



What is Environmental Science?

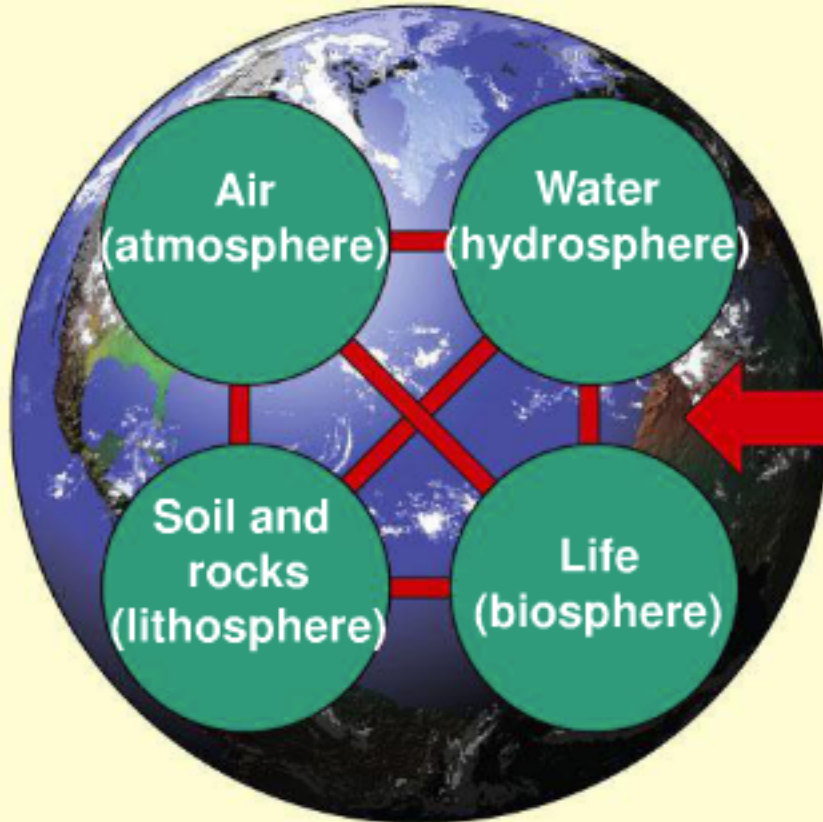
What is Environmental Science?

- Environmental Science - interdisciplinary study of human relationships with other organisms & the nonliving physical environment



ENVIRONMENTAL SCIENCE

Earth's Life-Support System



Human Culturesphere



What is the study of Env. Science ?

Environmental Science tries to establish principles and **model how the natural world functions** AND THEN uses these principles to **develop solutions to environmental problems** caused by humans (ANTHROPOGENIC).



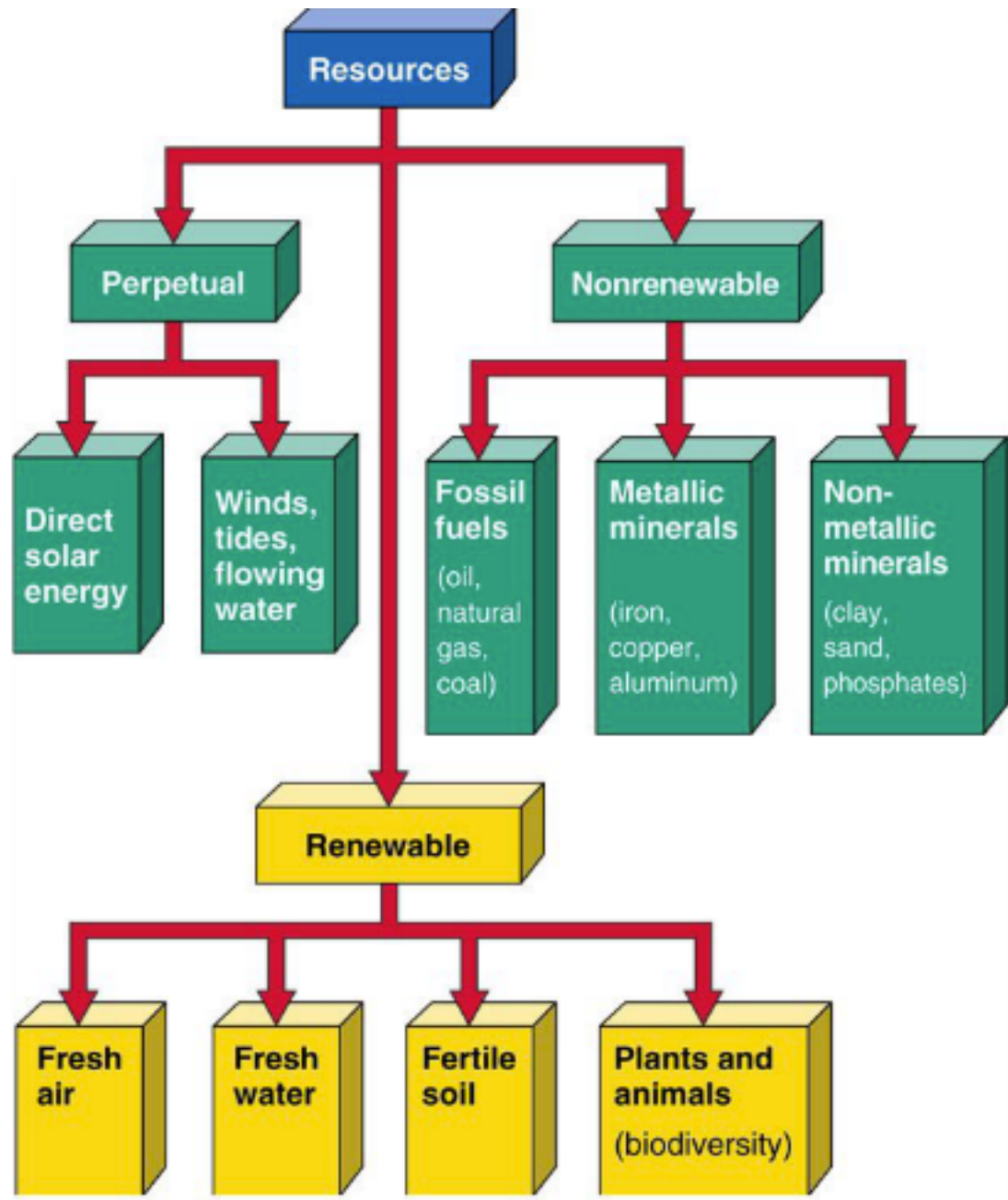
What is a resource?

- Resource - anything from environment that meets the needs/wants of humans
- defined based on replenishment time



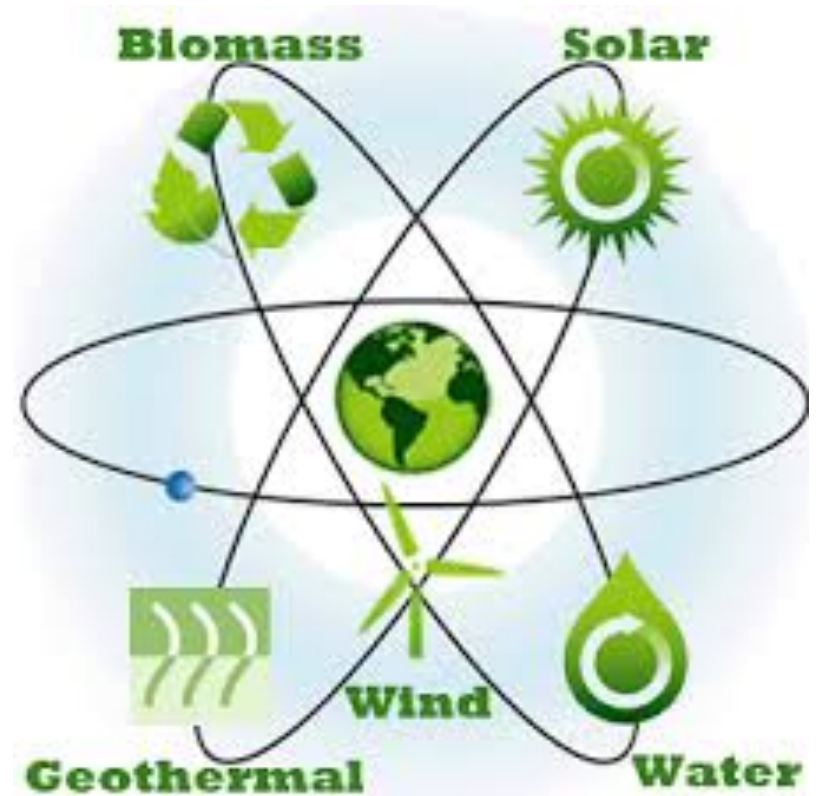
dreamstime.com





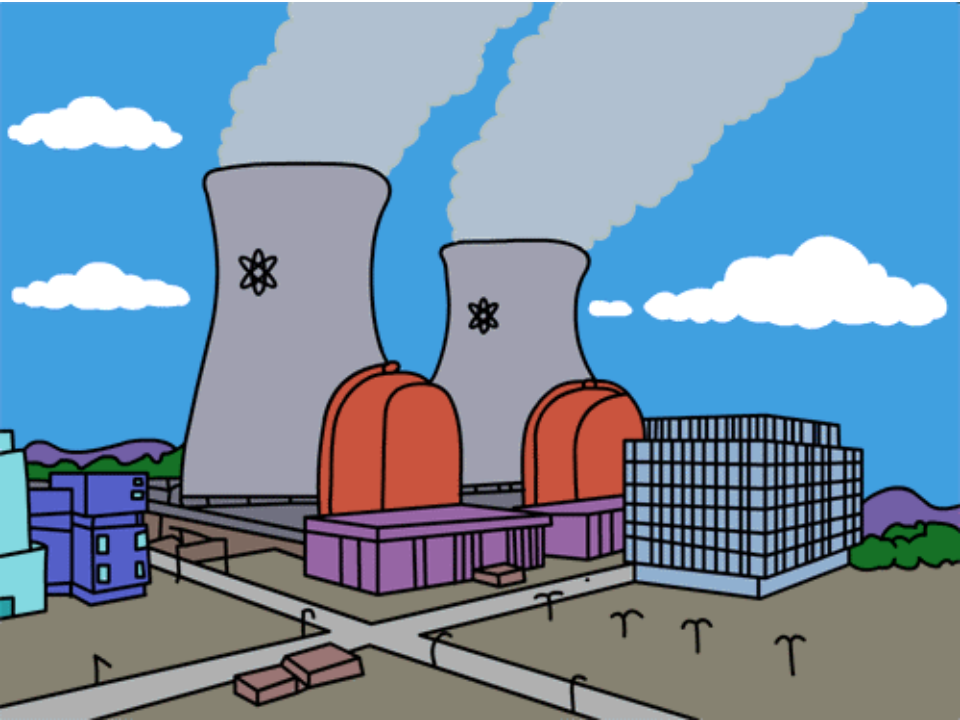
Renewable Resource

replenished during
lifetime, can be
depleted but
regenerated in human
lifespan



Nonrenewable Resource

Cannot be replenished during lifetime, fixed stock, can be replenished on geologic timescale

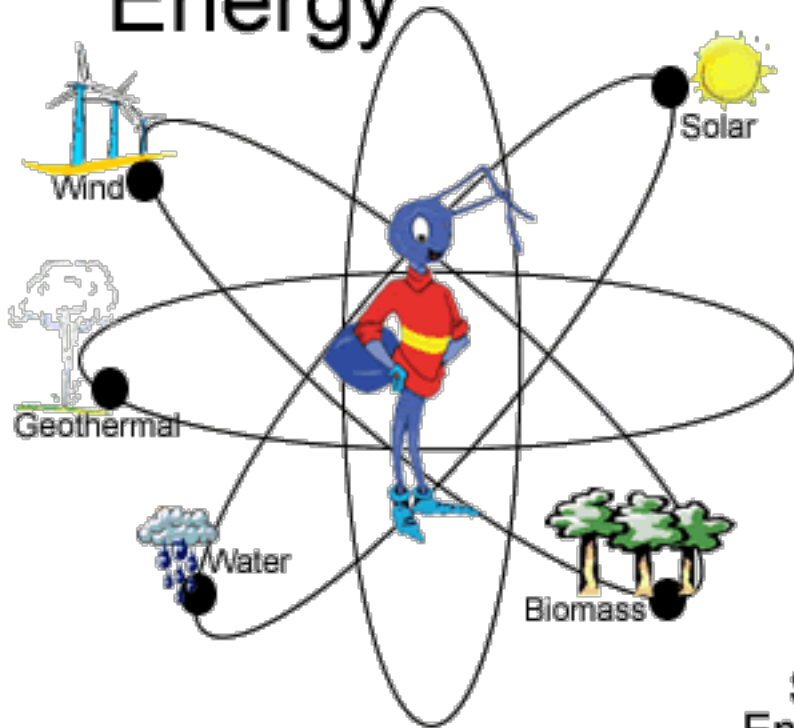


Perpetual Resource

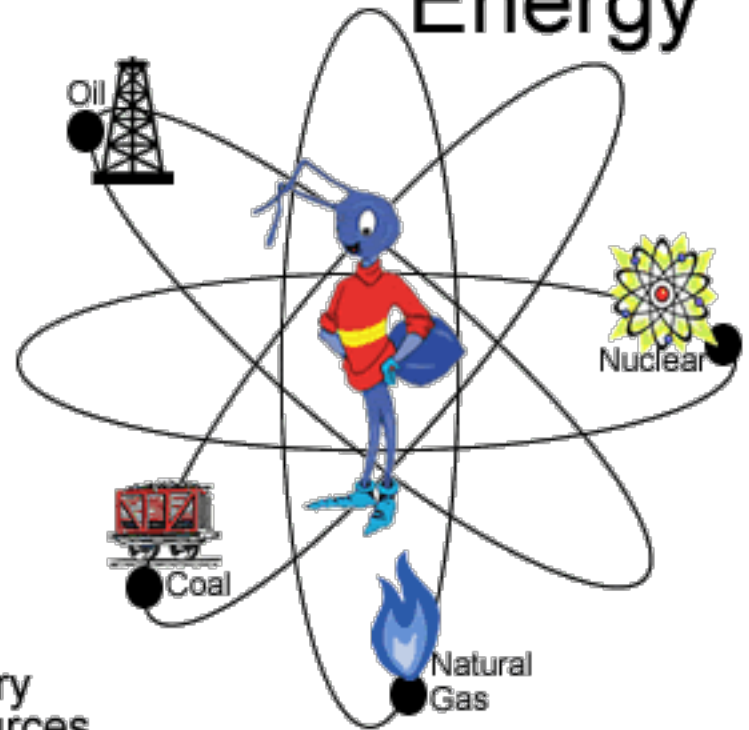
Renewed Continuously



Renewable Energy



Non-Renewable Energy



Secondary Energy Sources

U.S. Energy Consumption by Source 2006



PETROLEUM 38.8%
nonrenewable
transportation, manufacturing



BIOMASS 3.3%
renewable
heating, electricity, transportation



COAL 22.6%
nonrenewable
electricity, manufacturing



HYDROPOWER 2.9%
renewable
electricity



NATURAL GAS 21.6%
nonrenewable
heating, manufacturing, electricity



GEO THERMAL 0.35%
renewable
heating, electricity



URANIUM 8.2%
nonrenewable
electricity



WIND 0.25%
renewable
electricity



PROPANE 1.9%
nonrenewable
manufacturing, heating



SOLAR 0.1%
renewable
light, heating, electricity

Sustainable

Meeting the needs of today without harming future generation's abilities to meet their needs.



Three Principles of Sustainability



Solar Energy

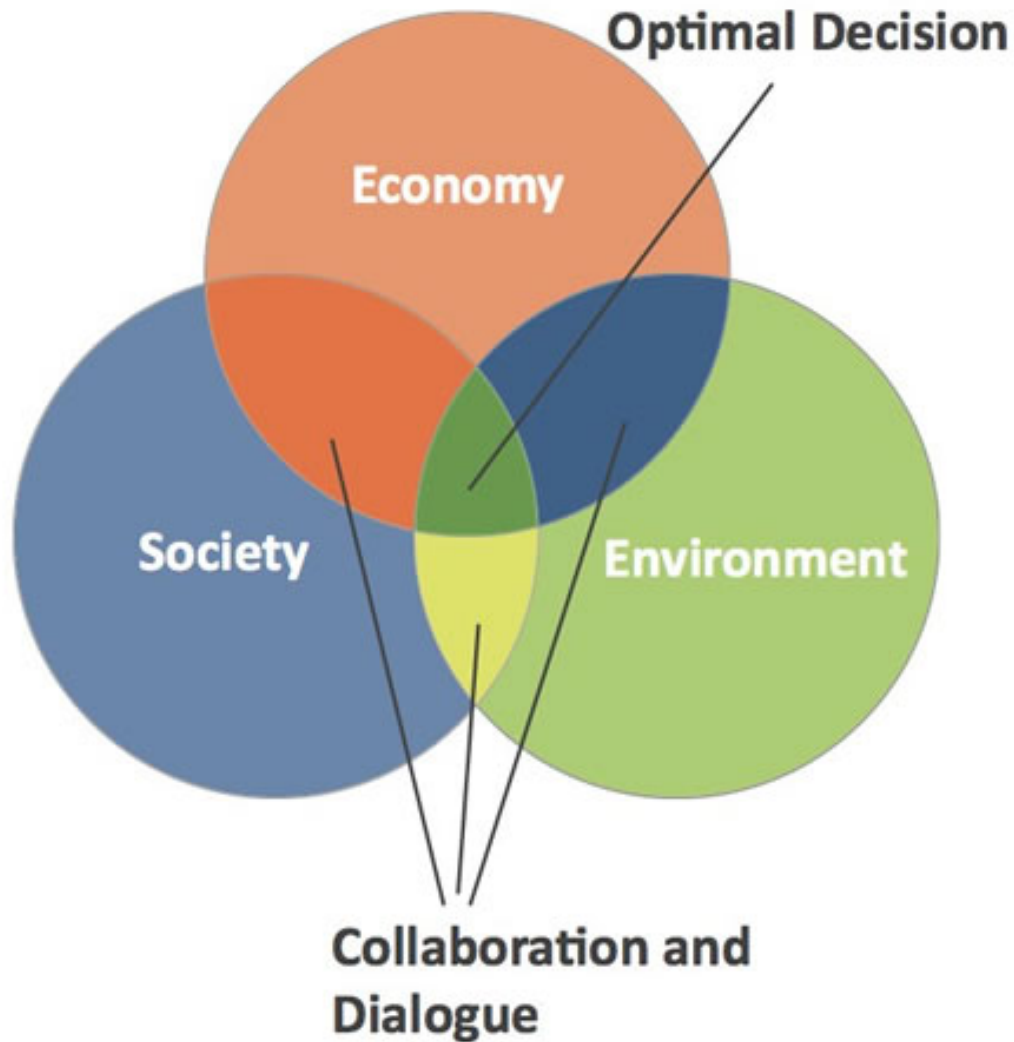


Chemical Cycling



Biodiversity

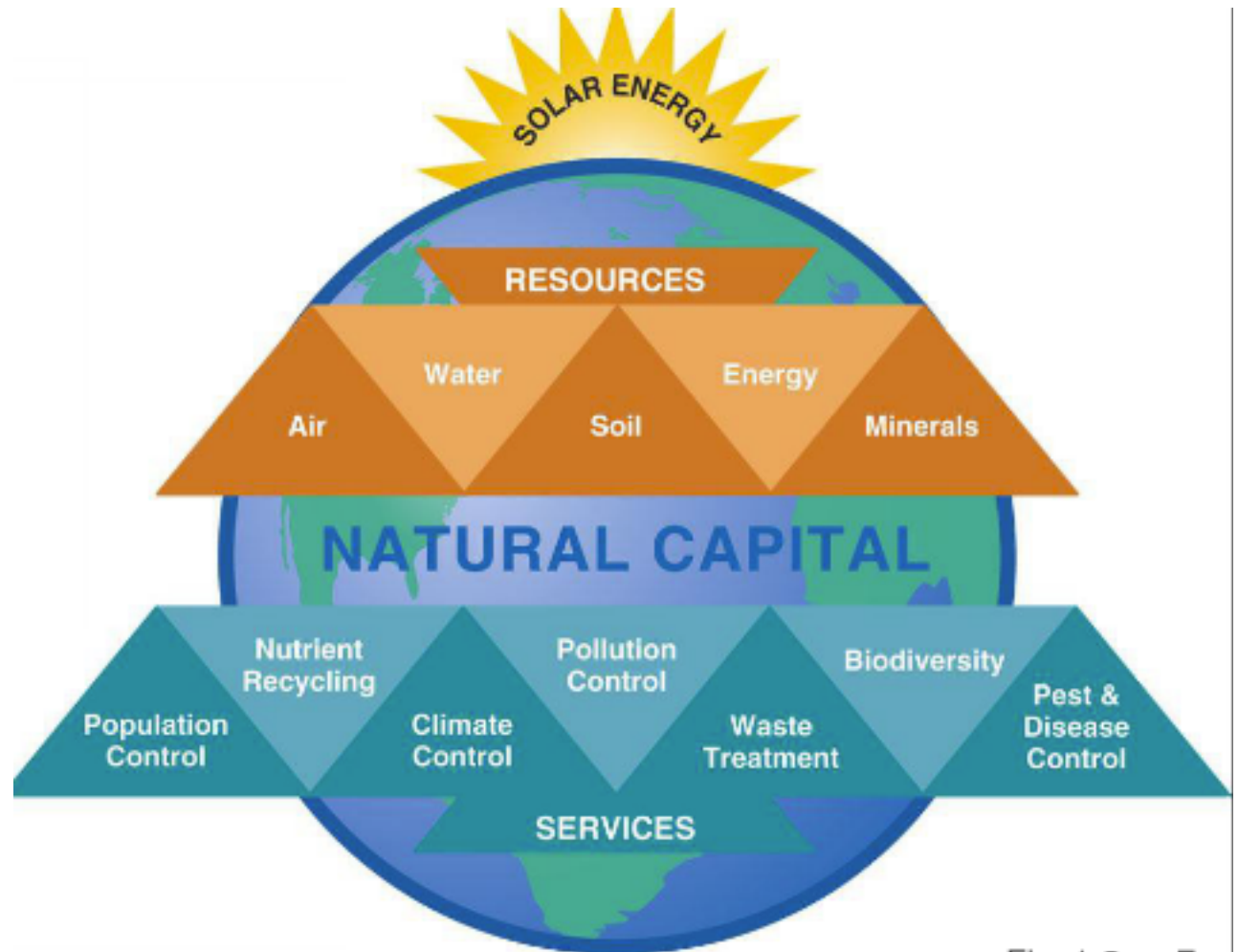
Sustainable



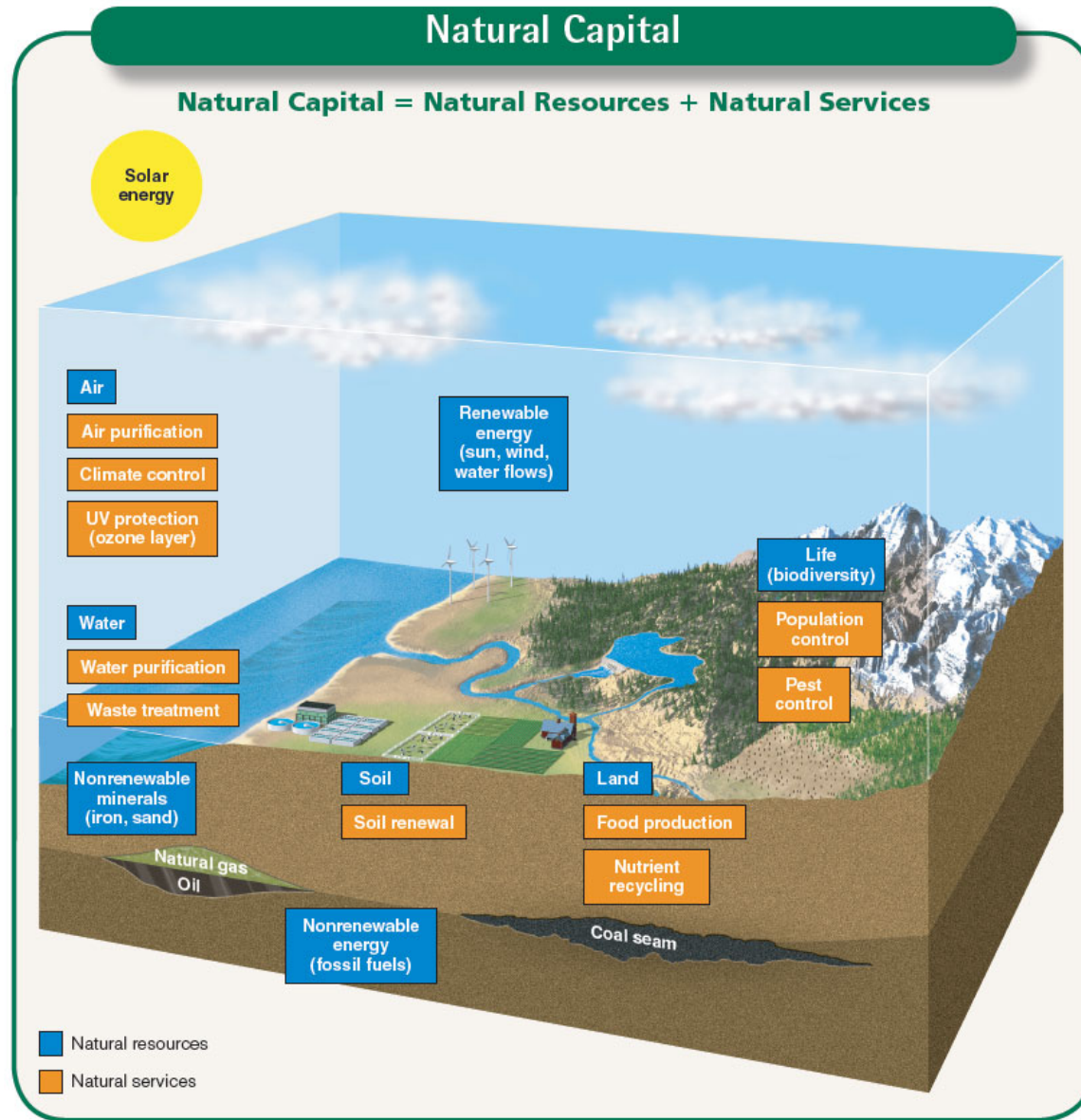
What needs to be sustained?

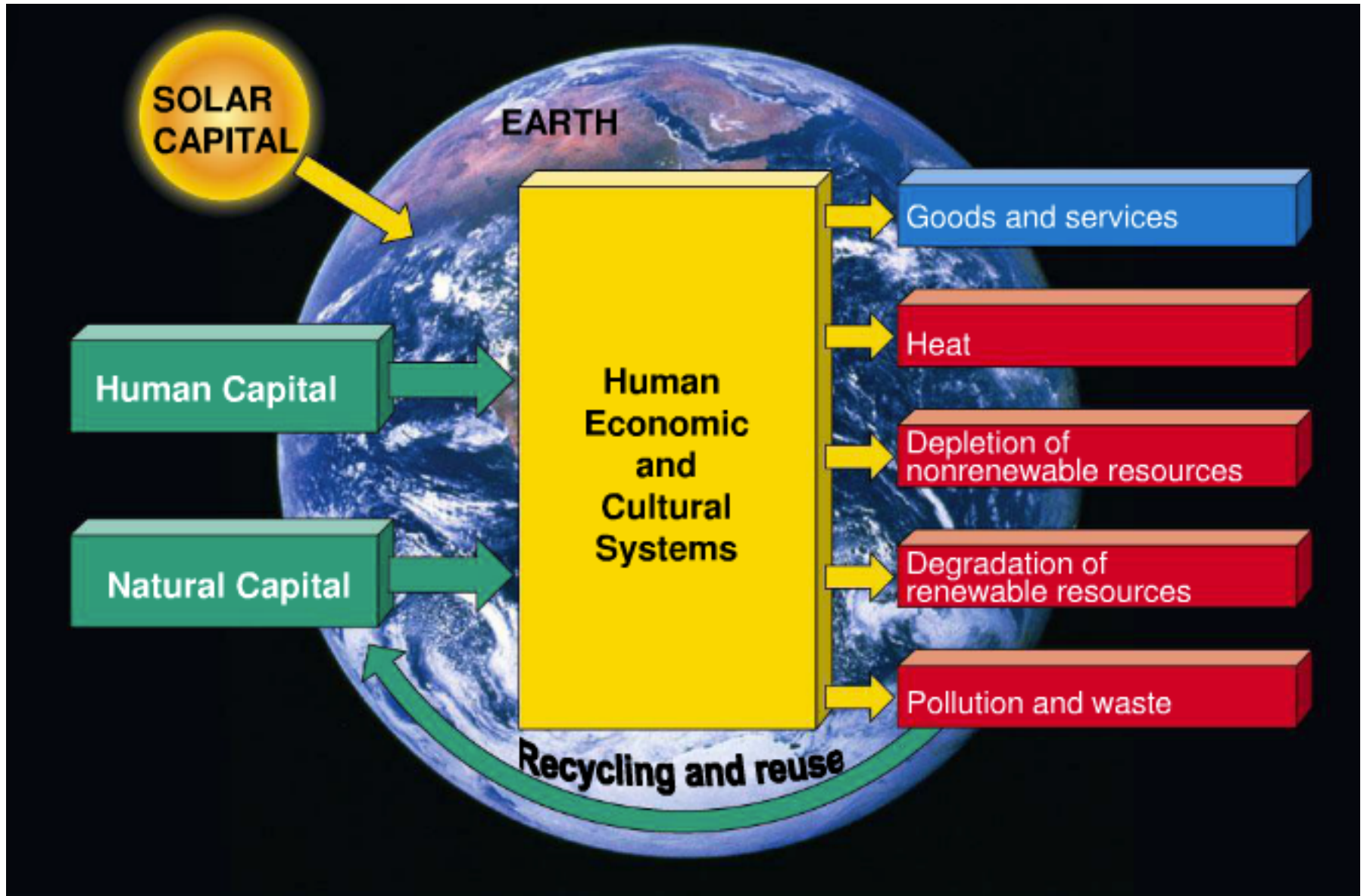
Solar Capital

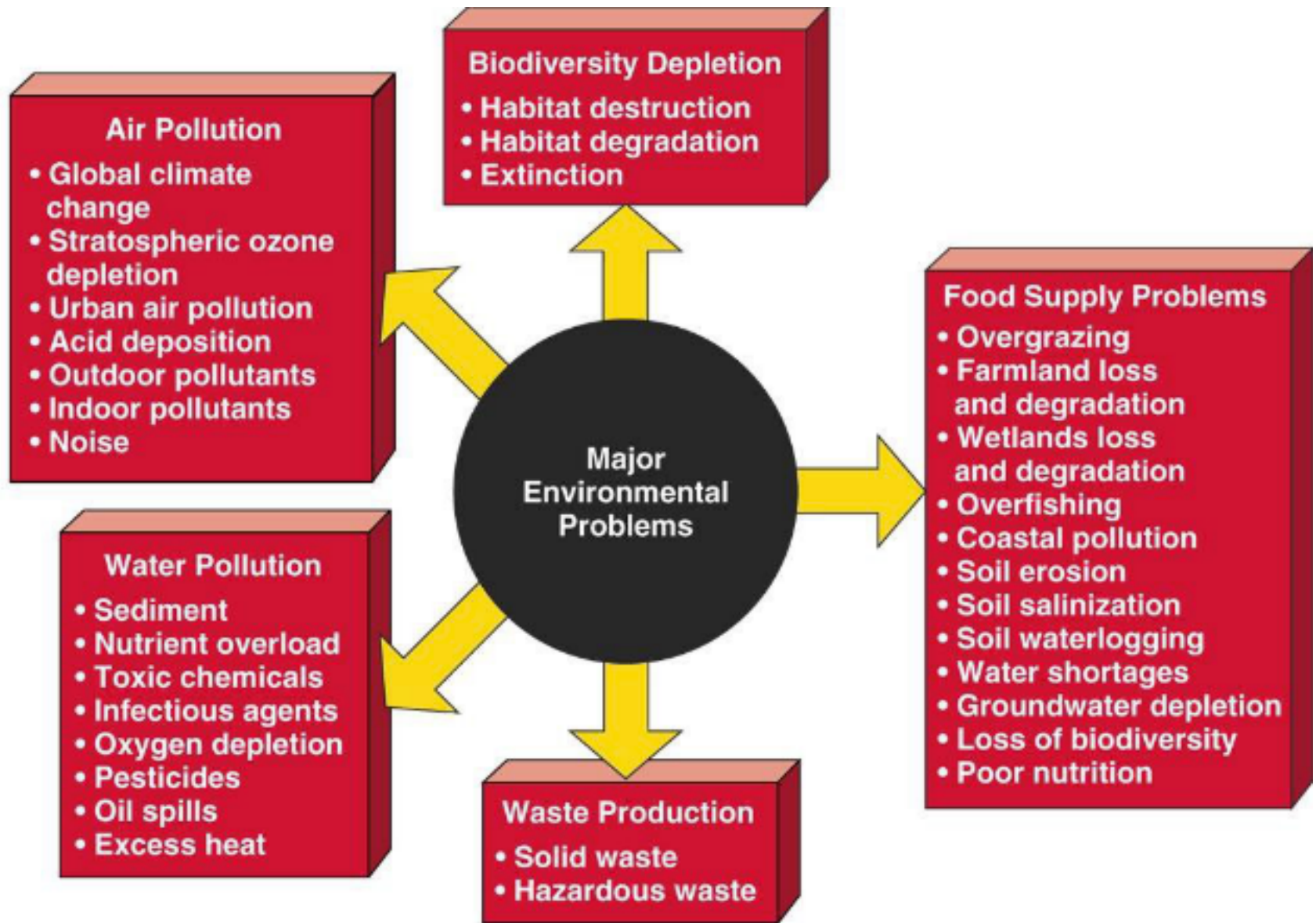
Natural Capital



Natural Capital = Natural Resources + Natural Services







Major Environmental Problems

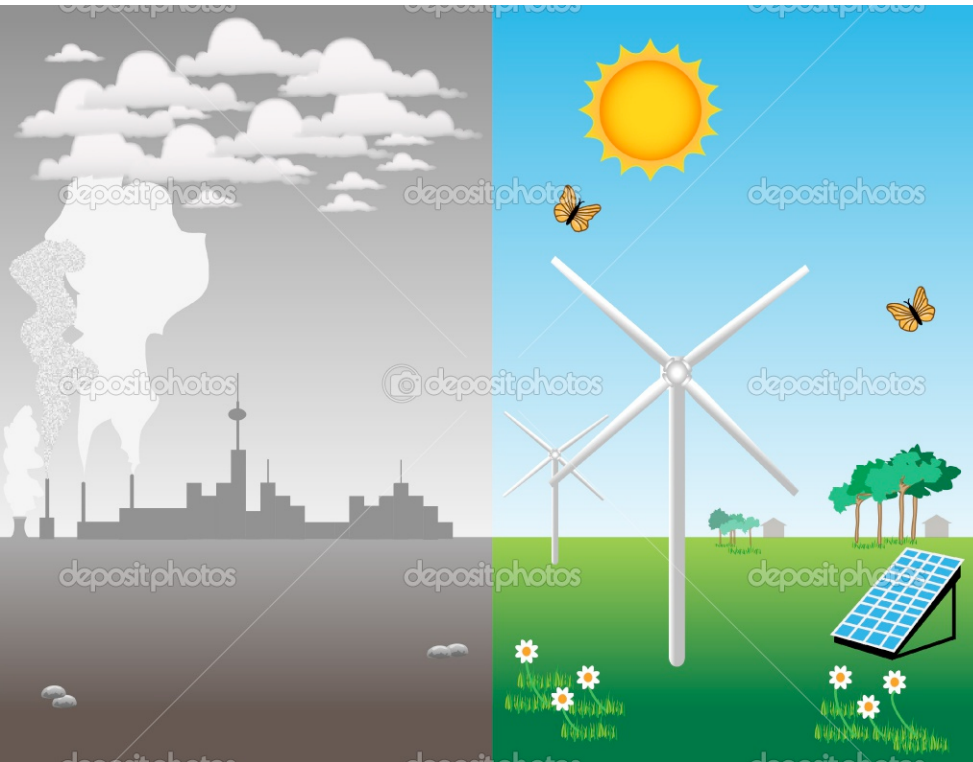
1. Air Pollution
2. Biodiversity Depletion
3. Food Supply Problems
4. Waste Production
5. Water Pollution



Basic Causes of Environmental Problems

1. Rapid Population Growth
2. Unsustainable Resource Use
3. Poverty
4. Not including environmental cost in the price of goods/services
5. Trying to manage and simplify nature with too little understanding of how it works.

What are current issues at the heart of Env. Science?



ENERGY SUPPLY and DEMAND

GLOBAL WARMING

Global warming: Causes and effects

Earth's temperature has risen about 1 degree Fahrenheit in the last century. The past 50 years of warming has been attributed to human activity.

Burning fuels such as coal, natural gas and oil produces greenhouse gases in excessive amounts.

Greenhouse gases are emissions that rise into the atmosphere and trap the sun's energy, keeping heat from escaping.

The United States was responsible for 20 percent of the global greenhouse gases emitted in 1997.

Most of the world's emissions are attributed to the United States' large-scale use of fuels in vehicles and factories.

During the past 100 years global sea levels have risen 4 to 8 inches.

Some predictions for local changes include increasingly hot summers and intense thunderstorms.



Damaging storms, droughts and related weather phenomena cause an increase in economic and health problems. Warmer weather provides breeding grounds for insects such as malaria-carrying mosquitoes.

Source: Environmental Protection Agency

NATE OWEN/STAFF



OVERPOPULATION

FOOD SUPPLIES

