

ENVIRONMENTAL STUDIES

Dr. V. Sivashankar

Environment Definition

The complex of physical, chemical and biological factors in which a living organism or community exists.

Environment is of five types

1. Jungle
2. Tundra
3. Aquatic
4. Grassland
5. desert

Jungle



Jungle



AMAZON



Amazon Satellite view





CONGO



Congo Satellite Map

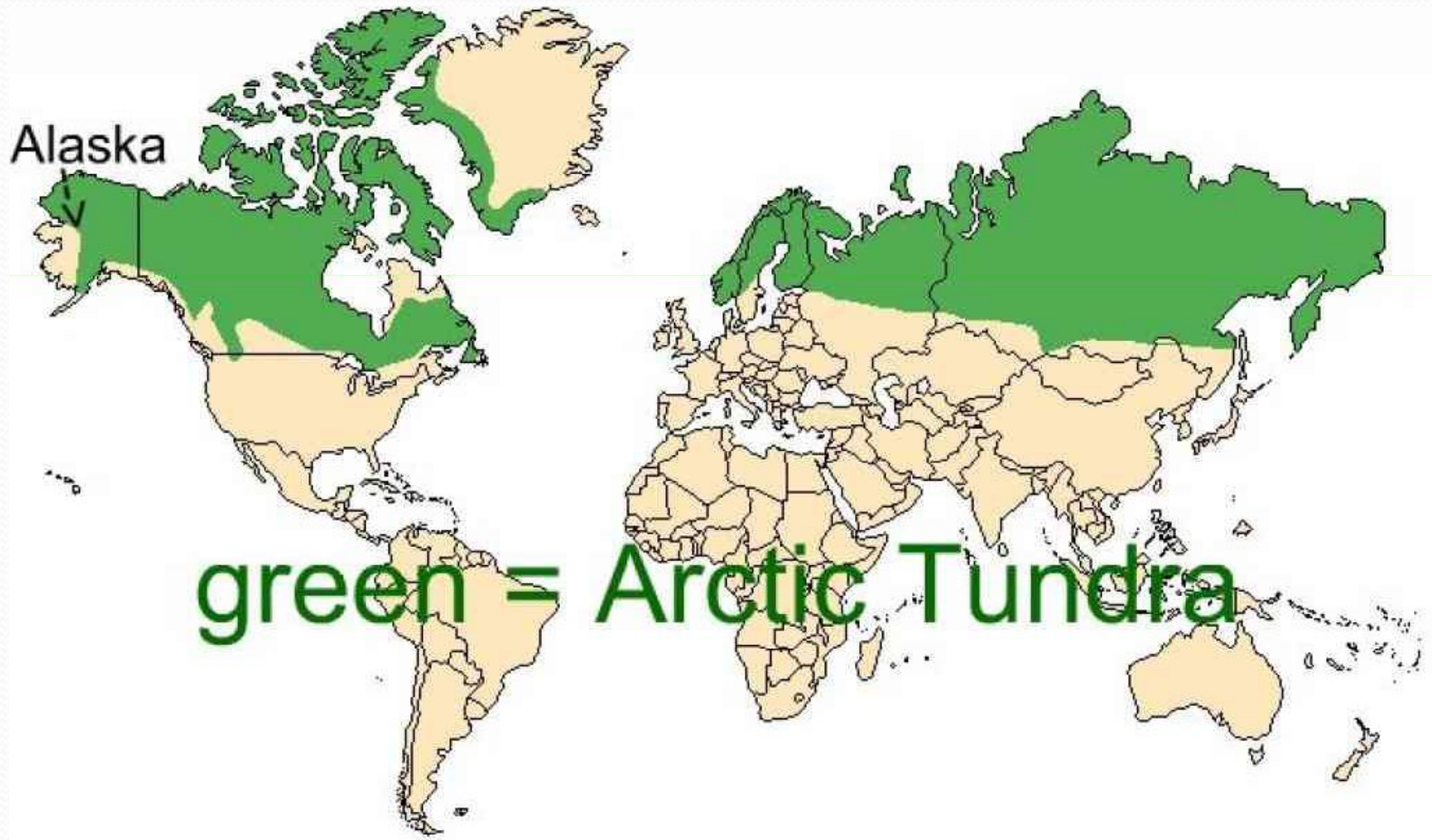


Sumatra satellite map



Tundra Forest





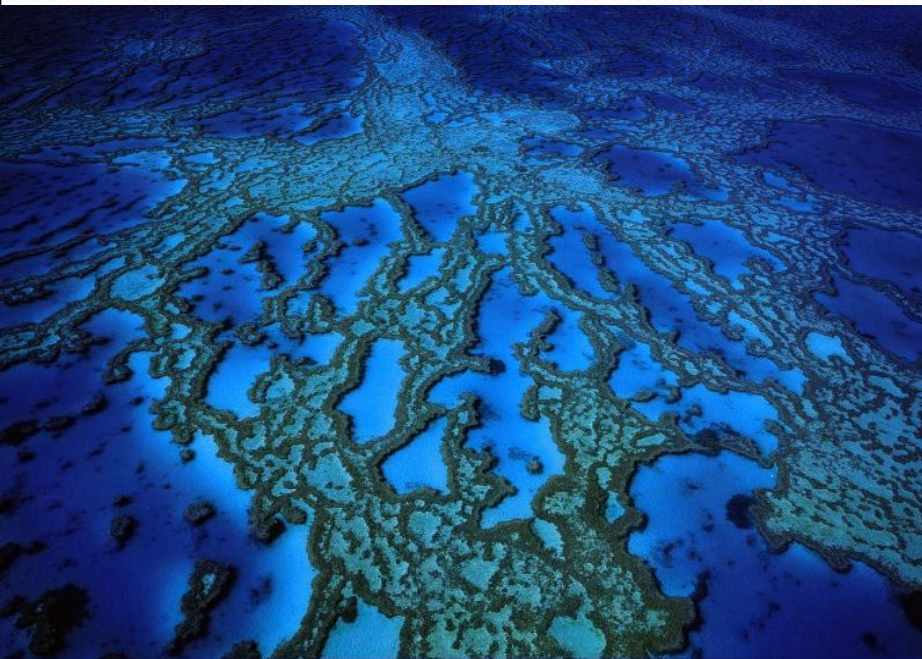
green = Arctic Tundra

Aquatic





Great barrier reef



Grass land



Grass land



Grass land



Desert



Vegetation in sahara Desert



Desert



Desert with life



Desert with life



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Mangrove forest



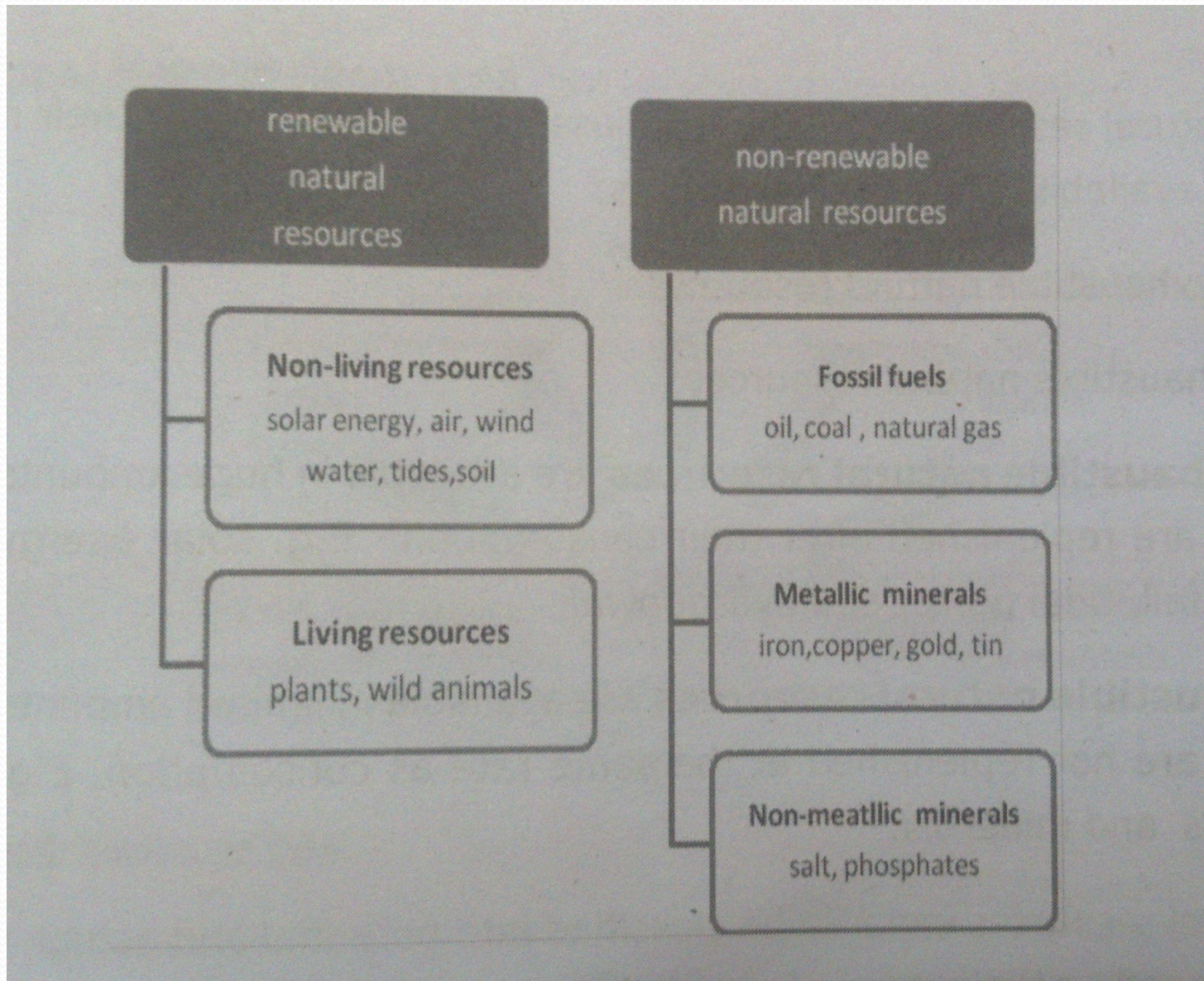
Mangrove forest



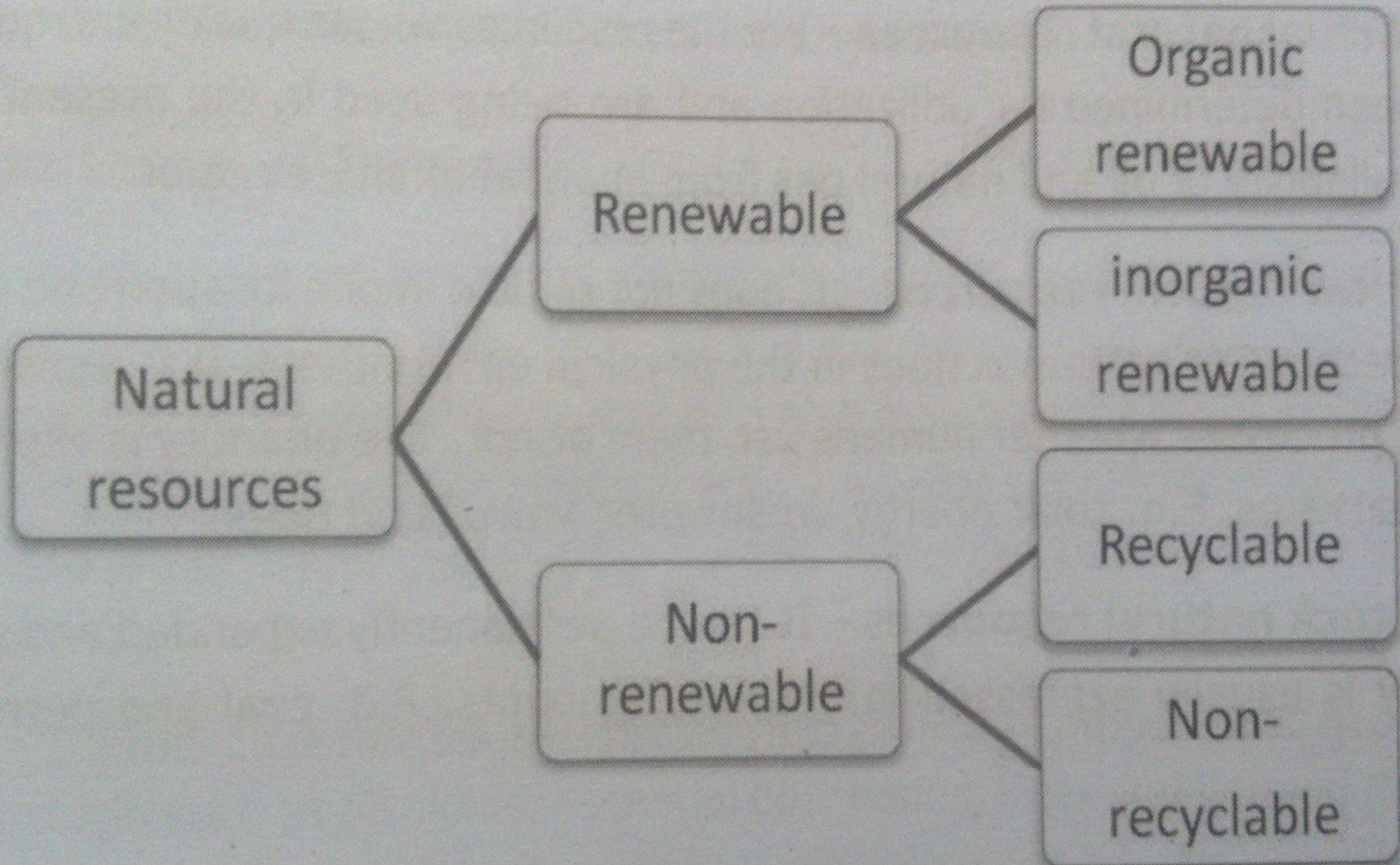
Natural resources



Natural resources



Natural resources



Natural resources

1. Inexhaustable natural resources

Eg: solar,windrainfall,tidal,hydro power etc

2. exhaustable natural resources

Eg: fossil fuels, minerals, metals etc

- potential natural resource (resource yet to be identified)
- Actual natural resource (resource currently used)
- Flow natural resource (solar energy, water, tides, waves)
- Stock natural resource (coal and petroleum deposits)

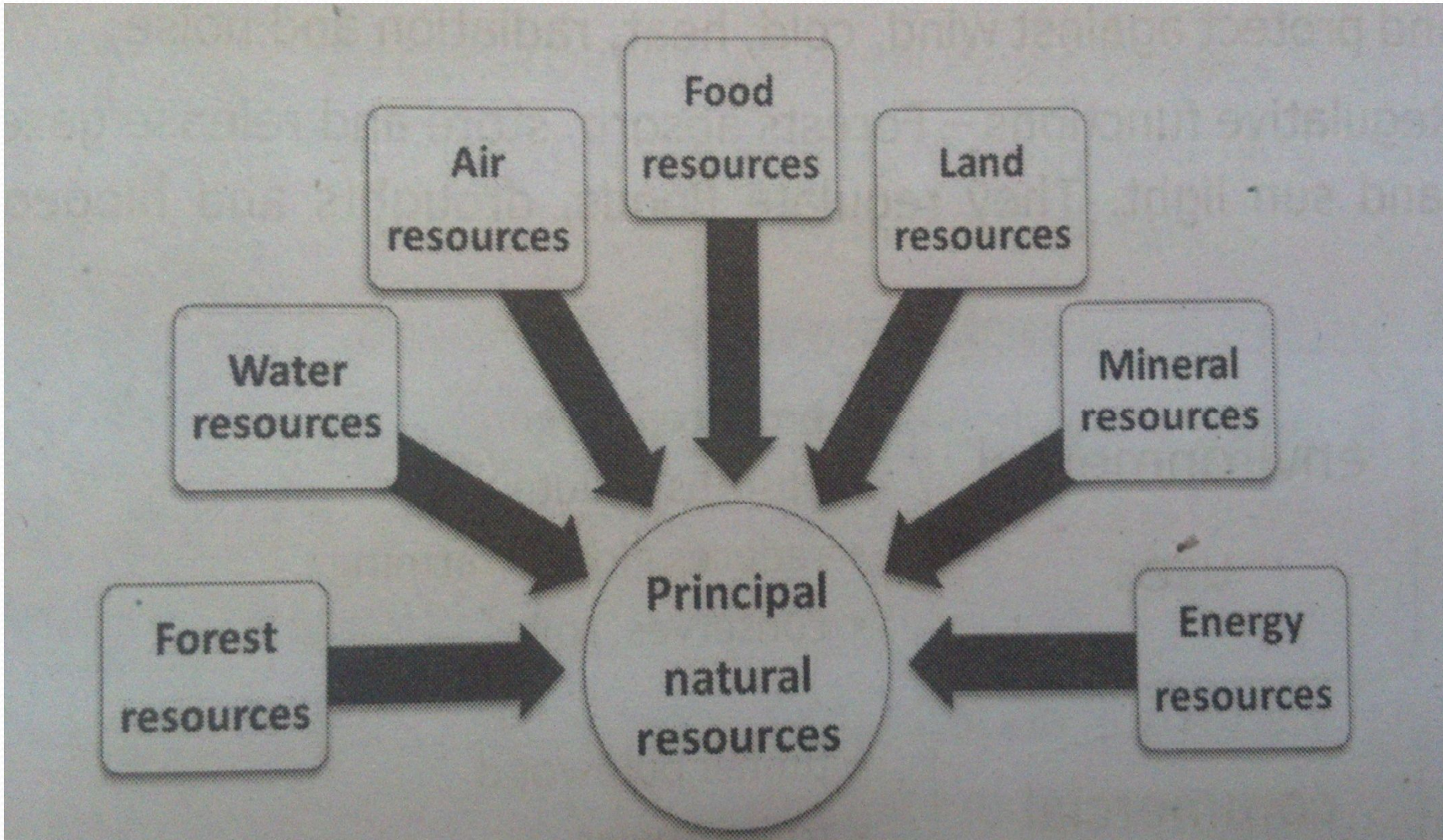


Thank You

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Principal natural Resource



Forest resource

Productive functions- yield timber, bamboo, rubber, medicine etc

Protective functions- conserve soil and water, protect against heat, cold, wind, radiation and noise.

Regulative functions- absorb, store and release gas, water, minerals and sunlight. Regulate floods and drought

Forest resource

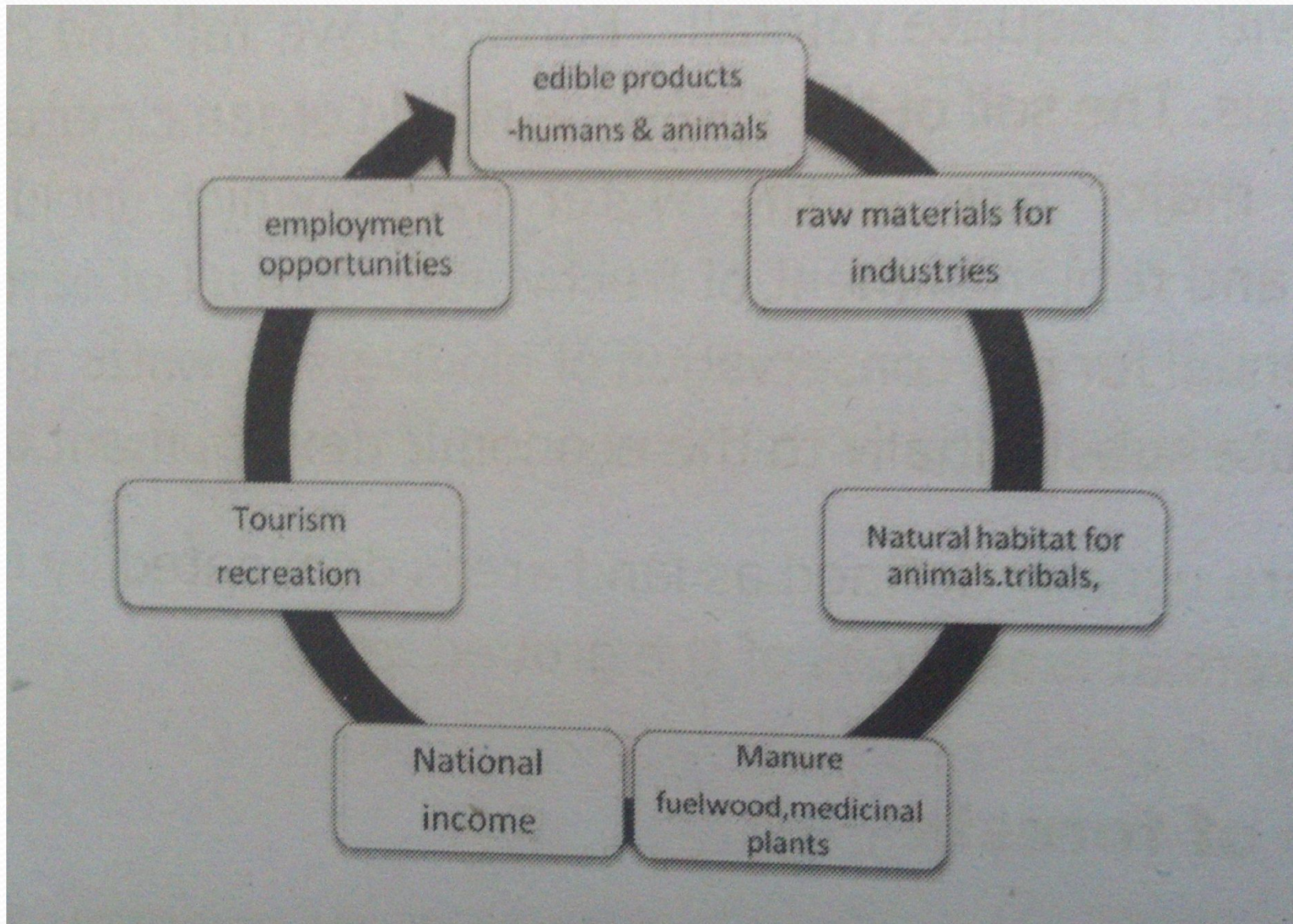
environmental uses

- produces oxygen
- absorbs pollutants
- reduces global warming
- conserves soil

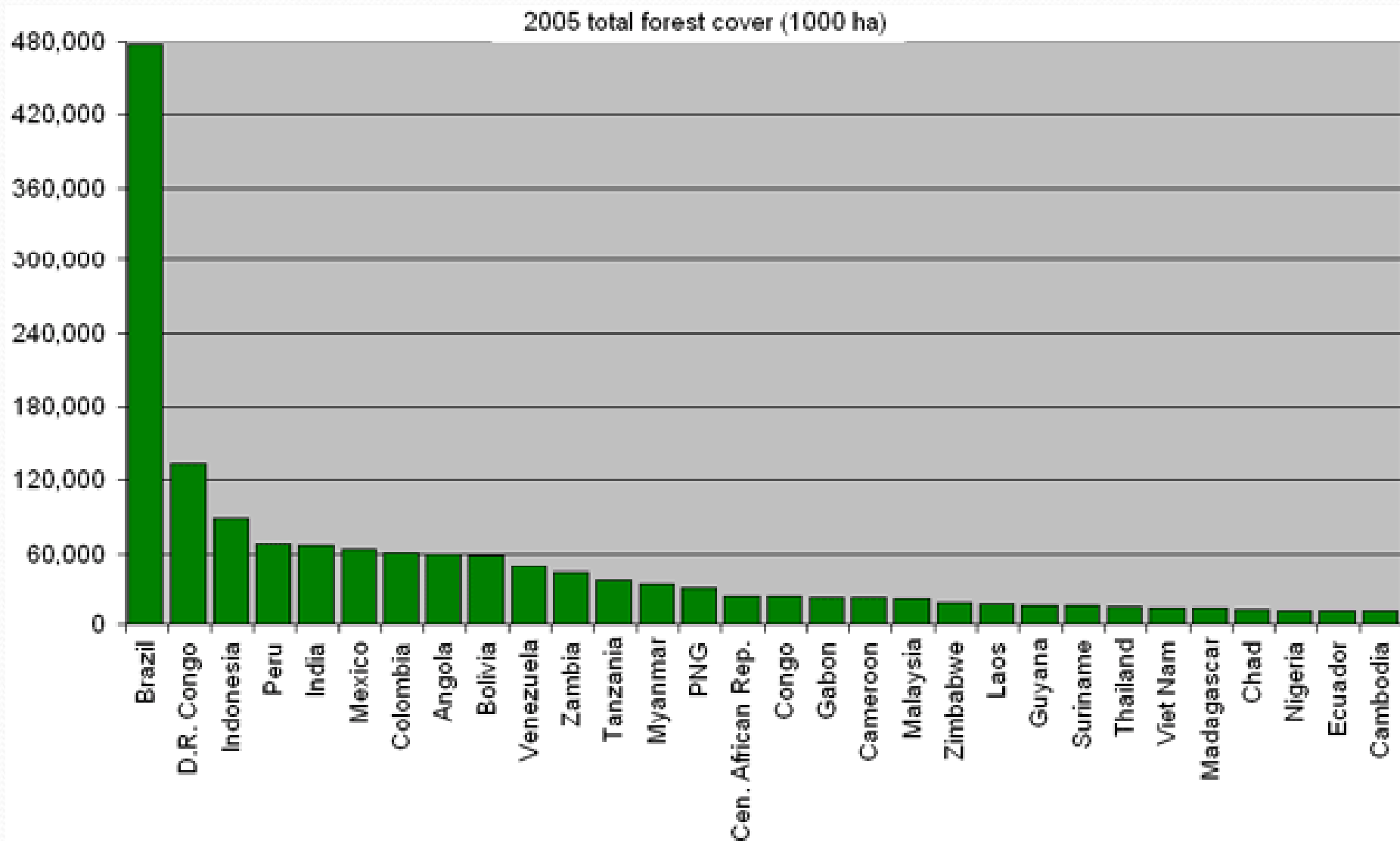
commercial uses

- timber, pulpwood
- fruits, spices
- fiber, rubber
- drugs, medicine

Forest resource



Forest resource



Forest resource

Causes for deforestation:

- Expansion of agriculture
- Growth of human population
- Industrial demand
- Mining operation
- Forest fires
- Forest pests
- Over grazing

Deforestation

Causes of deforestation

Agricultural expansion

Timber extraction

Developmental projects

Mining, Over-grazing



Effects of deforestation

loss of biodiversity

Cause extinction of wildlife species

Disrupt hydrologic cycle and rainfall

change Climate and global warming

Deforestation



Deforestation



Deforestation



Deforestation



Deforestation



Deforestation



Deforestation



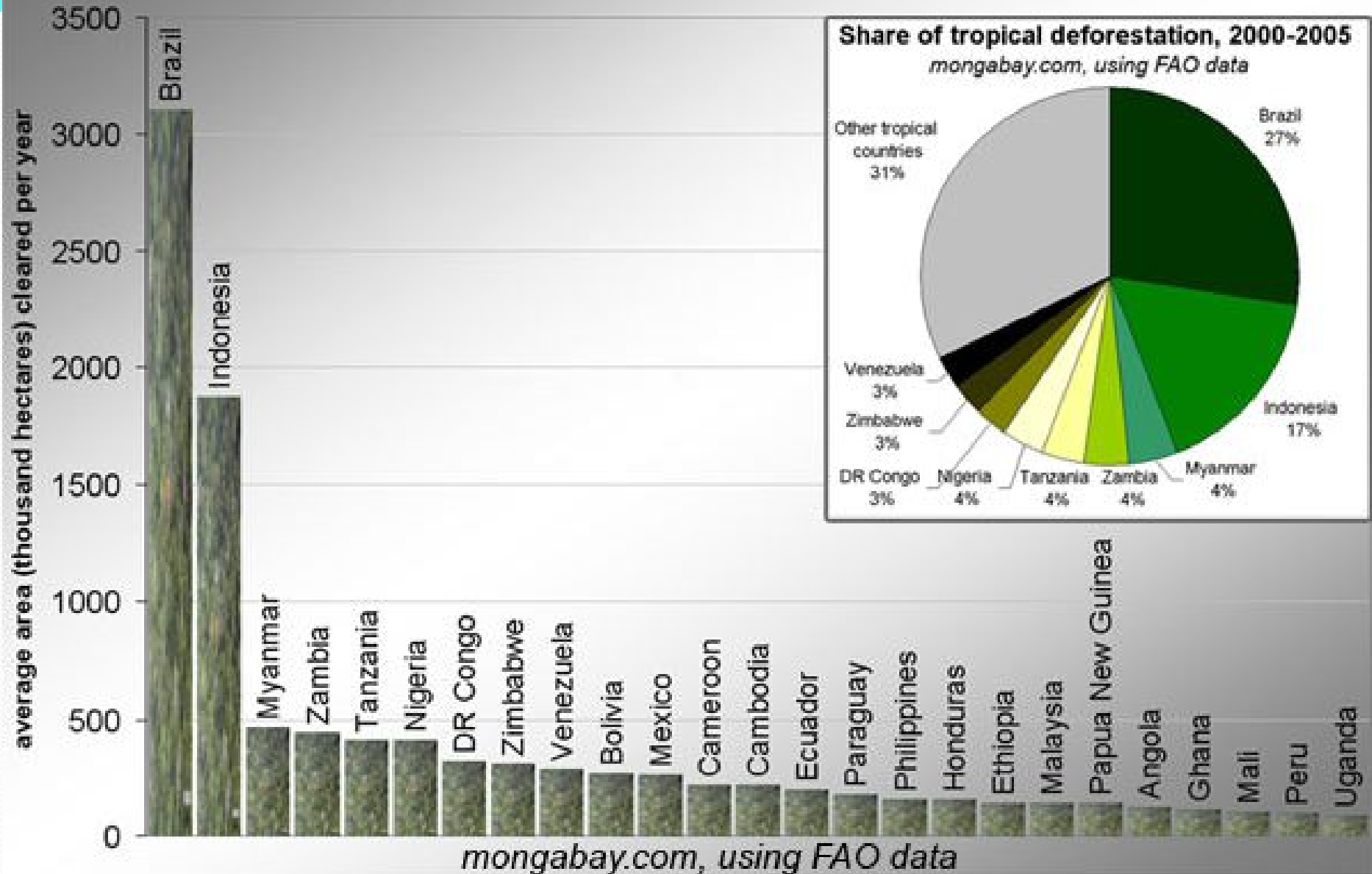
Deforestation

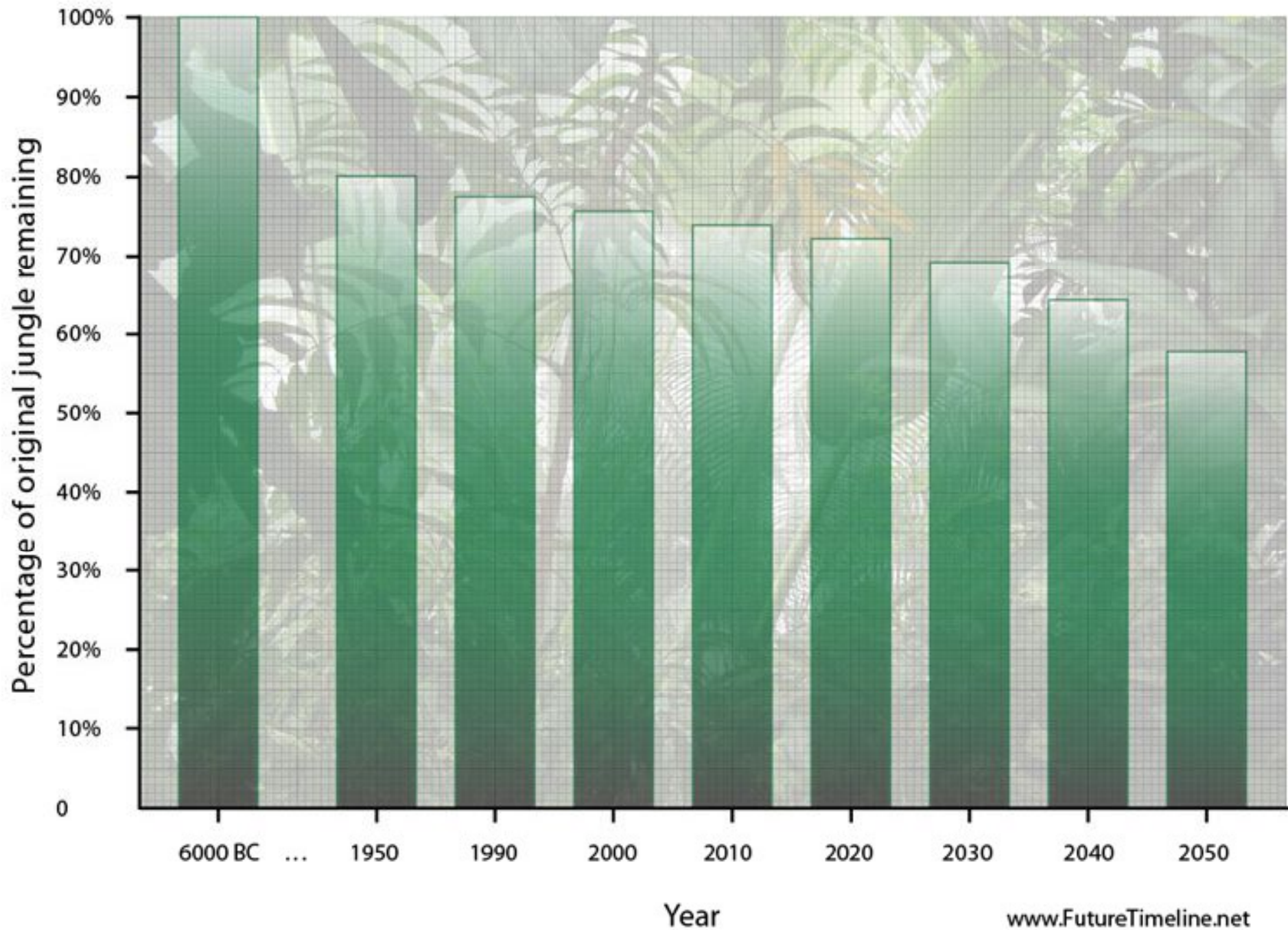


Deforestation



Tropical deforestation rates, 2000-2005





Deforestation

Conservation of forests:

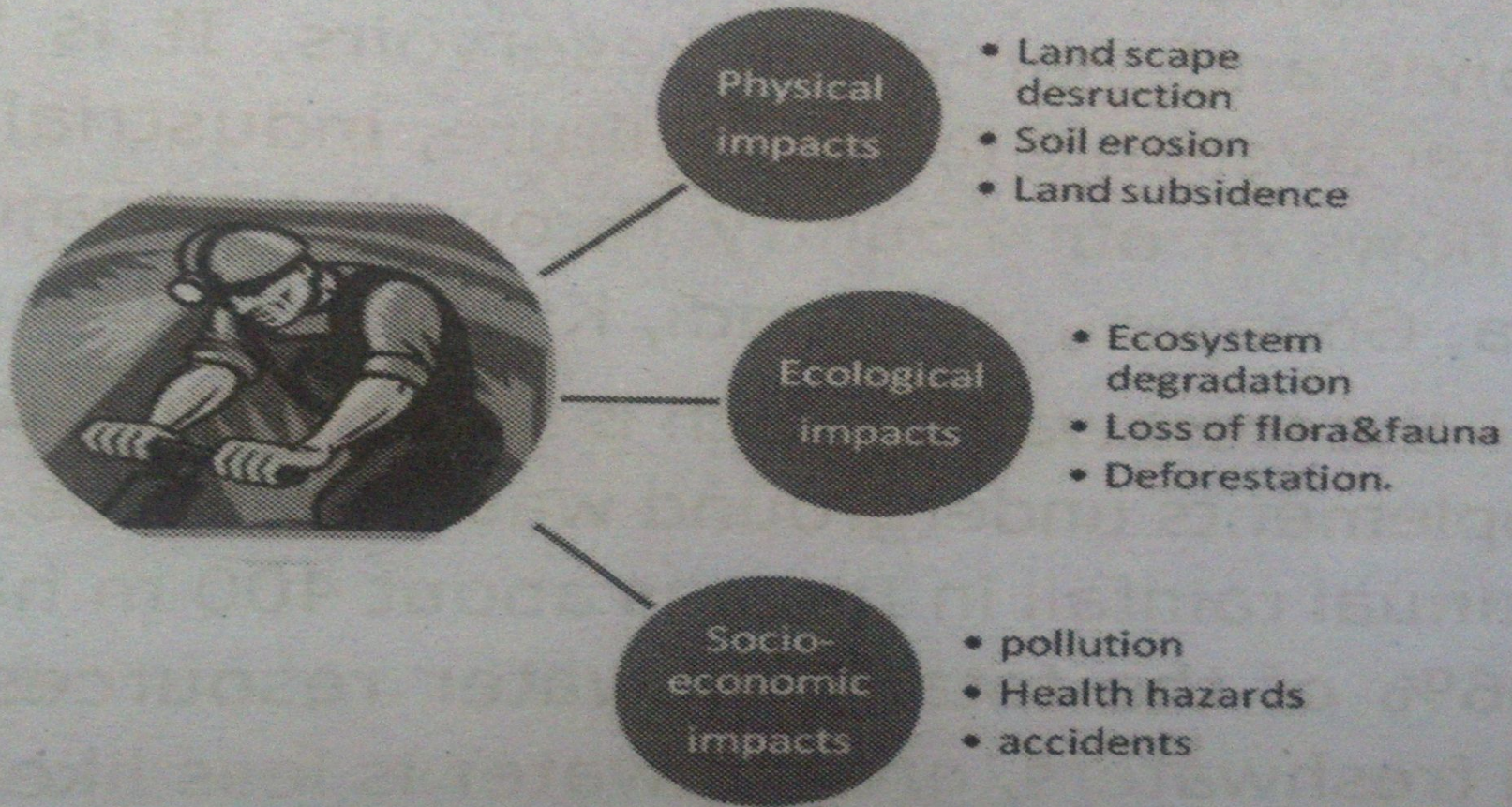
- Afforestation programmes
- Reforestation programmes
- Conservation of reserve forests
- Chipko movement
- Commercial forestry

Mineral resource

Mining: Removal of minerals and metals from the earth

1. Metallic minerals- found as ore (iron,copper,gold)
2. Non metallic minerals- composed of elements (silicon, calcium, quartz, calcite, diamond,sulphur, coal and pertroleum.

Mineral resource



Impacts of mining

Mineral resource

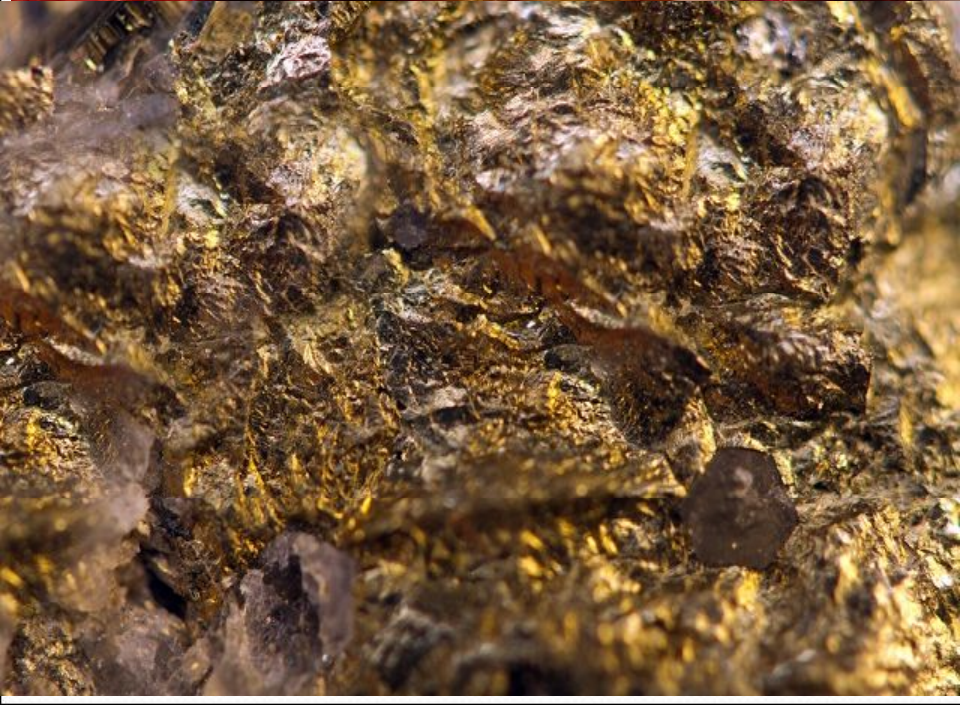
Conservation of mineral resources:

- ✓ Recycling
- ✓ Reuse
- ✓ Substitution
- ✓ Decreased consumption
- ✓ Use of industrial waste





Mineral resource



Mineral resource



Mineral resource



Mineral resource



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Water Resource

USES:

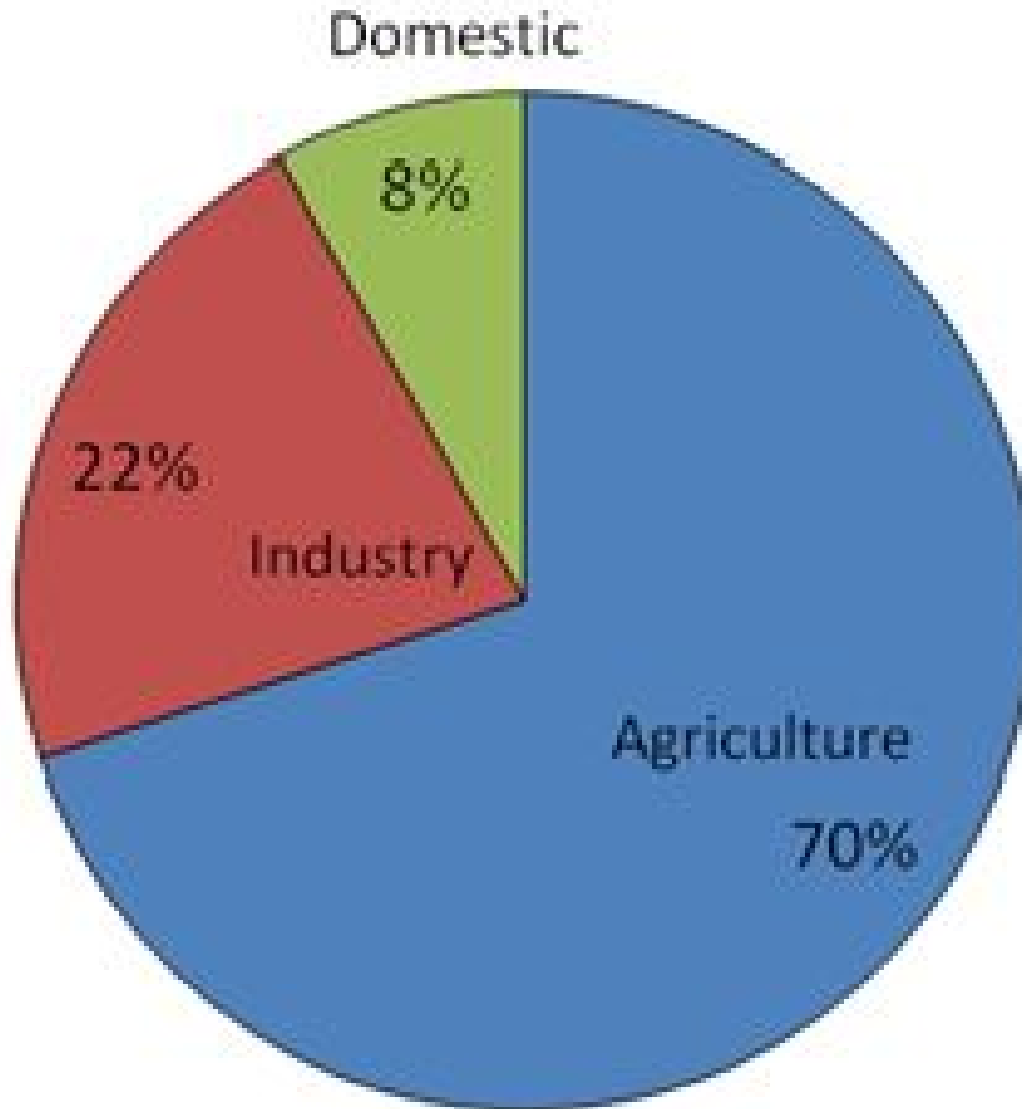
1. Domestic use- drinking, cooking, bathing and washing
2. Public use- irrigating parks, cleaning public places, filling pools and fire fighting
3. Agriculture use- irrigating crops
4. Industrial use- cooling and creating steam, drilling, mining

Water Resource

USES:

5. Environmental use- habitat for aquatic species, breeding space for amphibians and reptiles
6. Hydroelectric power- to generate electric power
7. Recreational use- lakes, reservoirs, rivers, water sports

Water Resource



Water Resource

Conservation of water resources:

1. Increase irrigation efficiency & reduce water wastage
2. Recycle industrial waste & sewage water
3. Construct waste water treatment plants
4. Reduce water wastage in domestic use
5. Adopt rain water harvesting methods
6. Protect water sheds
7. Preventing dumping waste and garbage in water bodies

Water Resource



Water Resource



Water Resource



Water Resource



Water Resource



Water Resource



Water Resource

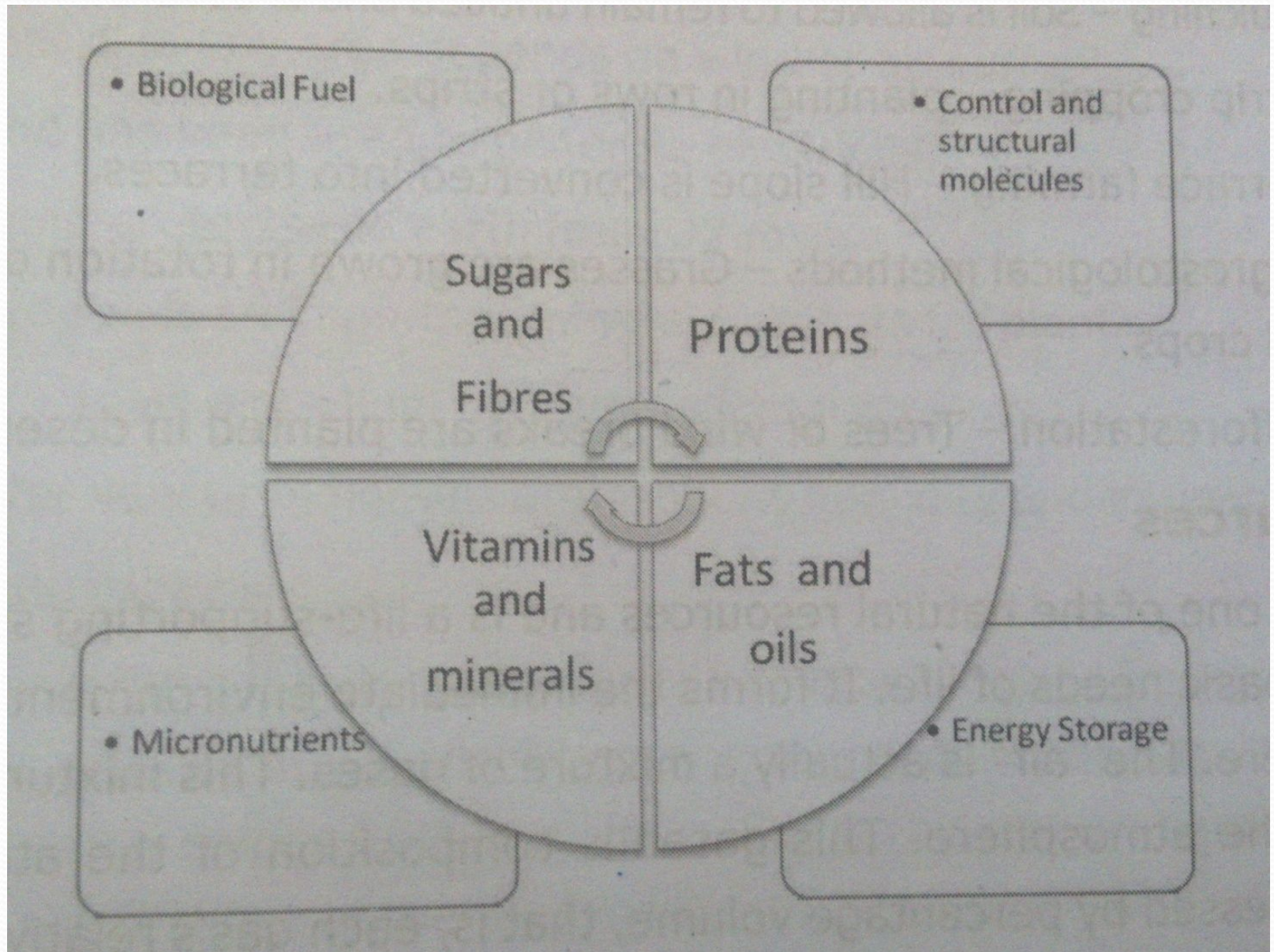


Water Resource

Sustainable water management:

- ✓ Construct dams and small reservoirs
- ✓ Protect wetlands
- ✓ Desalinize sea water into usable water
- ✓ Divert freshwater canals to dry areas
- ✓ Deslit rivers and water bodies regularly

Food Resource



Land Resource

Sustainable soil management:

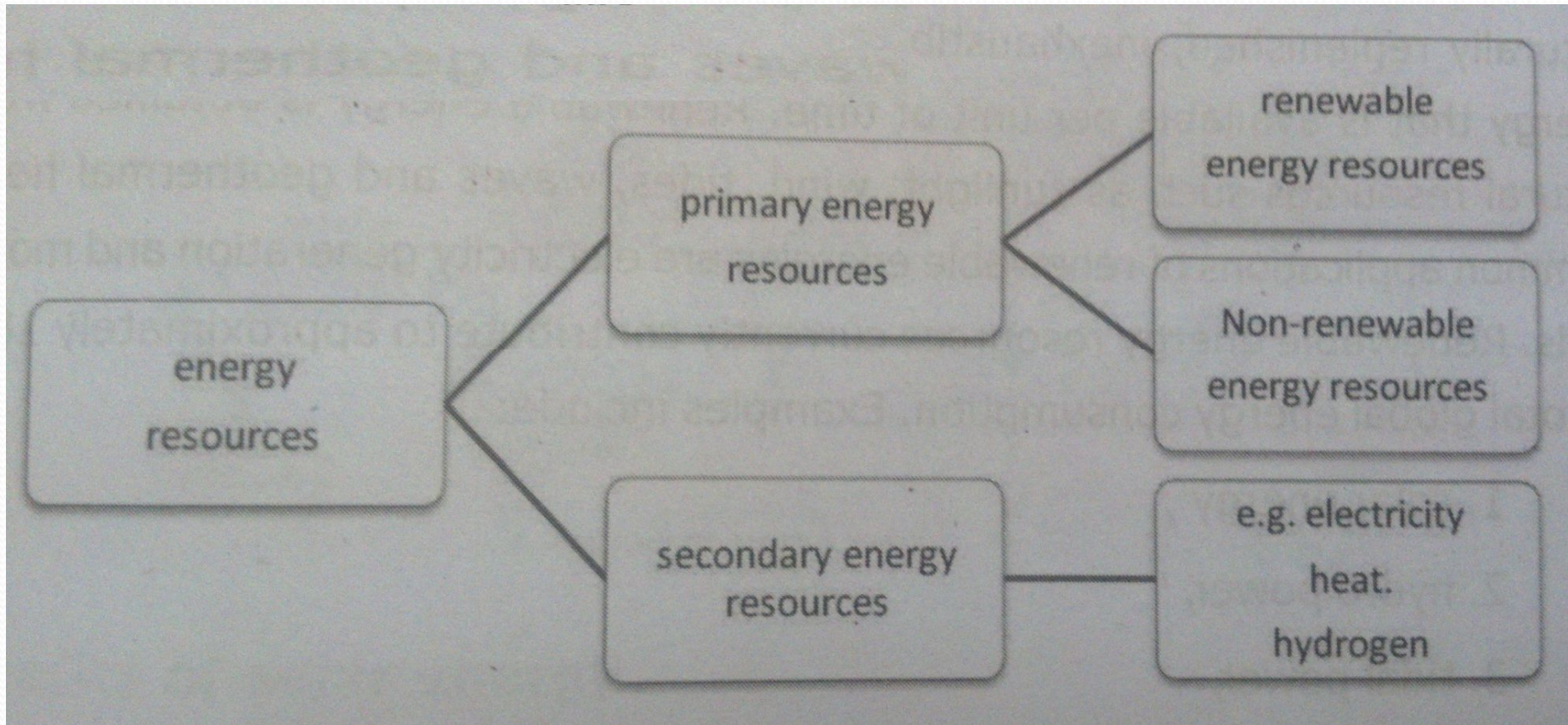
- ✓ Conservational tillage-ploughing
- ✓ Organic forming
- ✓ Crop rotation
- ✓ Contour ploughing
- ✓ Mulching-covering with plant litter
- ✓ Strip cropping
- ✓ Terrace farming
- ✓ Afforestation

Air Resource

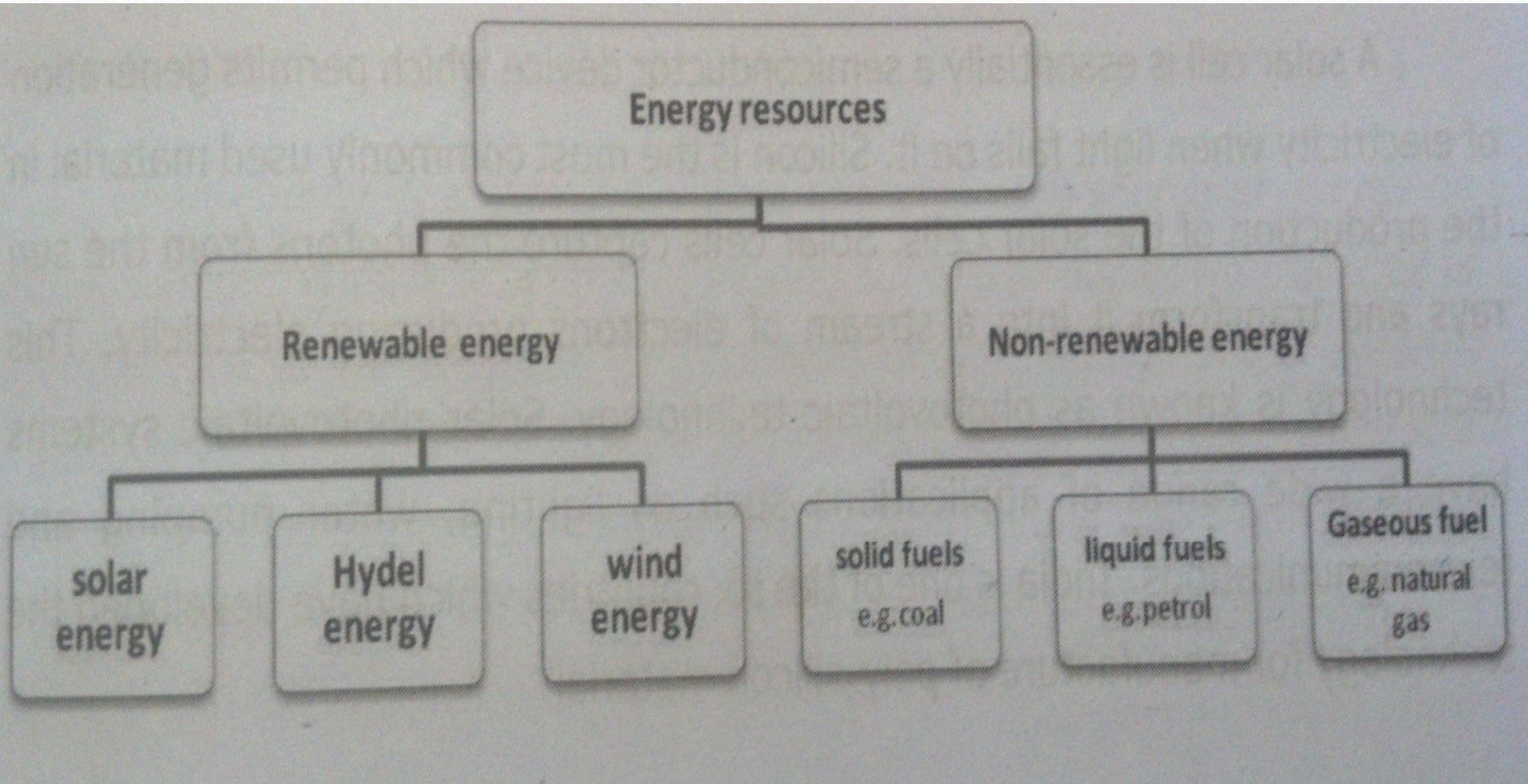
Importance of air management:

- ✓ Respirate oxygen and survive
- ✓ Rainfall depends on air current
- ✓ Wind is used to generate electricity
- ✓ Ozone protects from uv rays
- ✓ Nitrogen is important nutrient for plants
- ✓ Maintains atmospheric humidity

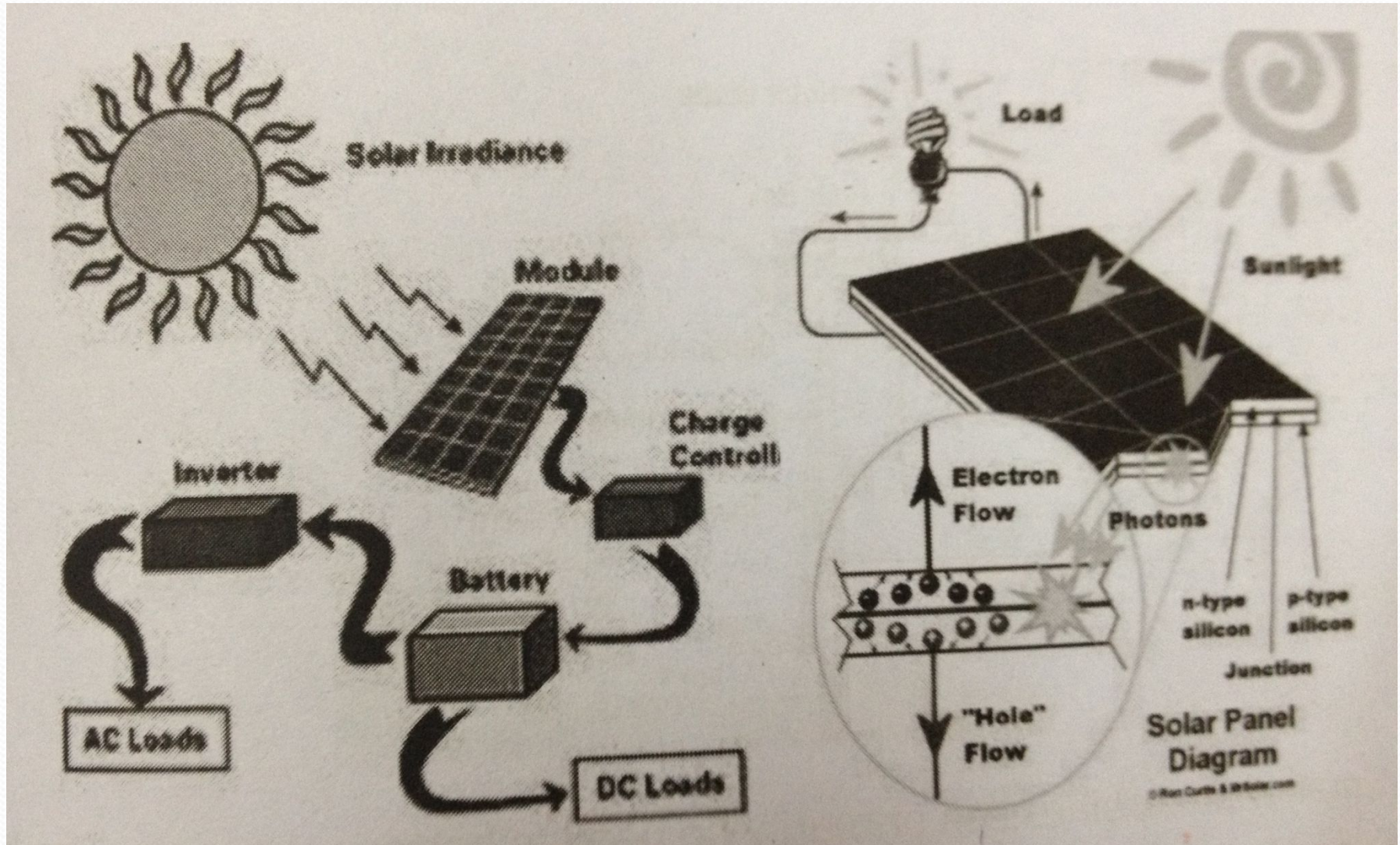
Energy Resources



Energy Resources



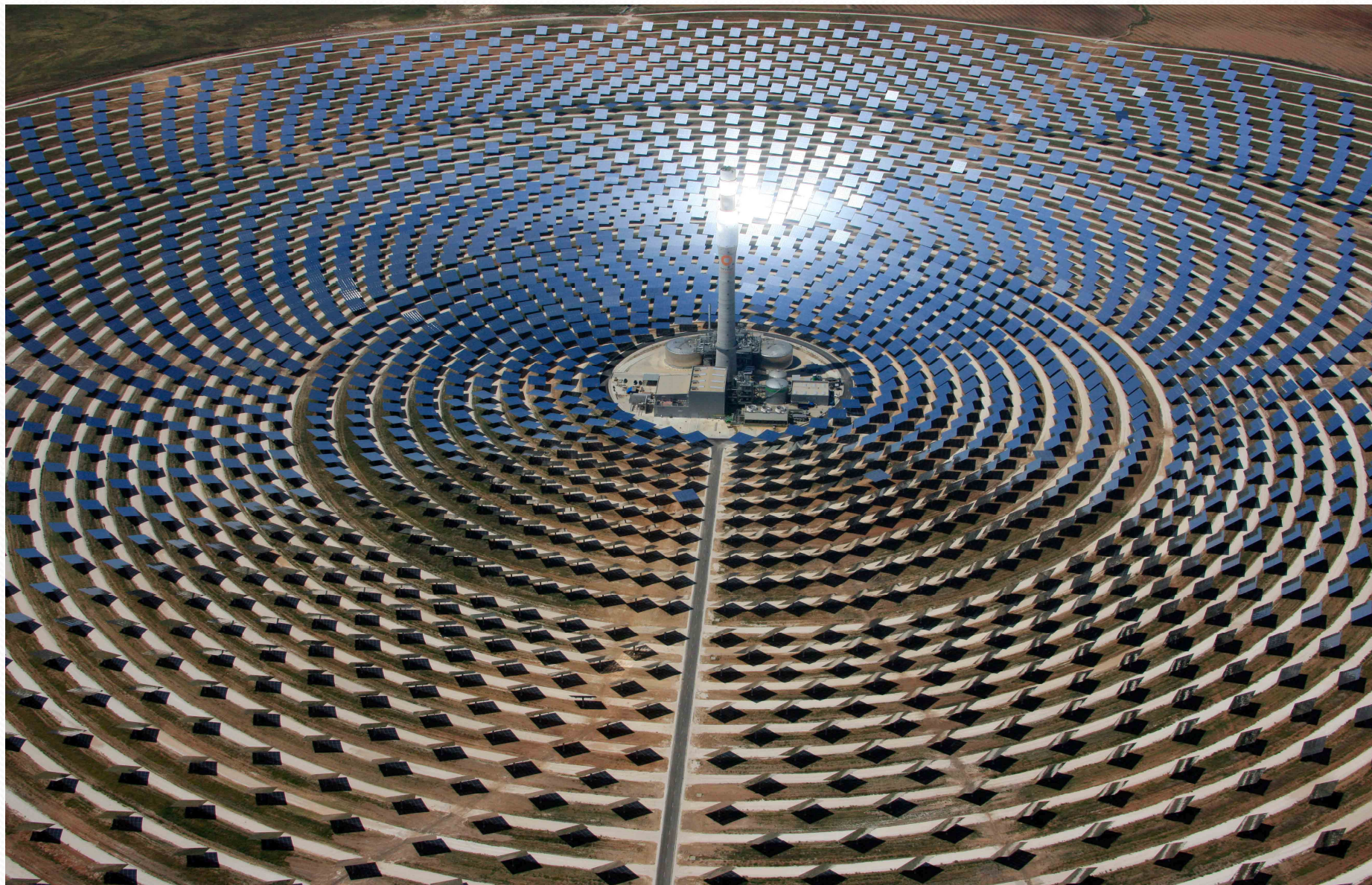
Solar Energy



Solar Energy



Solar Energy



Solar Energy

Benefits:

- ❖ Abundant available anywhere
- ❖ Non polluting
- ❖ Convenient to install solar panels

Limitations:

- ❖ Works only on day light
- ❖ Solar panel are expensive
- ❖ Storage batteries need more maintenance

Wind Energy

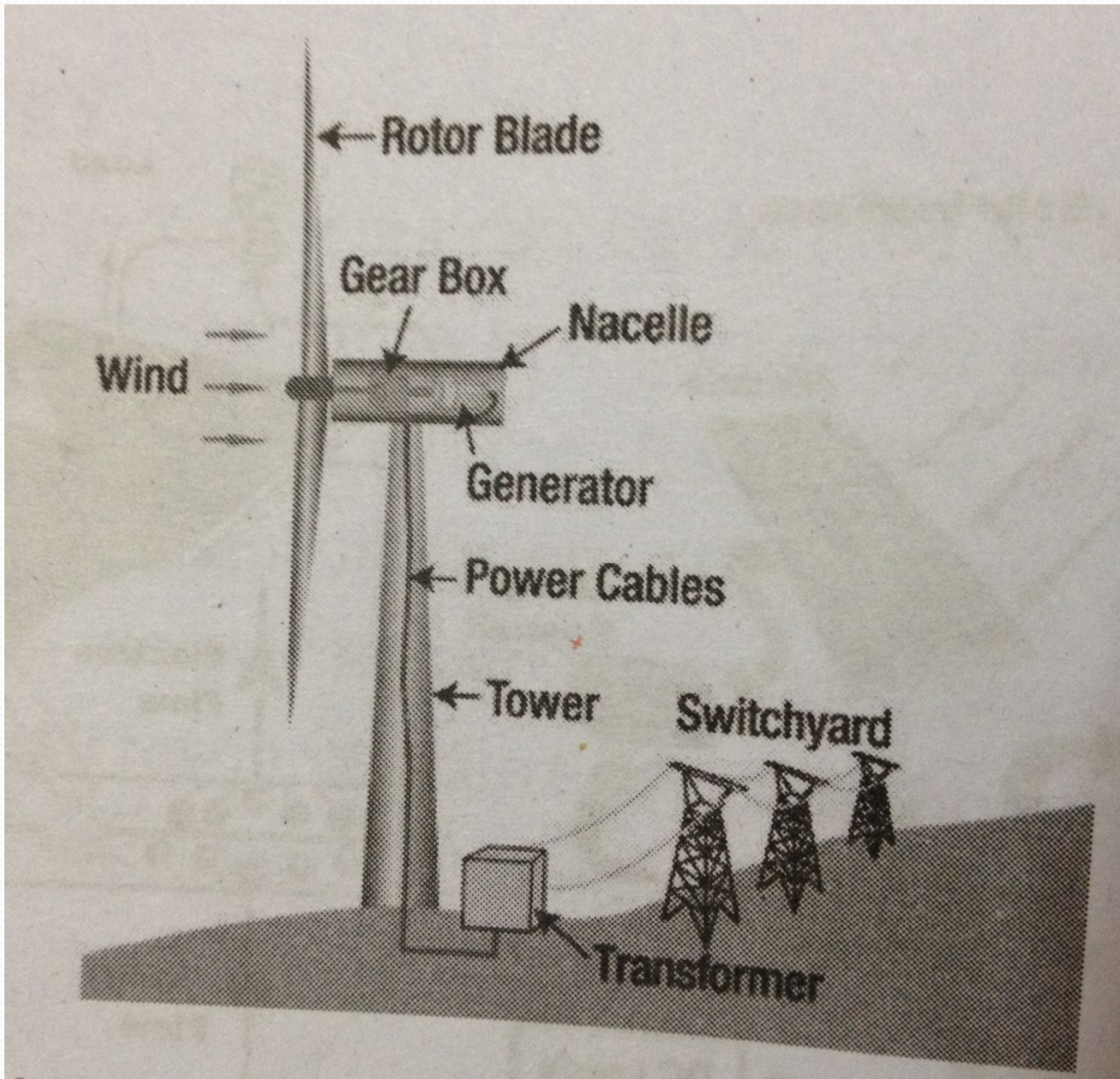
Benefits:

- ❖ Clean, renewable and eco-friendly
- ❖ Reliable and cost effective
- ❖ Used in remote locations

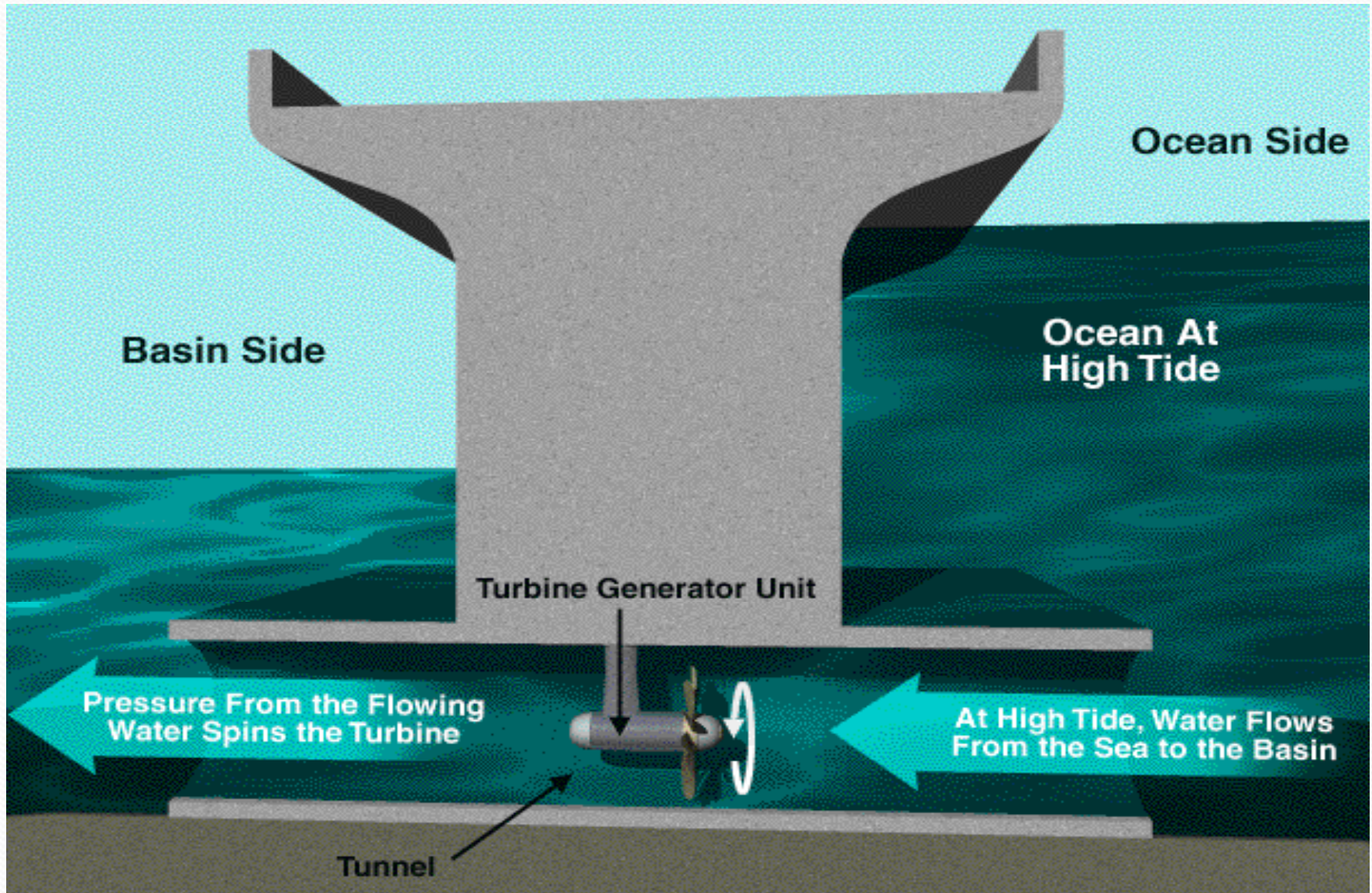
Limitations:

- ❖ Wind strength is not constant
- ❖ Turbines are noisy & easily damaged

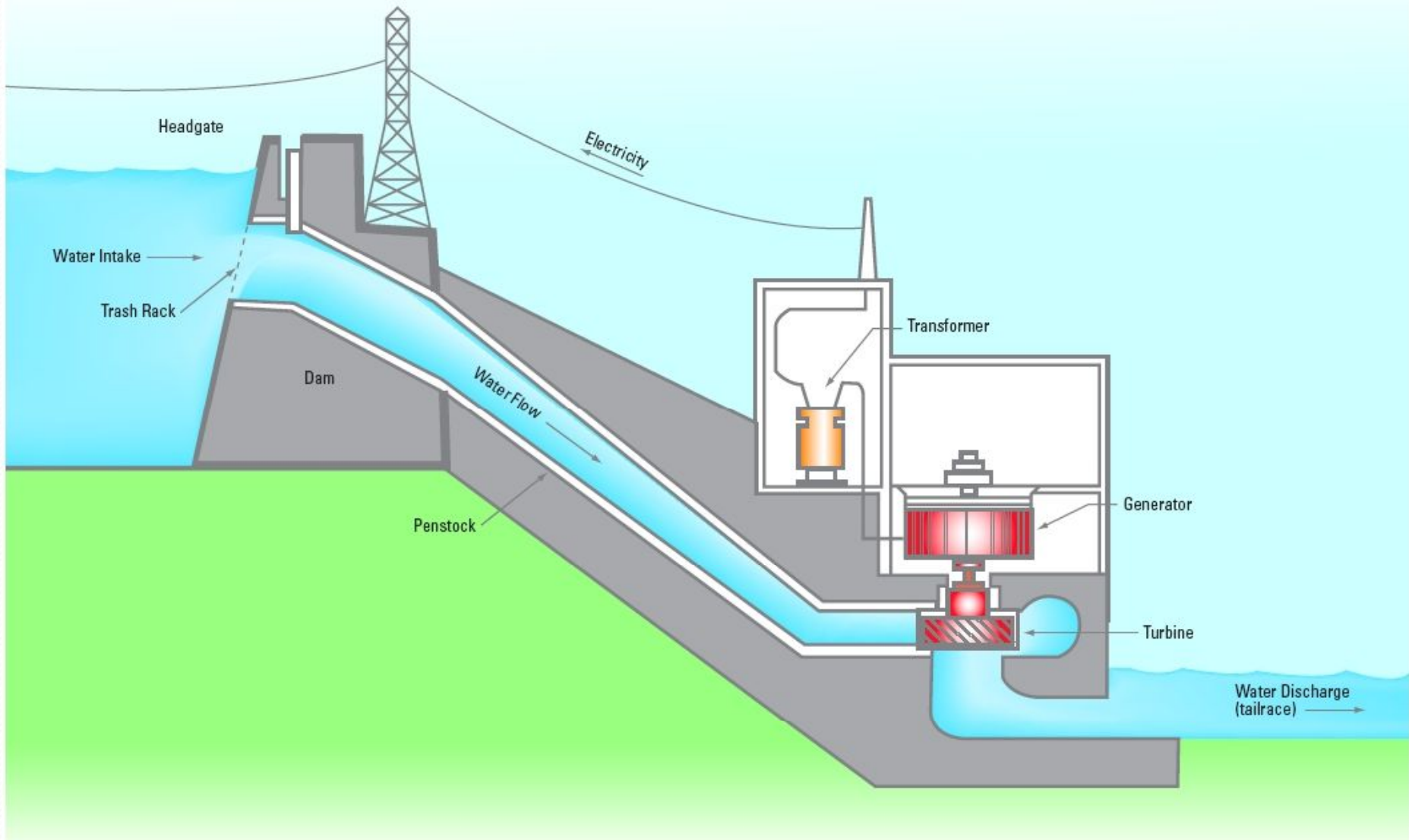
Wind Energy



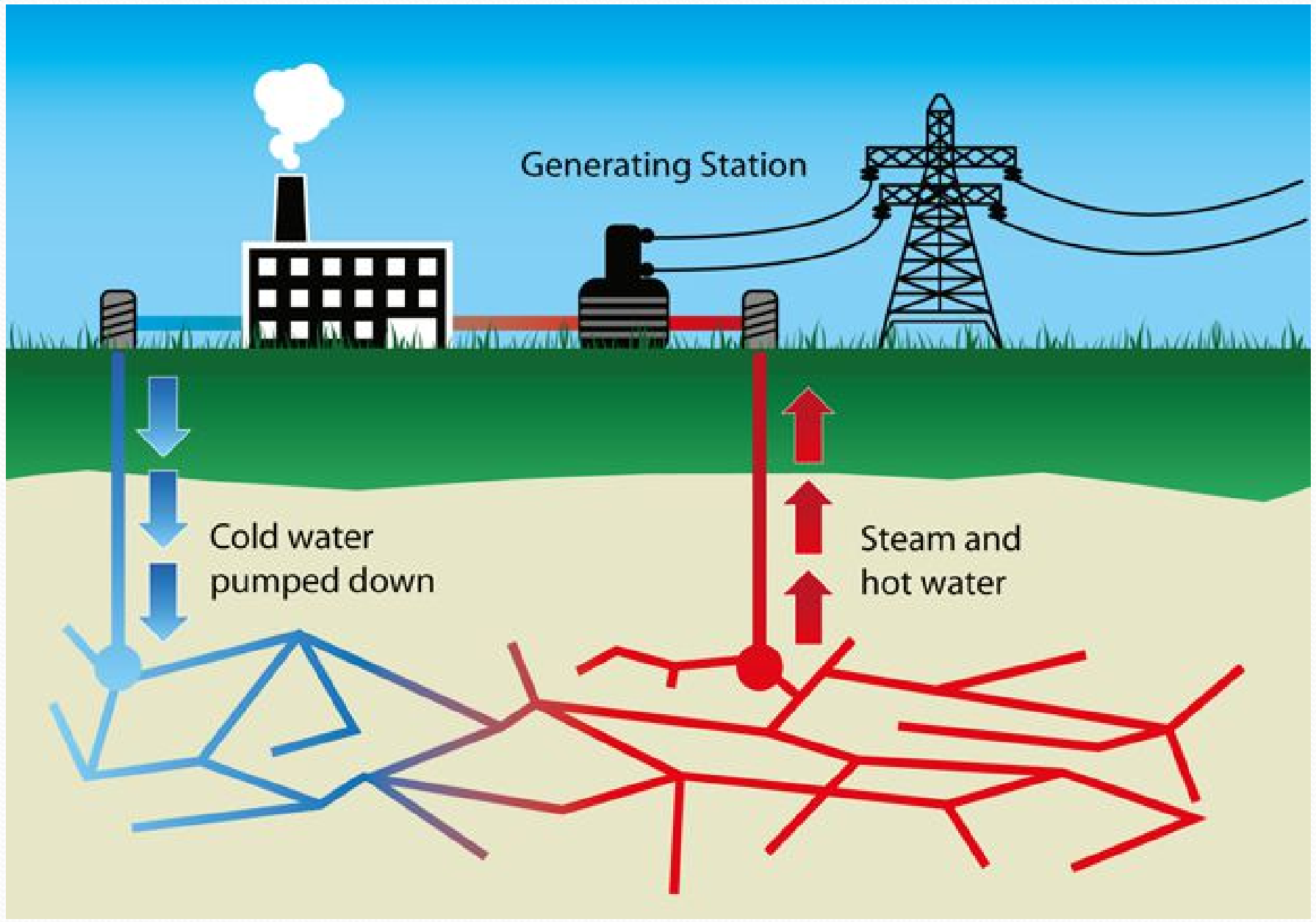
Tidal Energy



Hydro power

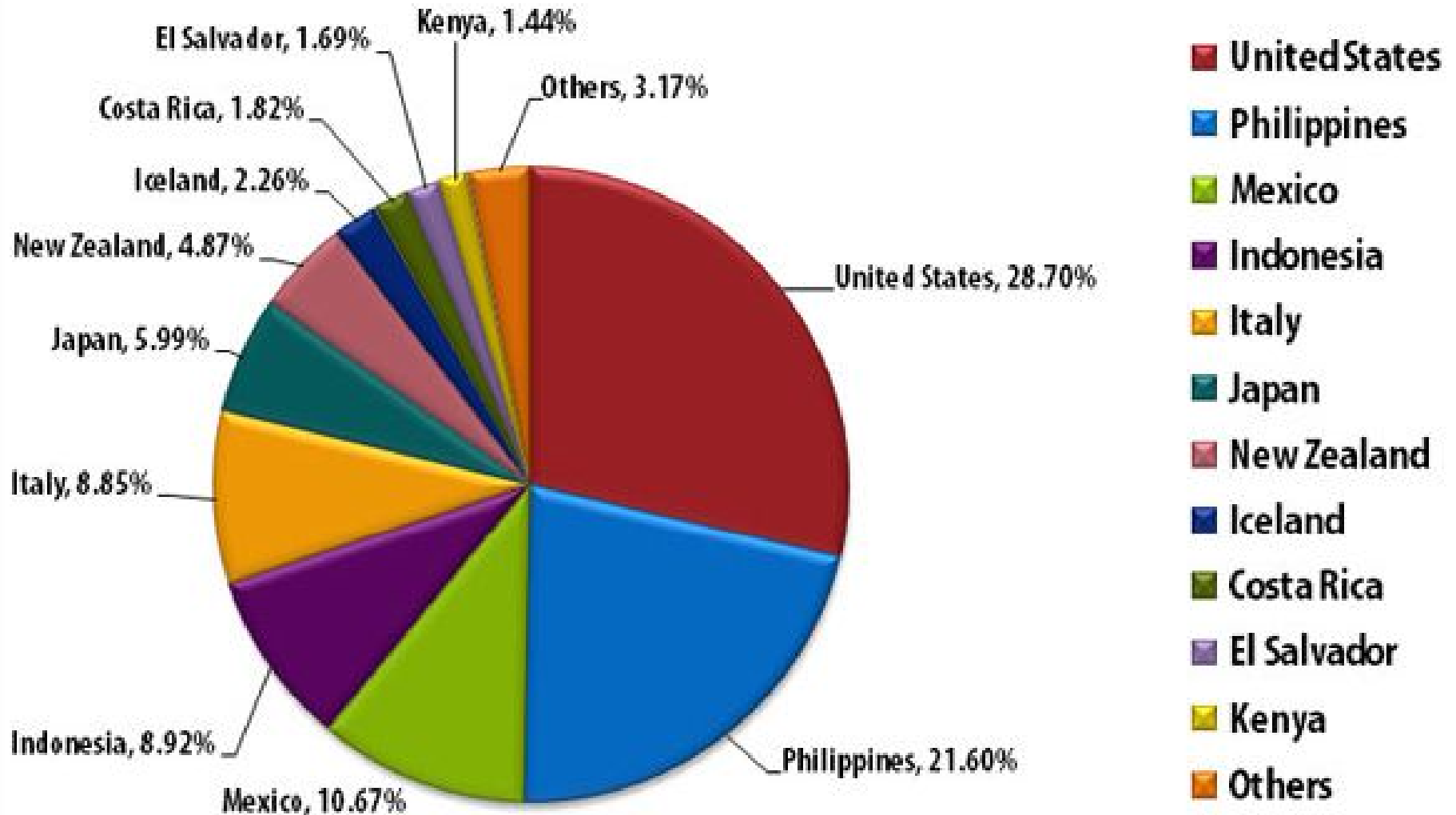


Geo thermal power



Geo thermal power

Breakdown of Geothermal Electricity Production

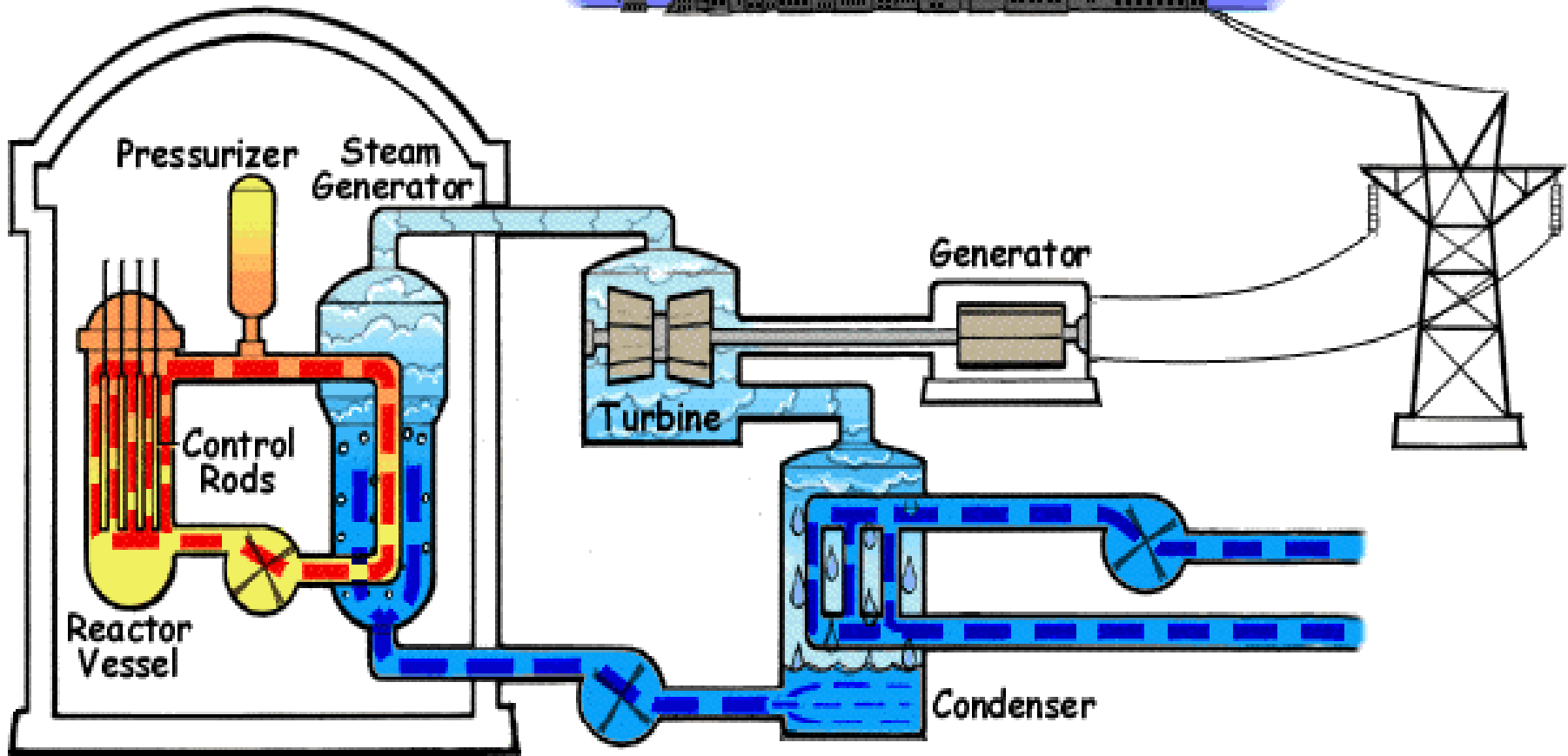
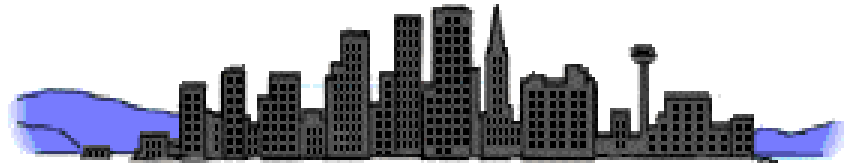


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Nuclear power

Containment Structure



Nuclear power

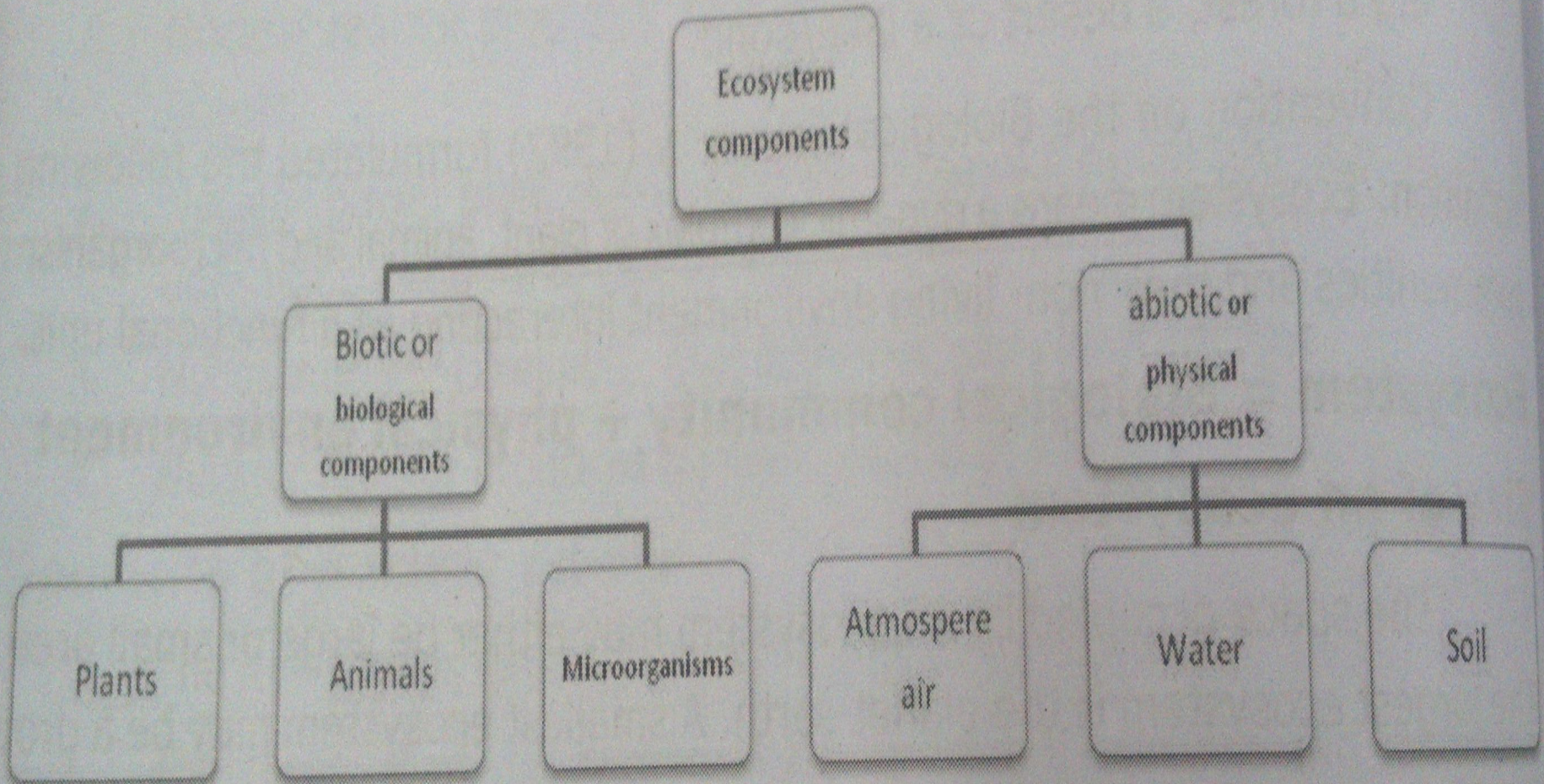
Merits:

- huge amount of energy
- No smoke or CO_2
- Reliable, clean energy
- Produce small amount of waste

Demerits:

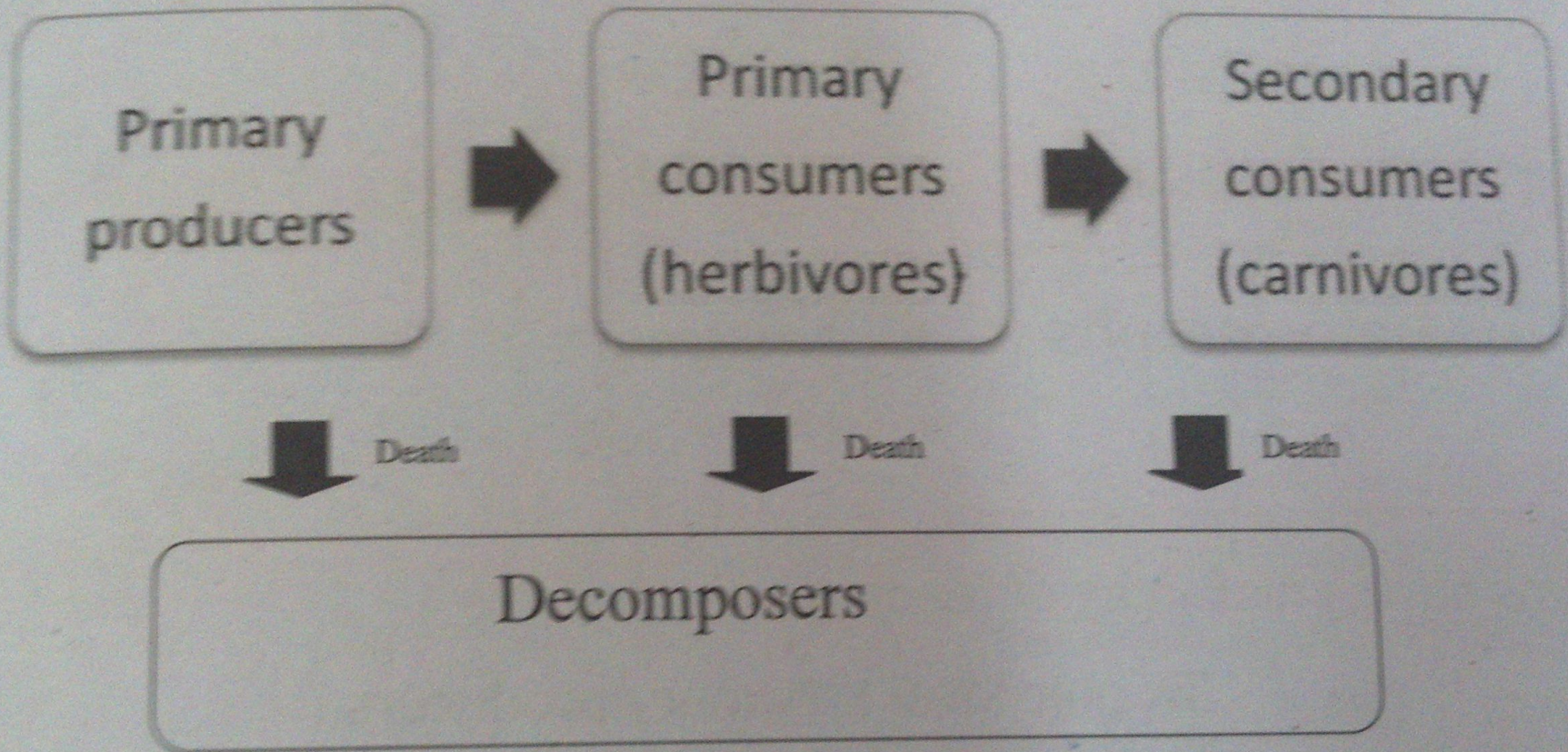
- Expensive fuel
- Disposal of waste is expensive
- Accident will spread radiation
- Melt down problem
- Cooling water requirement is heavy

Ecosystem



Basic components of an ecosystem

Ecosystem



Biotic structure of ecosystem

Trophic structure

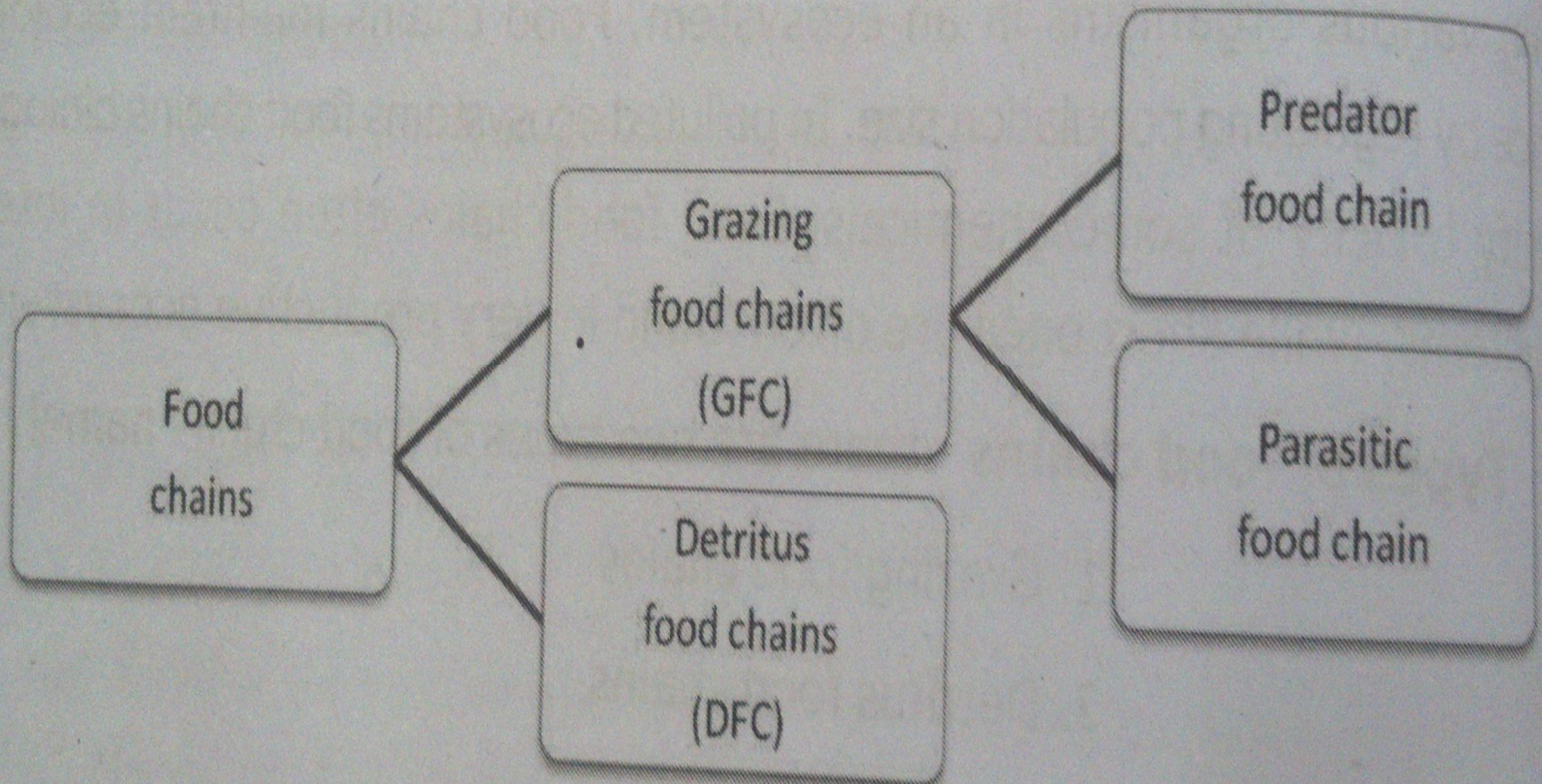
Autotrophs
Green plants

- Producers
- self-nourishing

Heterotrophs
Animals

- consumers
- other-nourishing

Food chain



Food chain

A simple grazing food chain

Grass
producer

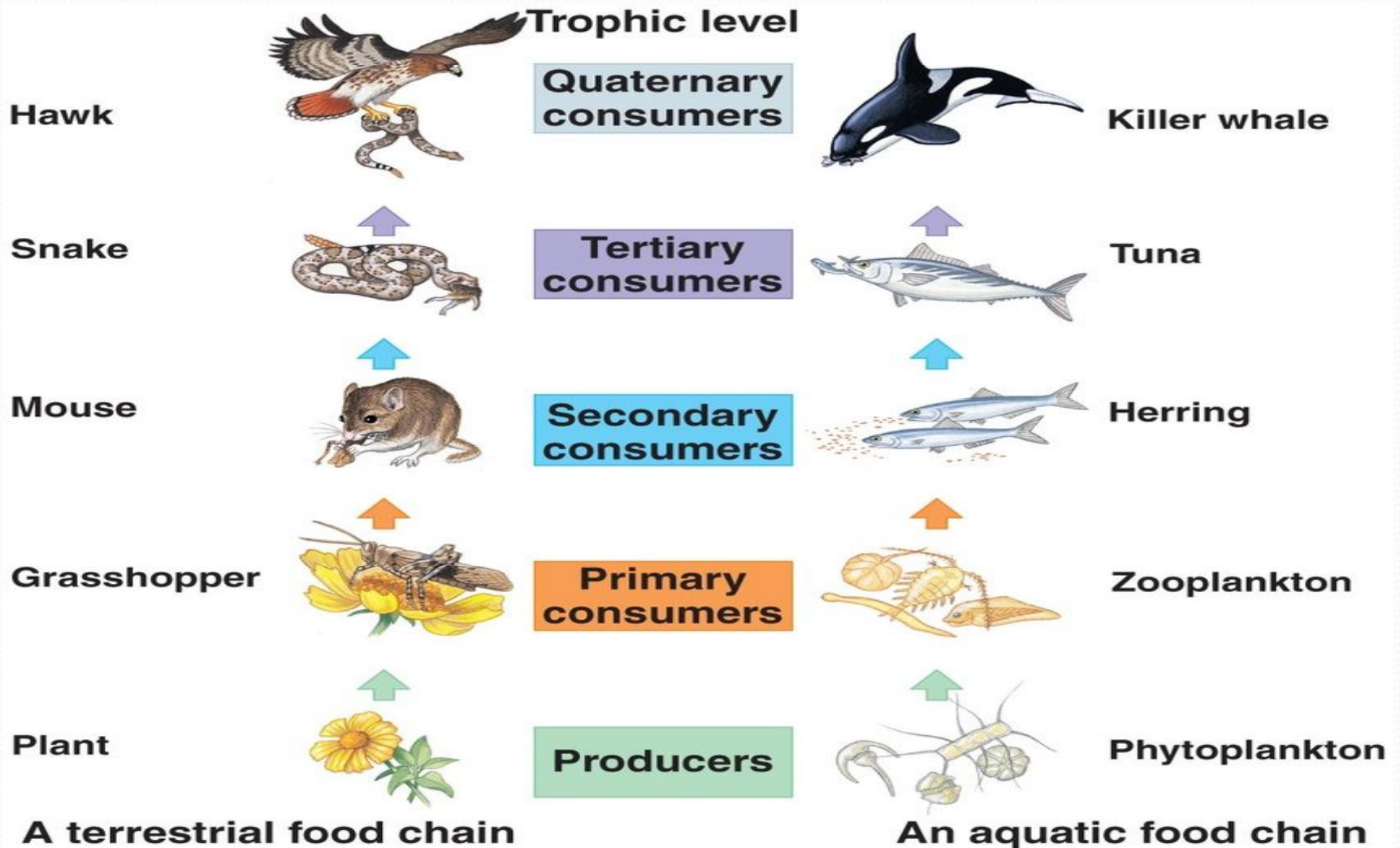


Goat
Primary
consumer

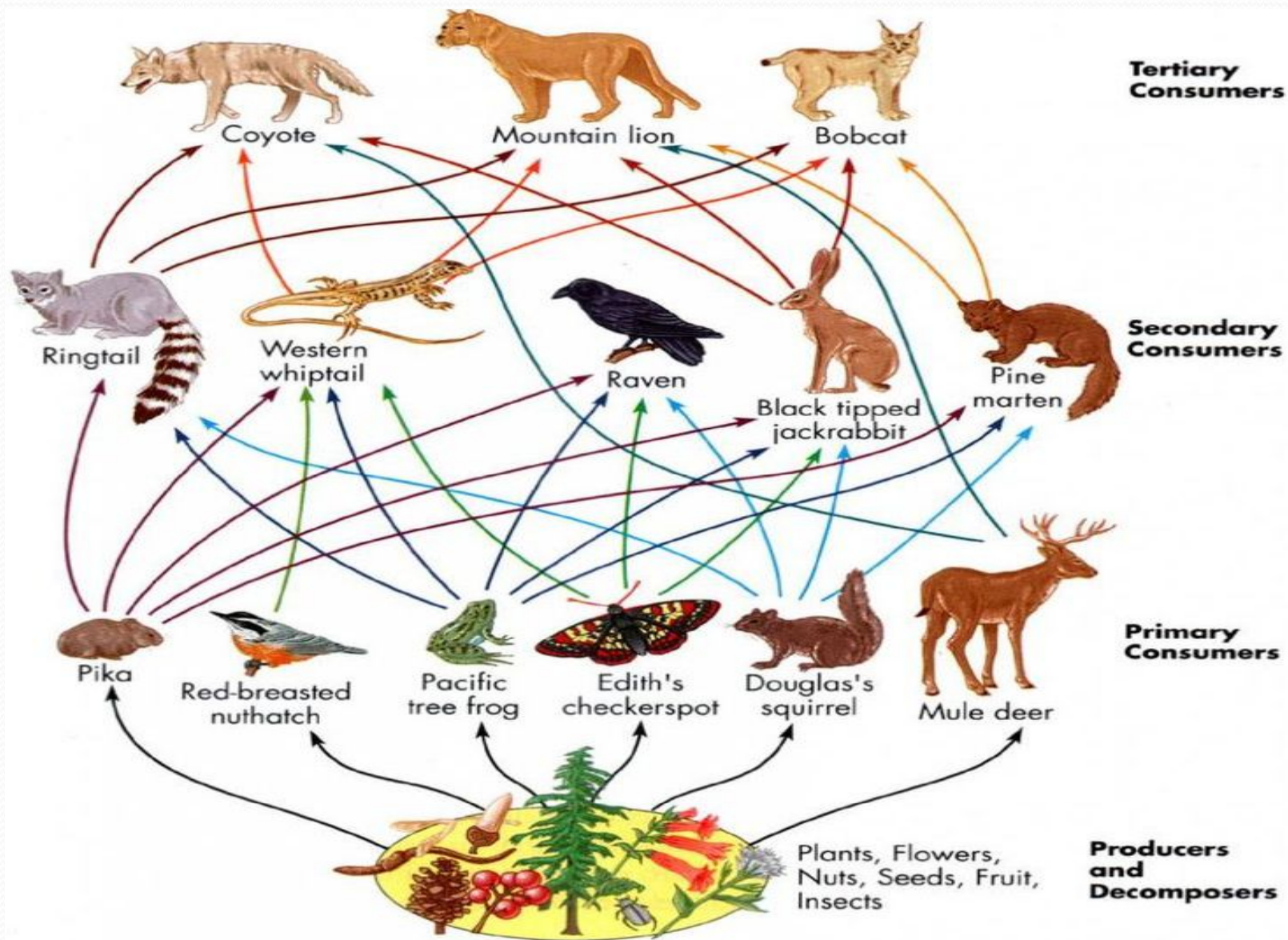


Man
Secondary
consumer

Food chain

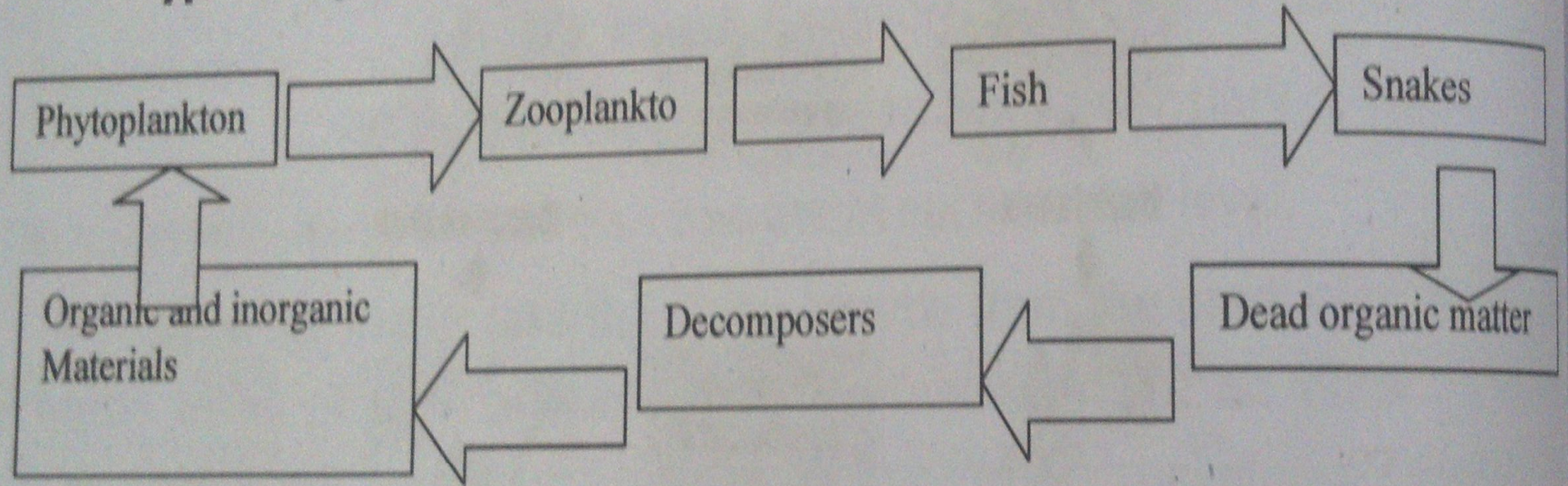


Food chain

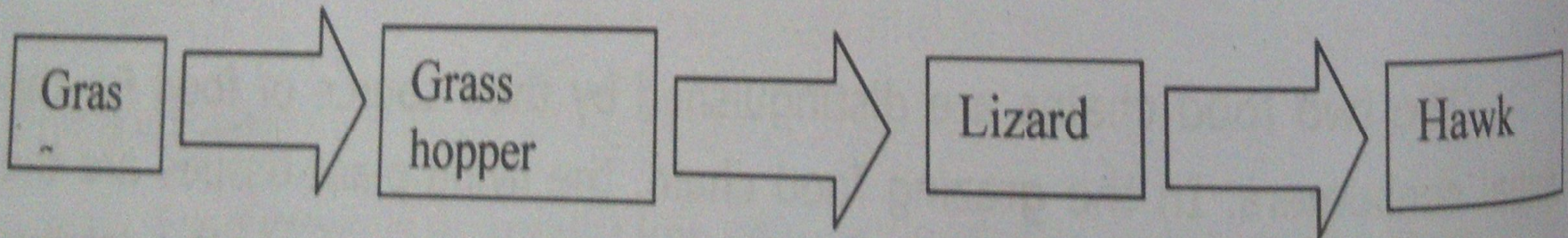


Food chain

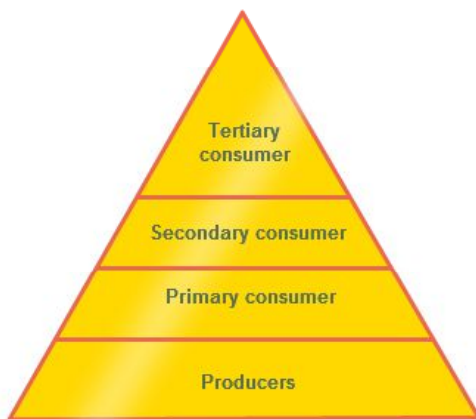
Typical aquatic food chain



Typical grassland food chain

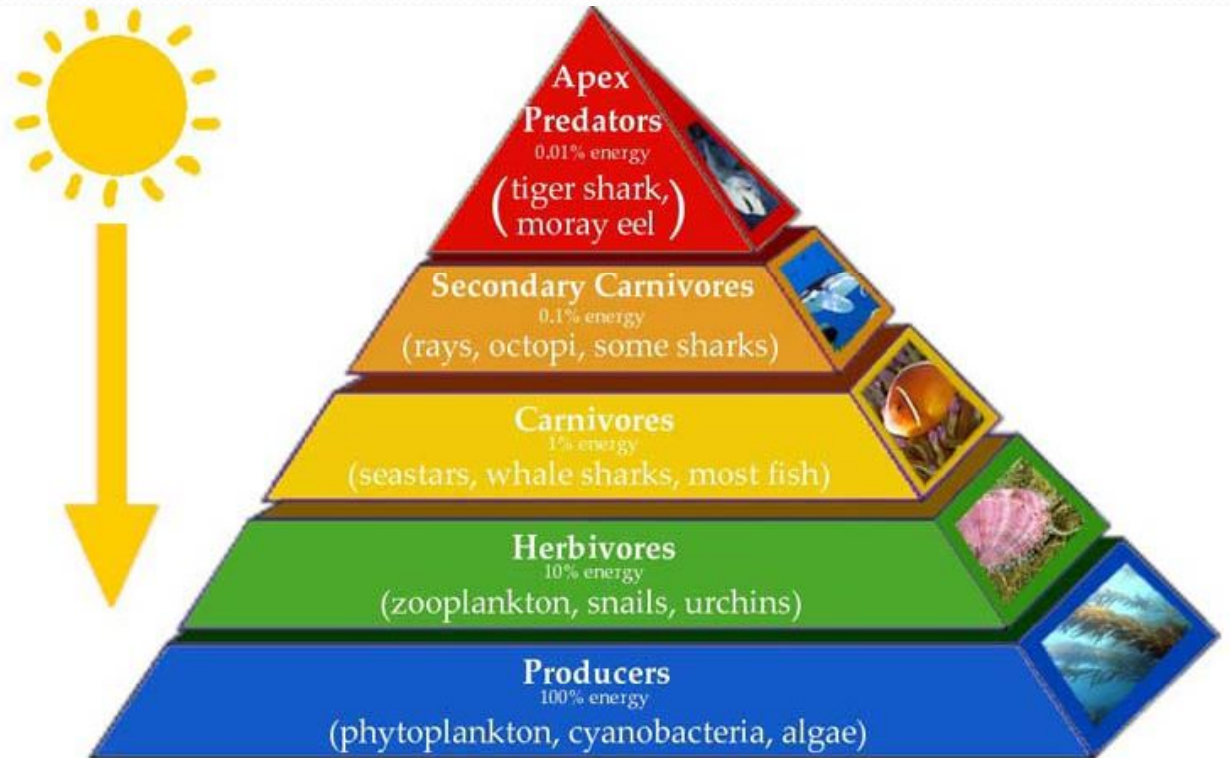


Ecological pyramid

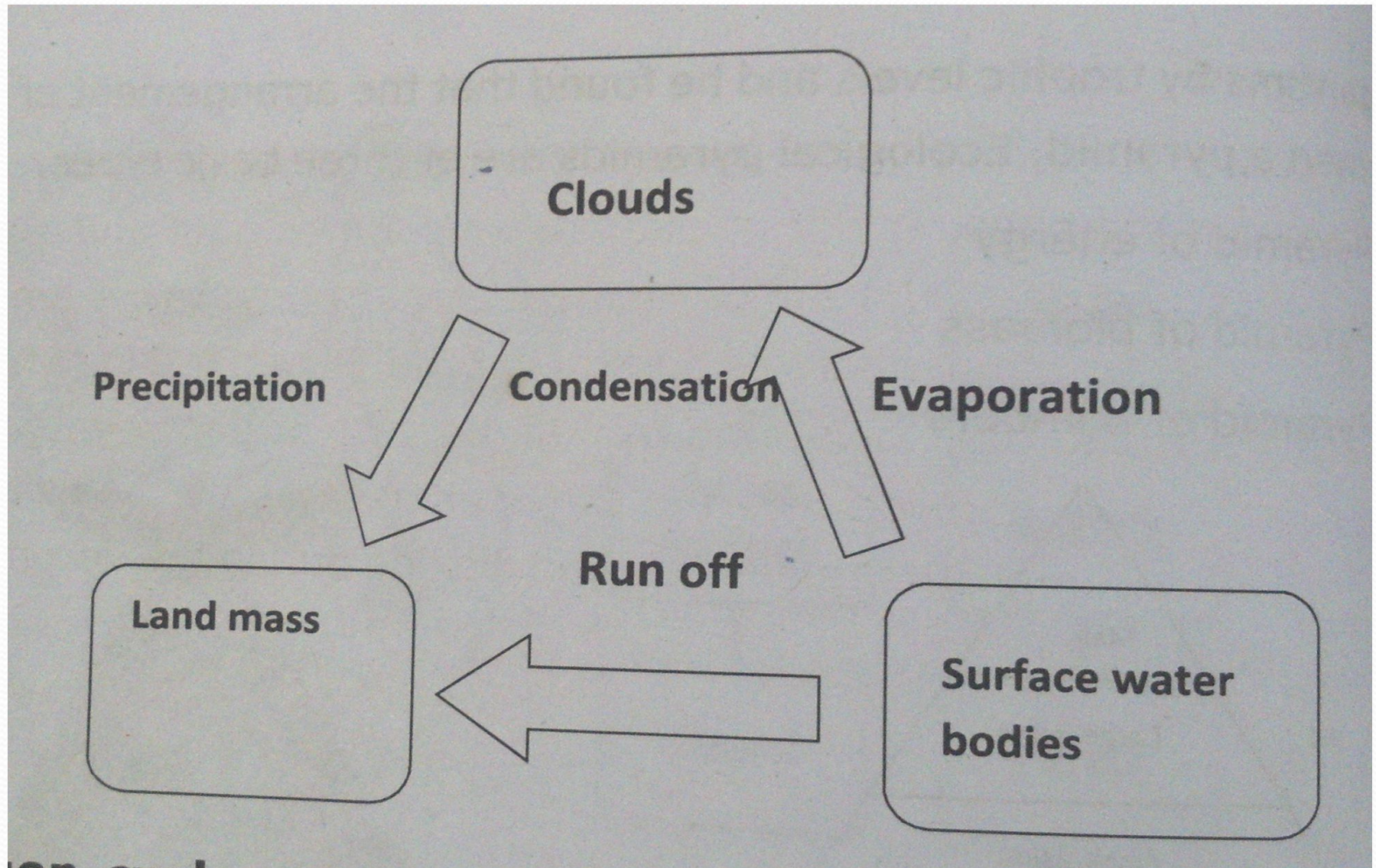


Ecological Pyramid

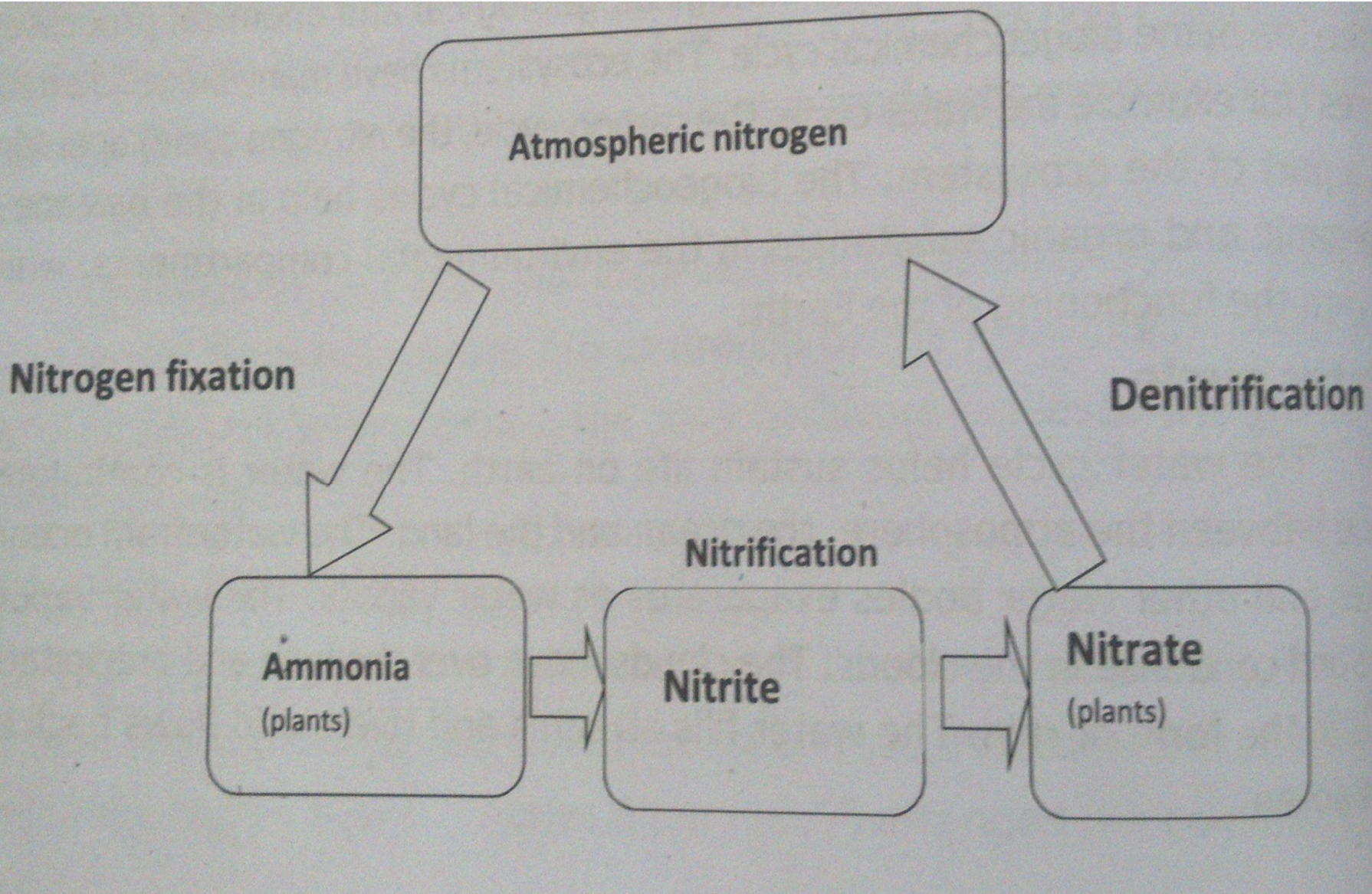
Increasing levels
of Food Chain



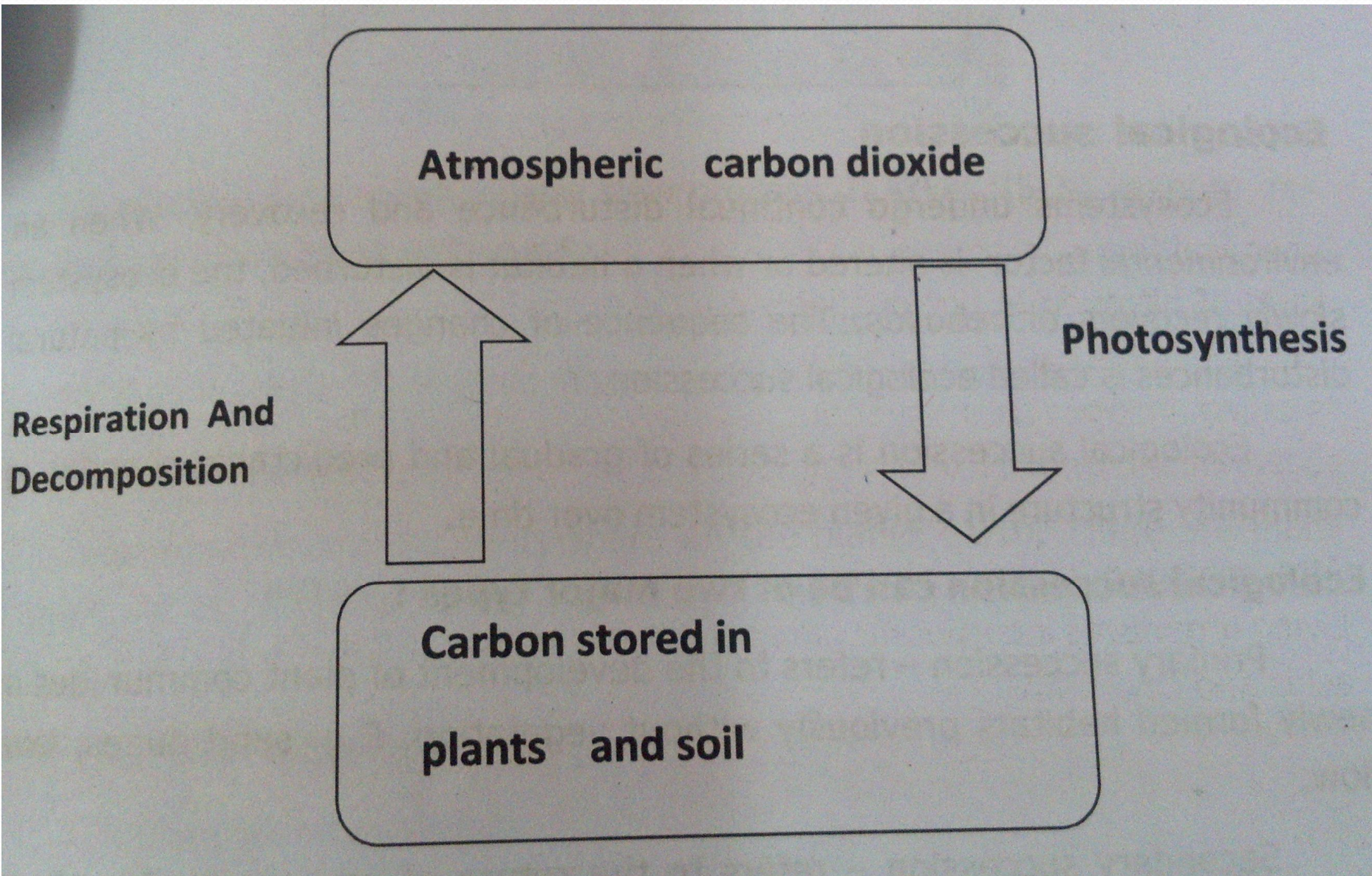
Water cycle



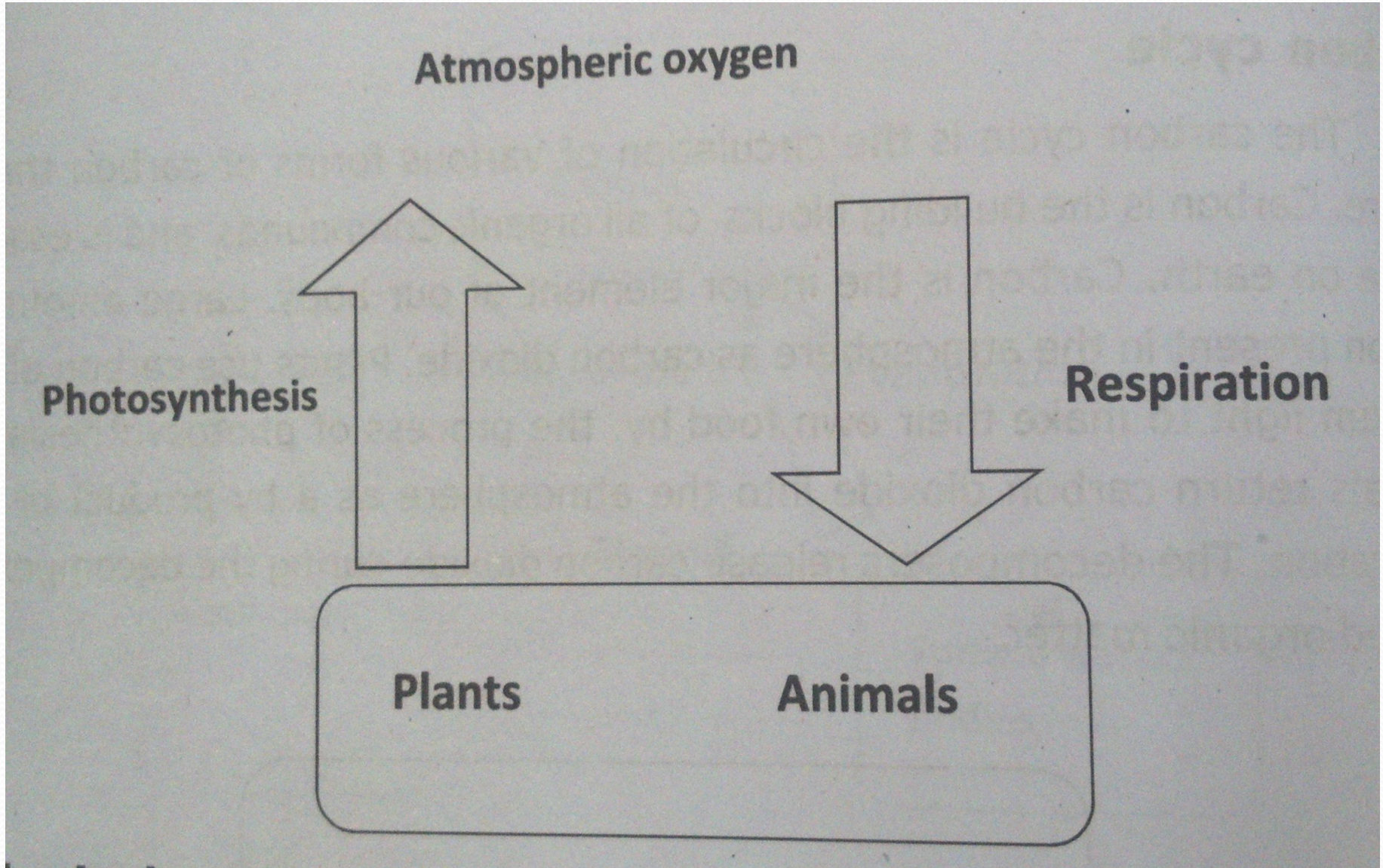
Nitrogen cycle



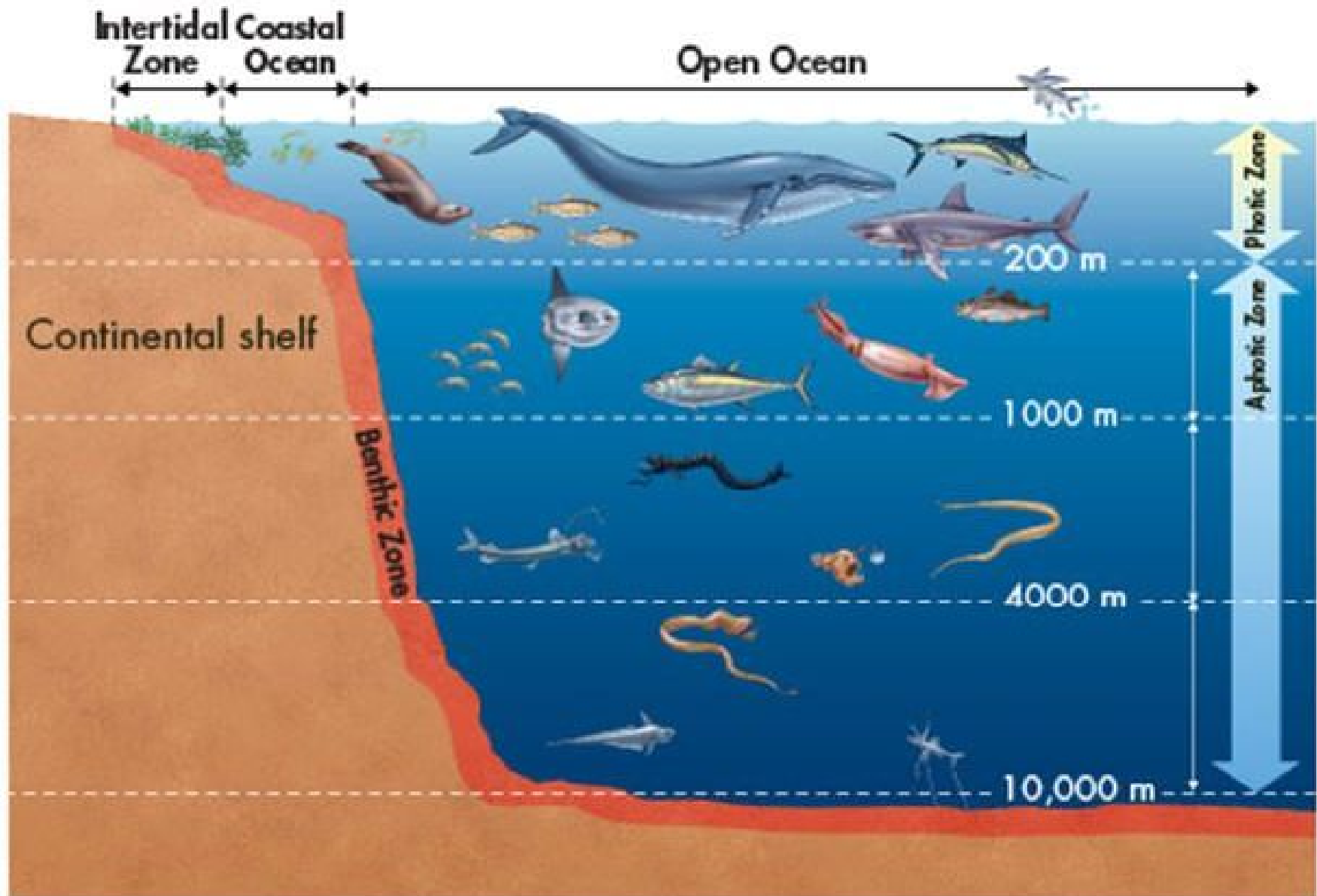
Carbon cycle



Oxygen cycle



Aquatic ecosystem



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Noise pollution



Noise pollution



Noise pollution



Noise pollution



Noise pollution



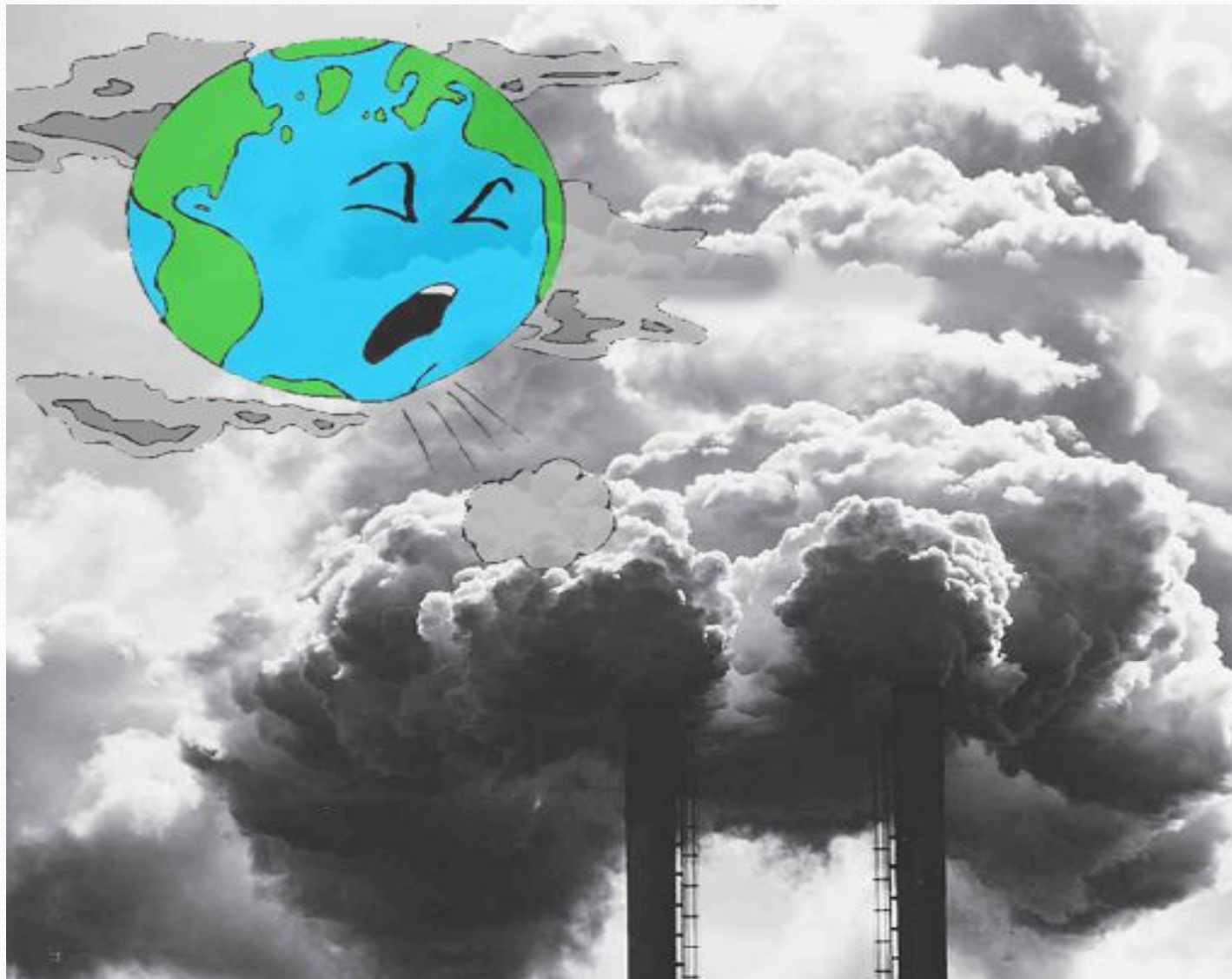
Noise pollution



Air pollution



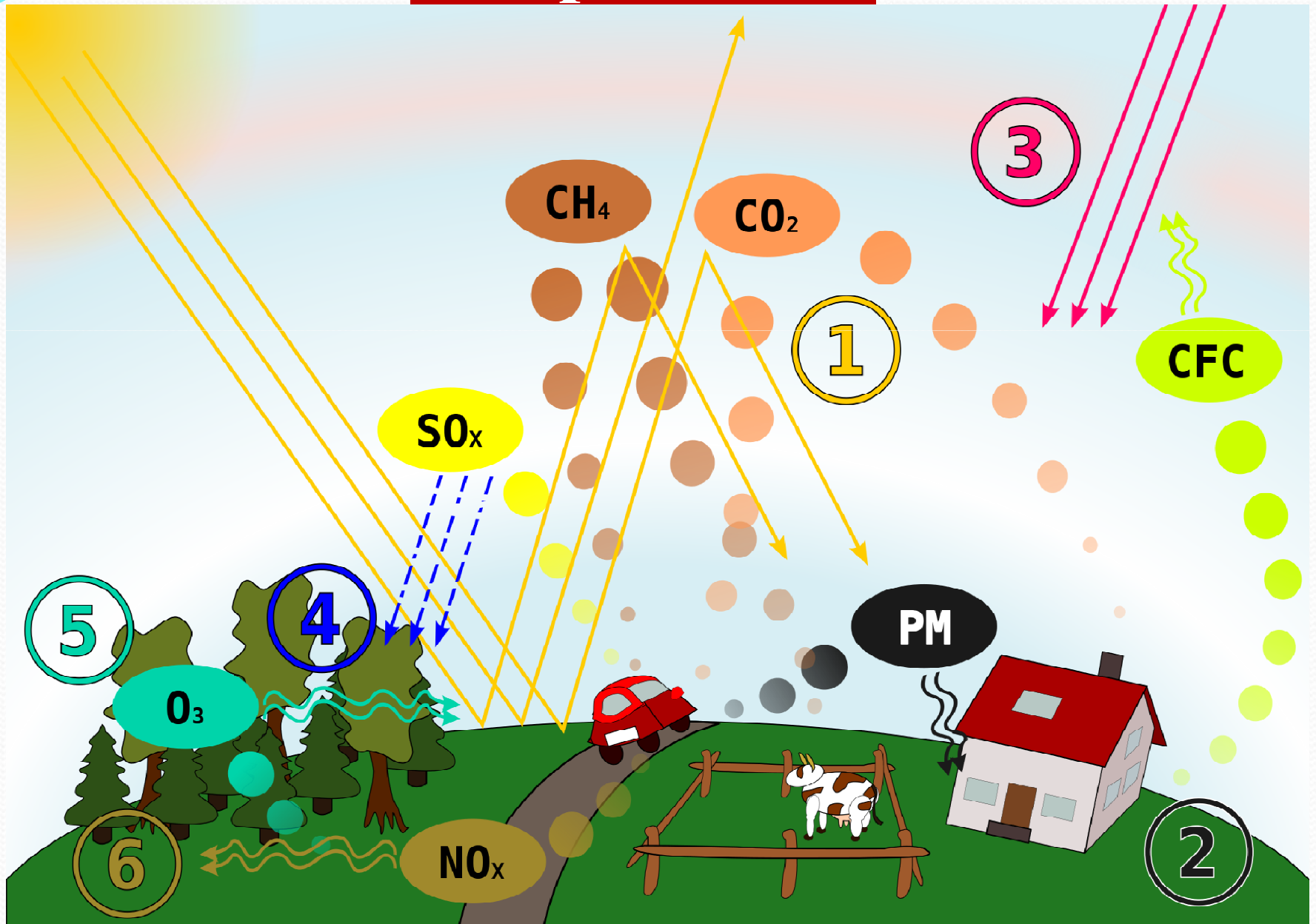
Air pollution



Air pollution

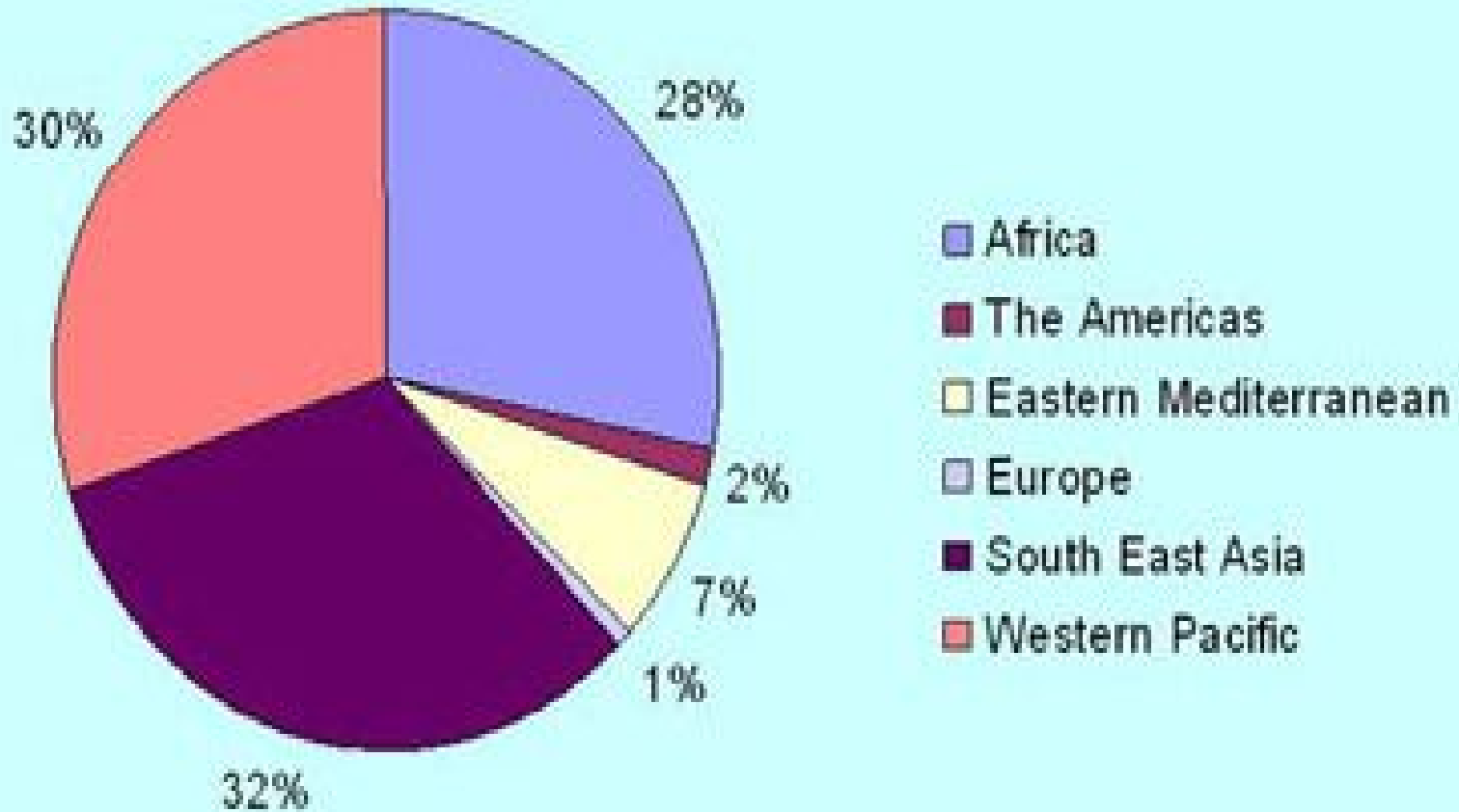


Air pollution



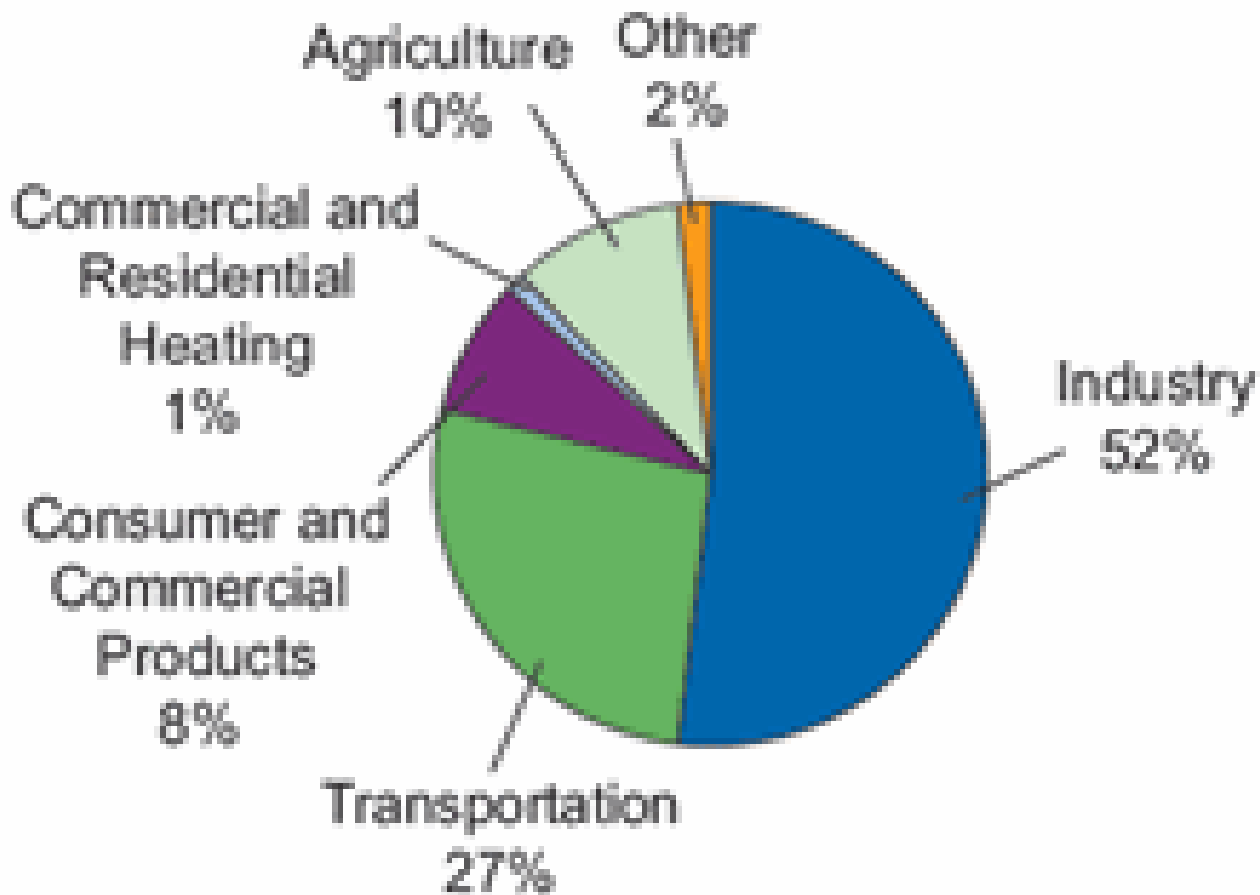
Air pollution

Deaths attributable to solid fuel use, 2004



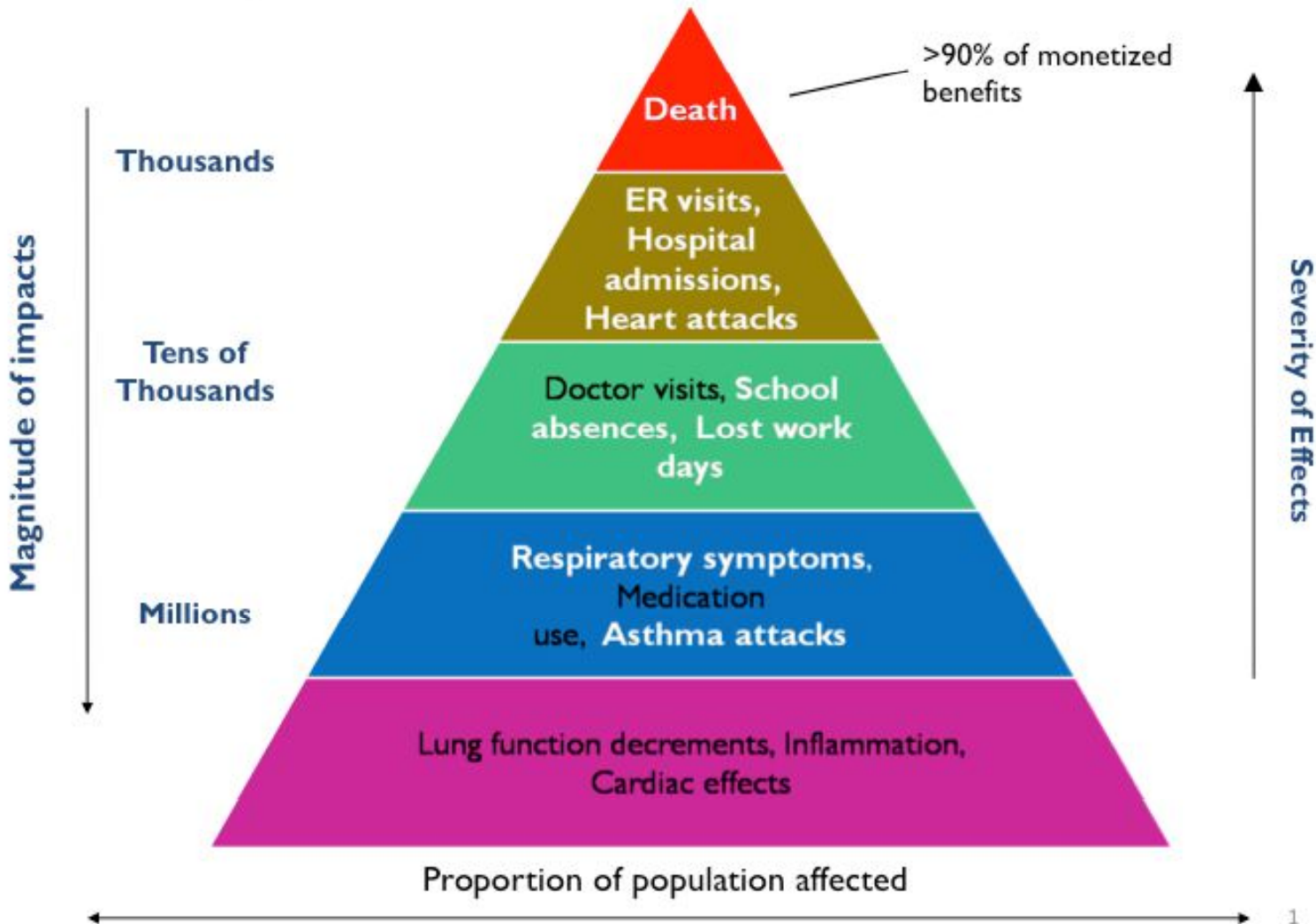
Air pollution

Sources of Emissions of Air Pollutants

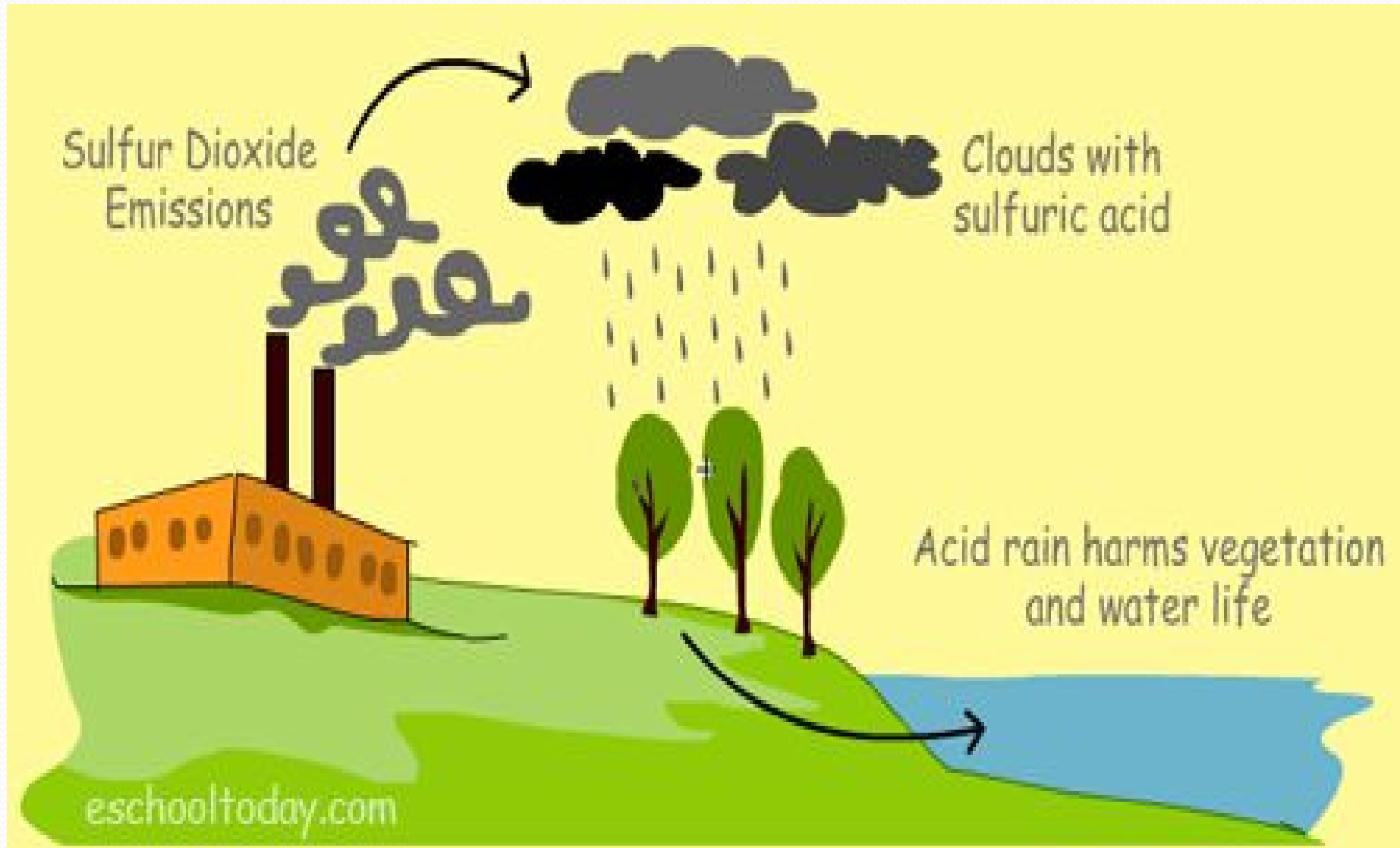


Air pollution

A “Pyramid of Effects” from Air Pollution



Air pollution



Air pollution



Air pollution



Water pollution



Water pollution



Water pollution



Water pollution



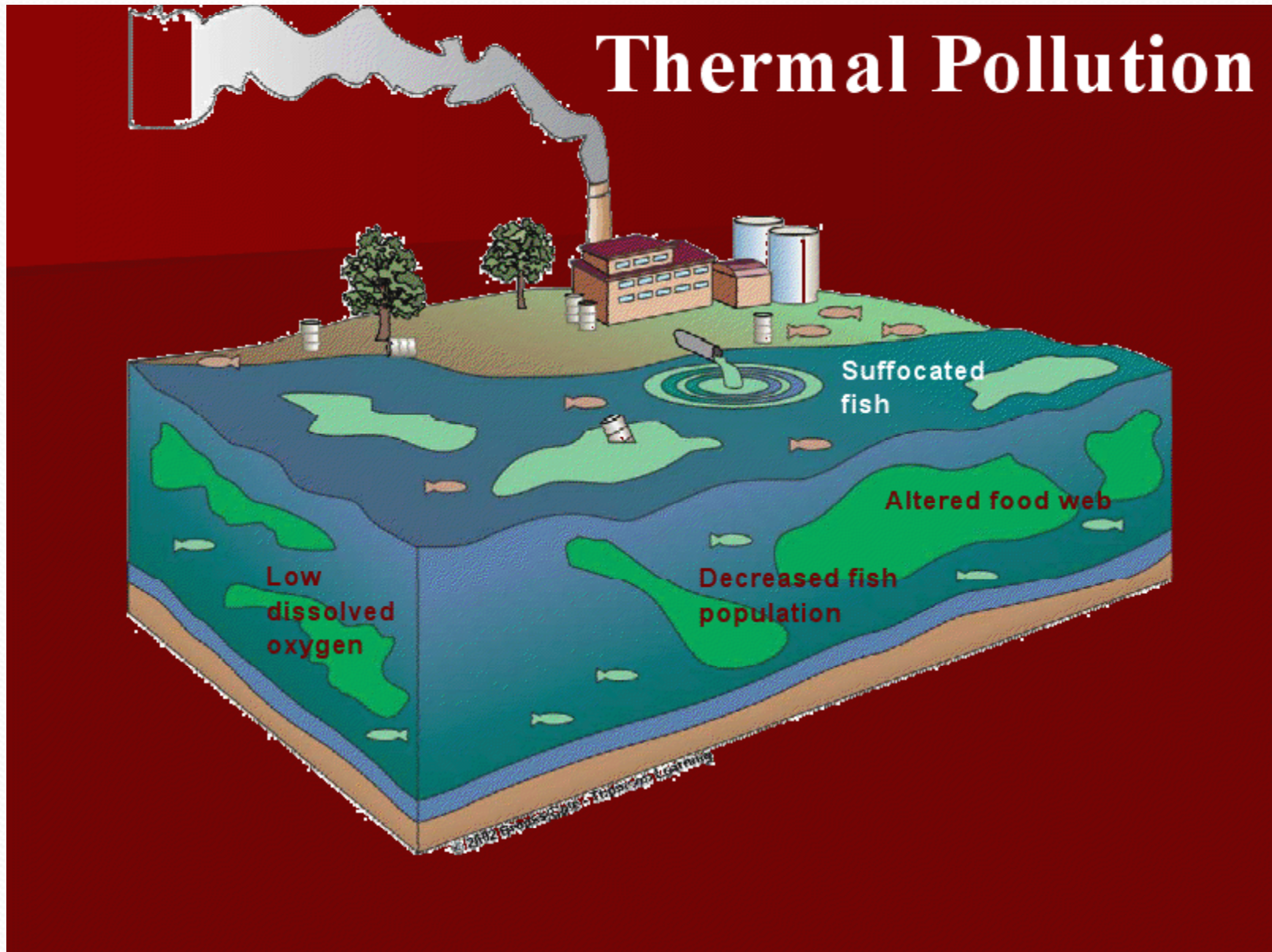
Water pollution



Thermal pollution



Thermal pollution



soil pollution



soil pollution



soil pollution



soil pollution



Ocean pollution



Ocean pollution



Ocean pollution



Ocean pollution



Ocean pollution



Ocean pollution



Ocean pollution



Ocean pollution



Ocean pollution



Nuclear pollution



epa - knews

Nuclear pollution



Nuclear pollution



Nuclear pollution



I've come for the children