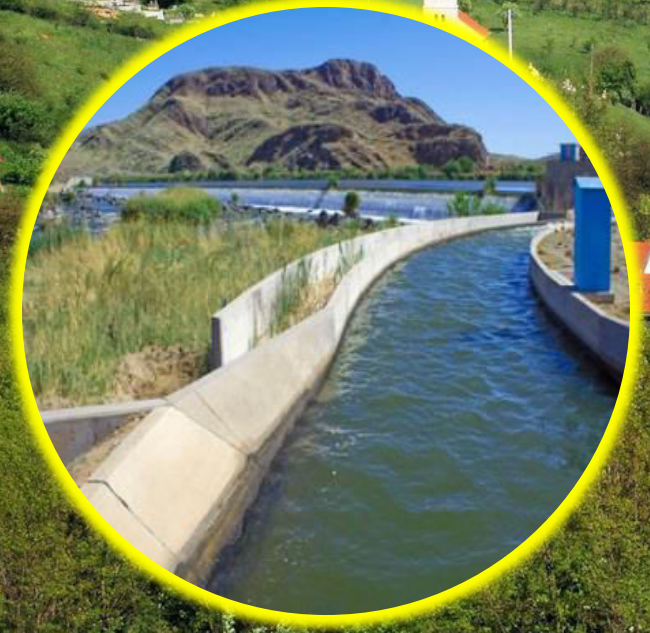
The water flowing in the streams was diverted into man-made channels which took this water to numerous villages down the hillside.



The management of the water flowing in these kulhs was by common agreement among all the villages.

Interestingly, during the planting season, water was first used by the village farthest away from the source of the kulh, then by villages progressively higher up.

The water flowing in the streams was diverted into man-made channels which took this water to numerous villages down the hillside.



Thank You

MANAGEMENT OF NATURAL RESOURCES

- **Dams and Watersheds**

Dams

Large dams can ensure the storage of adequate water not just for irrigation, but also for generating electricity. Canal systems leading from these dams can transfer large amounts of water great distances.

For example, the ***Indira Gandhi Canal*** has brought greenery to considerable areas of Rajasthan.

Criticisms about large dams address

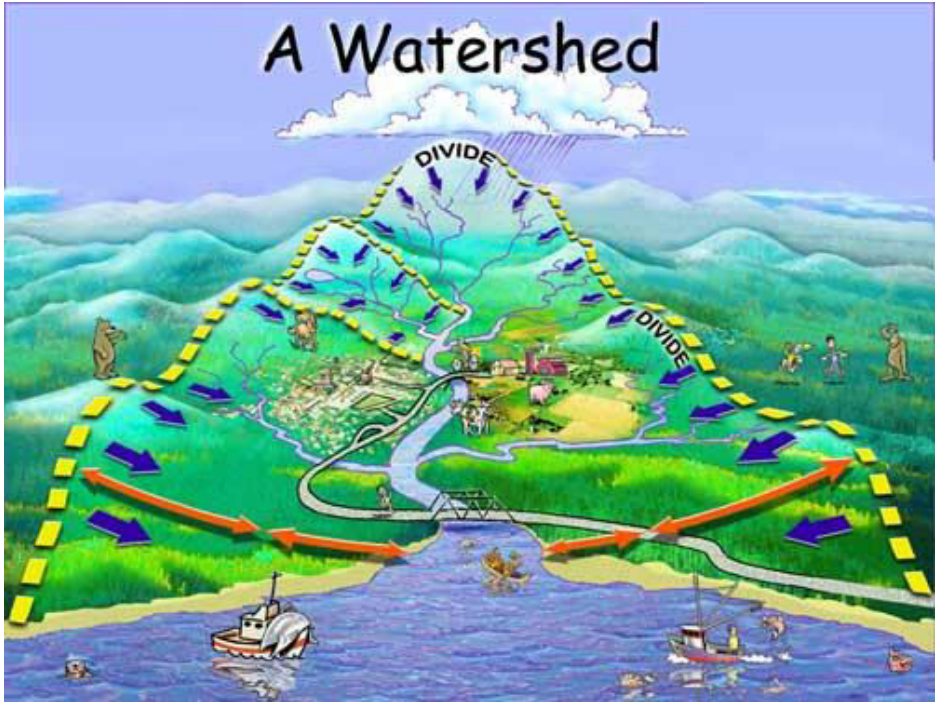
1. Social problems because they displace large number of peasants and tribals without adequate compensation or rehabilitation
2. Economic problems because they swallow up huge amounts of public money without the generation of proportionate benefits
3. Environmental problems because they contribute enormously to deforestation and the loss of biological diversity.

The people who have been displaced by various development projects are largely poor ***tribals*** who do not get any benefits from these projects and are alienated from their lands and forests without adequate compensation.

The oustees of the Tawa Dam built in the 1970s are still fighting for the benefits they were promised.

Water Harvesting

Watershed management emphasizes scientific soil and water conservation in order to increase the biomass production.


A Watershed
DIVIDE
DIVIDE

Watershed management not only increases the production and income of the watershed community.

But also mitigates droughts and floods and increases the life of the downstream dam and reservoirs.

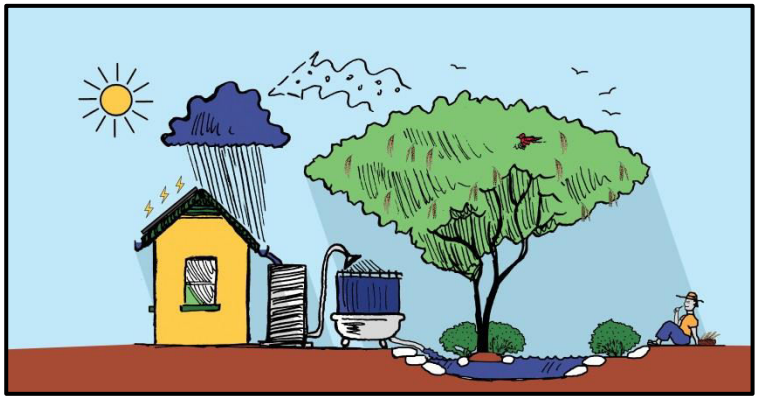
Thank You

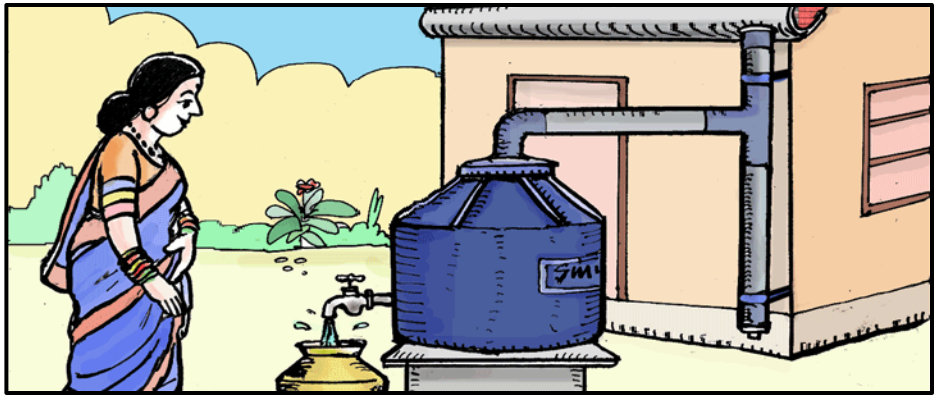
MANAGEMENT OF NATURAL RESOURCES

- **Water-harvesting Techniques**

Water harvesting techniques are highly locale specific and the benefits are also localized.

Giving people control over their local water resources ensures that mismanagement and over-exploitation of these resources is reduced/removed.





Water harvesting is an age-old concept in India.

- ***Khadins***, ***tanks*** and ***nadis*** in ***Rajasthan***
- ***Bandharas*** and ***tals*** in ***Maharashtra***
- ***Bundhis*** in ***Madhya Pradesh*** and ***Uttar Pradesh***
- ***Ahars*** and ***pynes*** in ***Bihar***
- ***Kuhls*** in ***Himachal Pradesh***
- ***Ponds*** in the Kandi belt of ***Jammu region***
- ***Eris*** (***tanks***) in ***Tamil Nadu***
- ***Surangams*** in ***Kerala***
- ***Kattas*** in ***Karnataka***

are some of the ancient water harvesting, including water conveyance, structures still in use today.

In largely level terrain, the water harvesting structures are mainly crescent shaped earthen embankments or low, straight concrete-andrubble **“check dams”** built across seasonally flooded gullies.

Monsoon rains fill ponds behind the structures.

Only the largest structures hold water year round; most dry up six months or less after the monsoons.

Their main purpose, however, is not to hold surface water but to recharge the ground water beneath.

The advantages of water stored in the ground are many.

- It *does not evaporate*, but spreads out to recharge *wells* and *provides moisture* for vegetation over a wide area.
- In addition, it does not provide breeding grounds for *mosquitoes* like *stagnant water collected* in *ponds* or artificial *lakes*.
- The ground-water is also relatively protected from *contamination* by *human and animal waste.*

Thank You

MANAGEMENT OF NATURAL RESOURCES

- **Coal And Petroleum**

COAL AND PETROLEUM

Another important resource fossil fuels that is

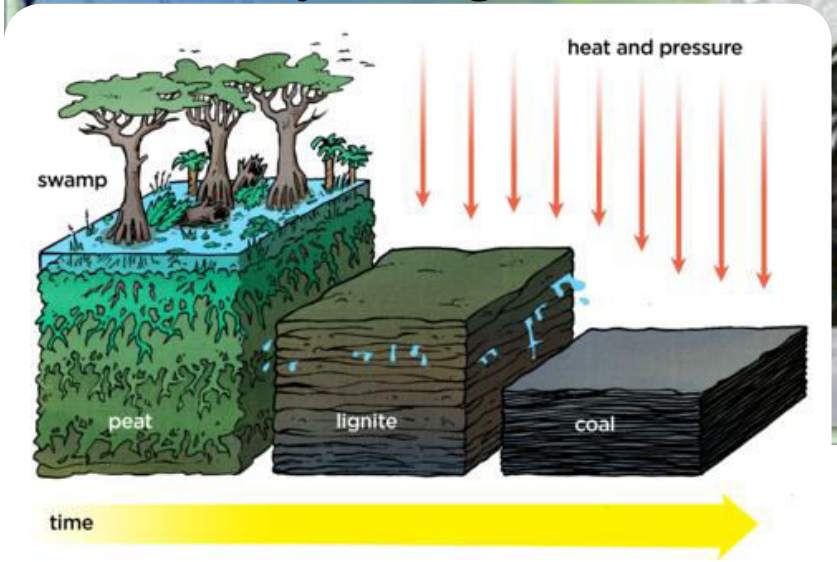
Coal **Petroleum** which are important sources of energy for us.

Since the industrial revolution, we have been using increasing amounts of energy to meet our basic needs and for the manufacture of a large number of goods upon which our lives depend.

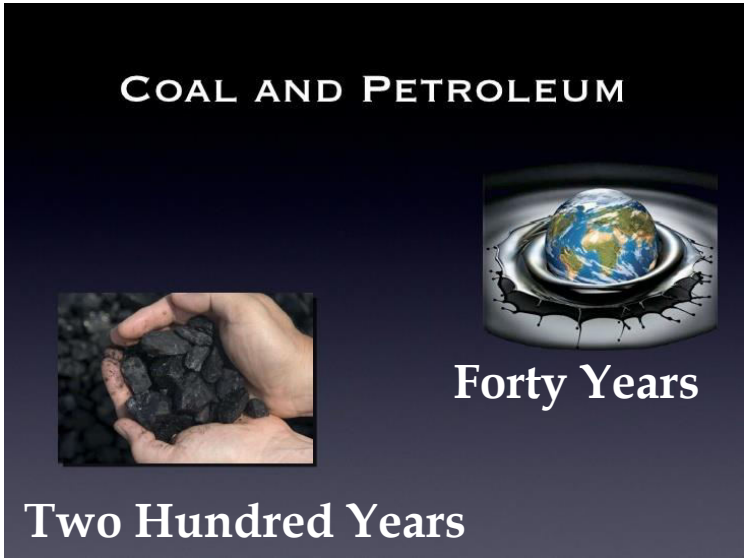
These energy needs have been largely met by the reserves of **coal** and **petroleum**.

The management of these energy sources involves slightly different perspectives.

Coal and petroleum were formed from the degradation of bio-mass millions of years ago.

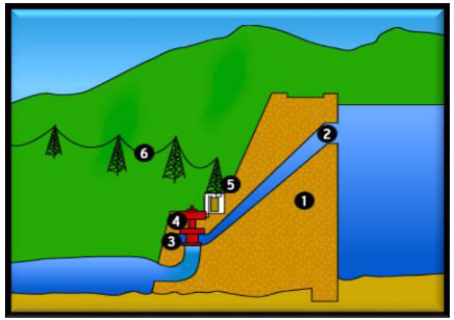


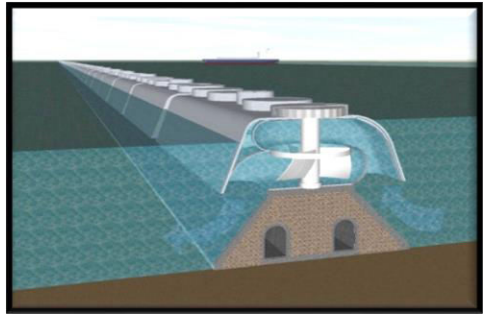
Hence these are resources that will be exhausted in the future no matter how carefully we use them.



Our known petroleum resources will last us for about forty years and the coal resources will last for another two hundred years.

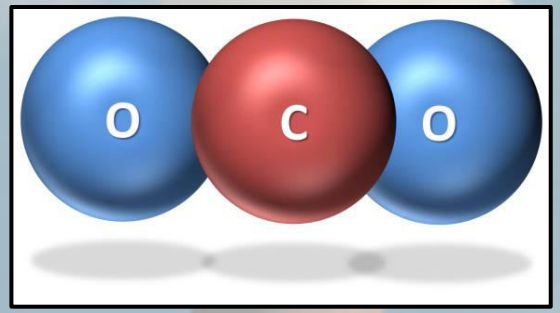
But looking to other sources of energy is not the only consideration when we look at the consumption of coal and petroleum.



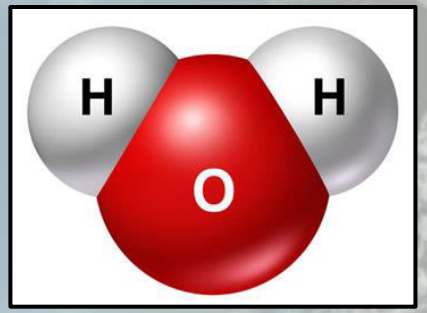


Since coal and petroleum have been formed from bio–mass, in addition to carbon, these contain hydrogen, nitrogen and sulphur.

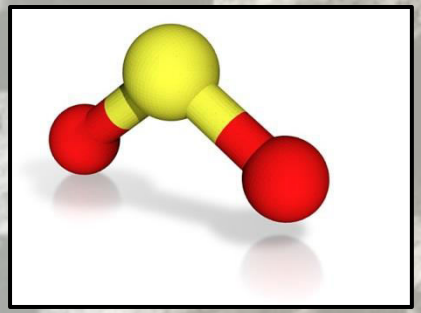
When these are burnt, the products are carbon dioxide, water, oxides of nitrogen and oxides of sulphur.

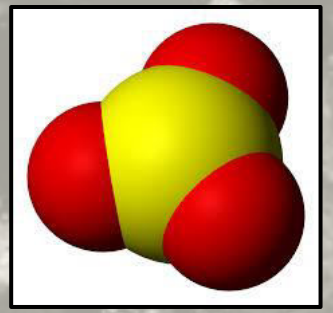


Carbon dioxide

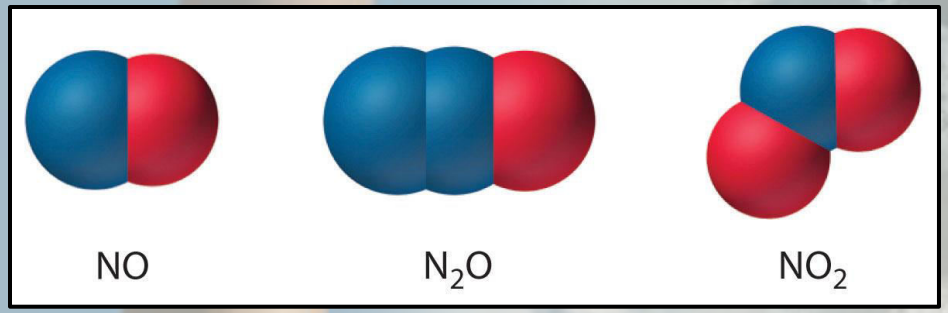


Water



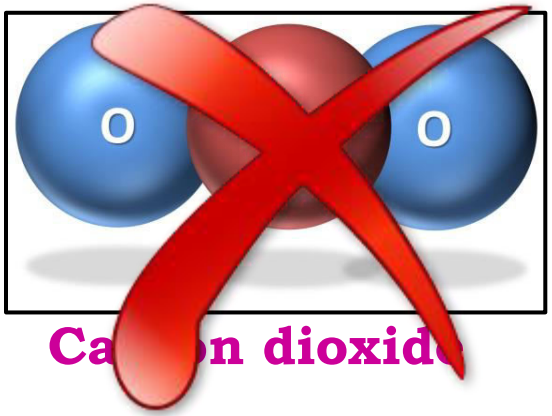


Oxides of sulphur

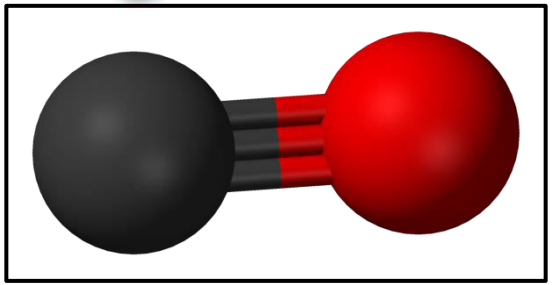


Oxides of nitrogen

When combustion takes place in insufficient air (oxygen), then carbon monoxide is formed instead of carbon dioxide.

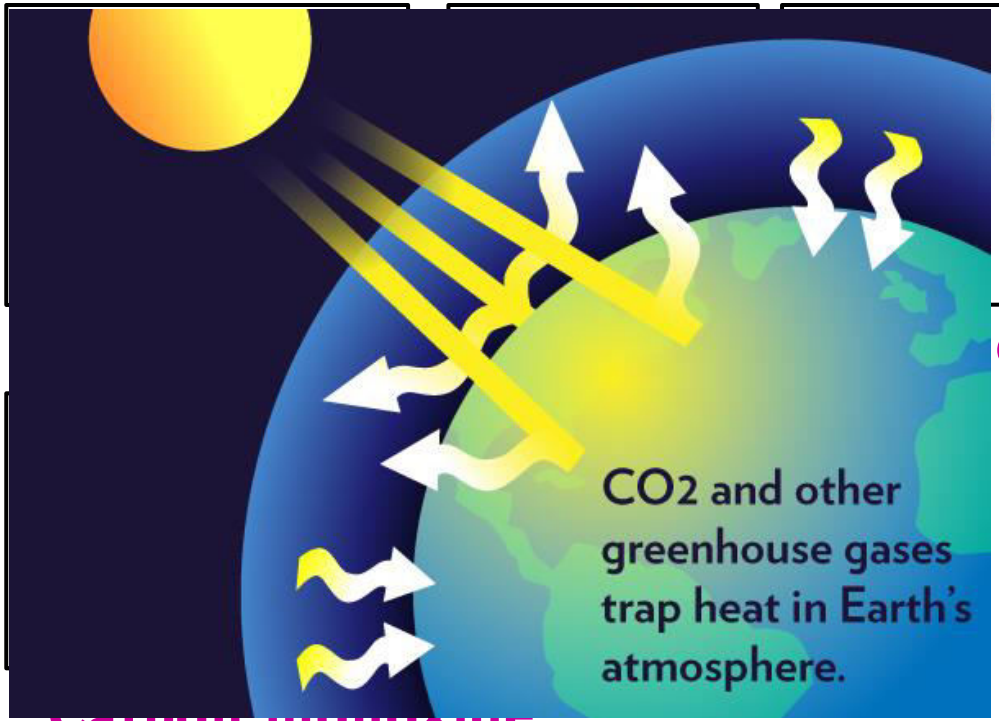


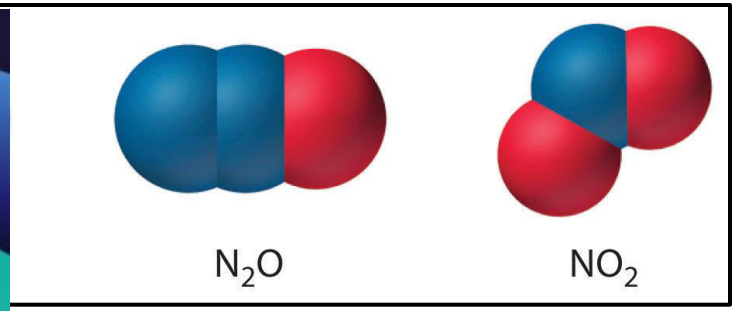
Carbon dioxide



Carbon monoxide

These products, the oxides of sulphur and nitrogen and carbon monoxide are poisonous at high concentrations and carbon dioxide is a green-house gas.





Oxides of nitrogen

Carbon monoxide

Thank You

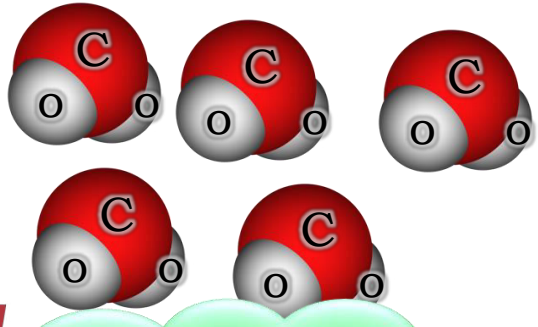
MANAGEMENT OF NATURAL RESOURCES

- Coal and petroleum
- Overview of natural resource management

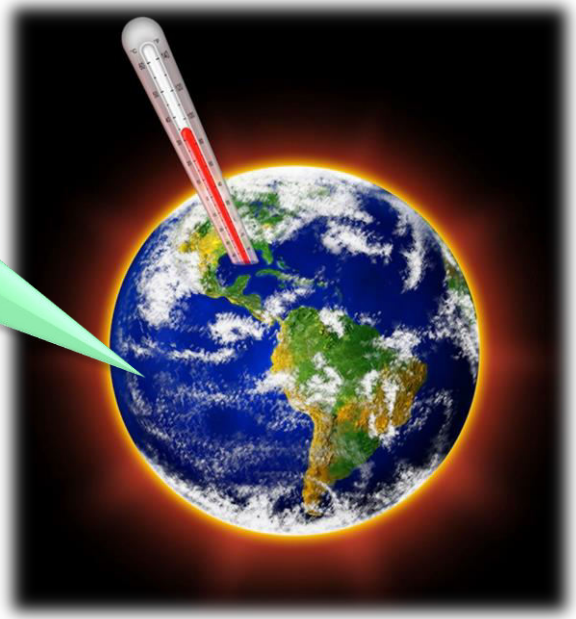
If all of this carbon is converted to carbon dioxide.

C

Huge reservoirs of carbon

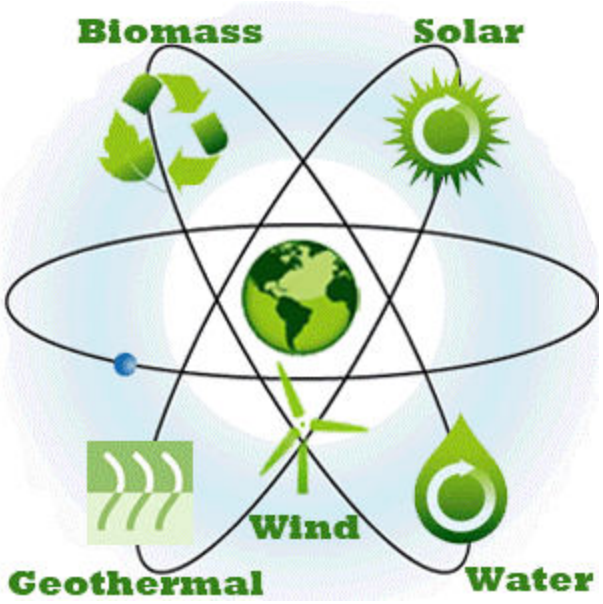


Then the amount of carbon dioxide in the atmosphere is going to increase leading to intense global warming.



Thus, we need to use these resources judiciously.

Some simple choices can make a difference in our energy consumption patterns.



Now let us see some examples of simple choices ....

1. Taking a bus, over using your personal vehicle or walking/cycling.

2. Using bulbs or fluorescent tubes in your homes.

3. Using the lift or taking the stairs.

4. Wearing an extra sweater or using a heating device (heater or ‘sigri’) on cold days.

The management of coal and petroleum also addresses the efficiency of our machines.

Fuel is most commonly used in internal combustion engines for transportation.

Recent research in this field concentrates on ensuring complete combustion in these engines in order to increase efficiency and also reduce air pollution.

AN OVERVIEW OF NATURAL RESOURCE MANAGEMENT

Sustainable management of natural resources is a difficult task.

AN OVERVIEW OF NATURAL RESOURCE MANAGEMENT

In addressing this issue, we need to keep an open mind with regard to the interests of various stakeholders.

AN OVERVIEW OF NATURAL RESOURCE MANAGEMENT

We need to accept that people will act with their own best interests as the priority.

AN OVERVIEW OF NATURAL RESOURCE MANAGEMENT

But the realization that such selfish goals will lead to misery for a large number of people and a total destruction of our environment is slowly growing.

AN OVERVIEW OF NATURAL RESOURCE MANAGEMENT

But the realization that such selfish goals will lead to misery for a large number of people.

AN OVERVIEW OF NATURAL RESOURCE MANAGEMENT

A total destruction of our environment is slowly growing.

AN OVERVIEW OF NATURAL RESOURCE MANAGEMENT

Going beyond laws, rules and regulations, we need to tailor our requirements, individually and collectively, so that the benefits of development reach everyone now and for all generations to come.

Thank You