



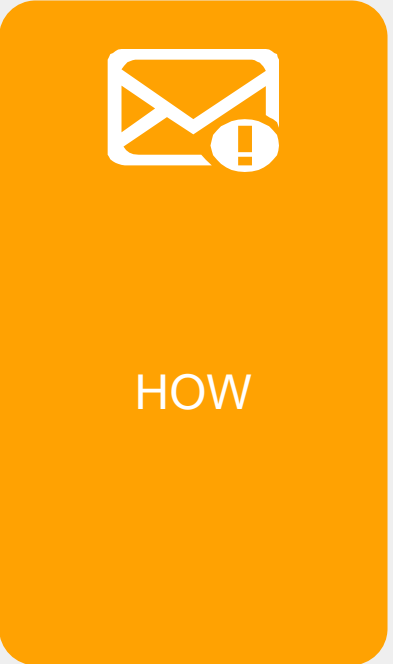
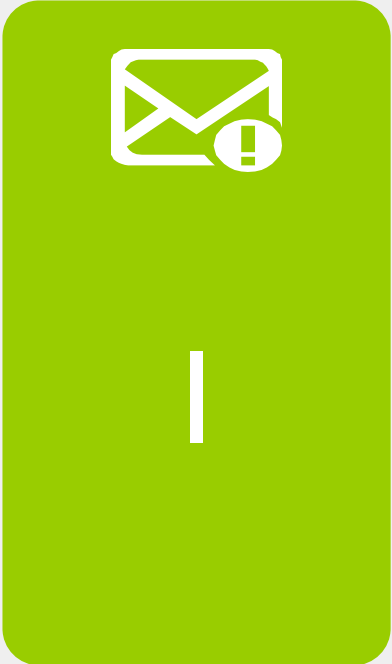
# ENVIRONMENTAL ETHICS

环境伦理学

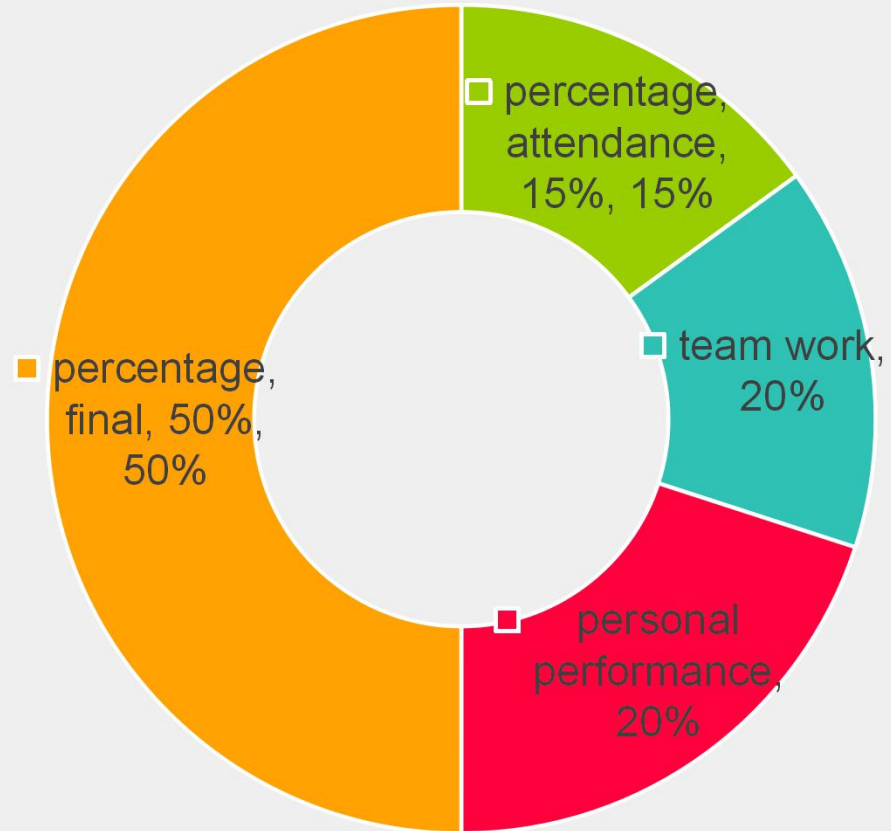
2016.FALL



# A COUPLE OF THINGS BEFORE THE CLASS BEGINS.....



# GRADE



AT: 3\*5

TW: 5-6/T

P2: Reading summary

Final: open-book exam

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80% 80~90



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<https://forest-hugger.com/>

# LECTURE 1

## The Environmental Challenges We Face



# 目 | 录

## CONTENTS

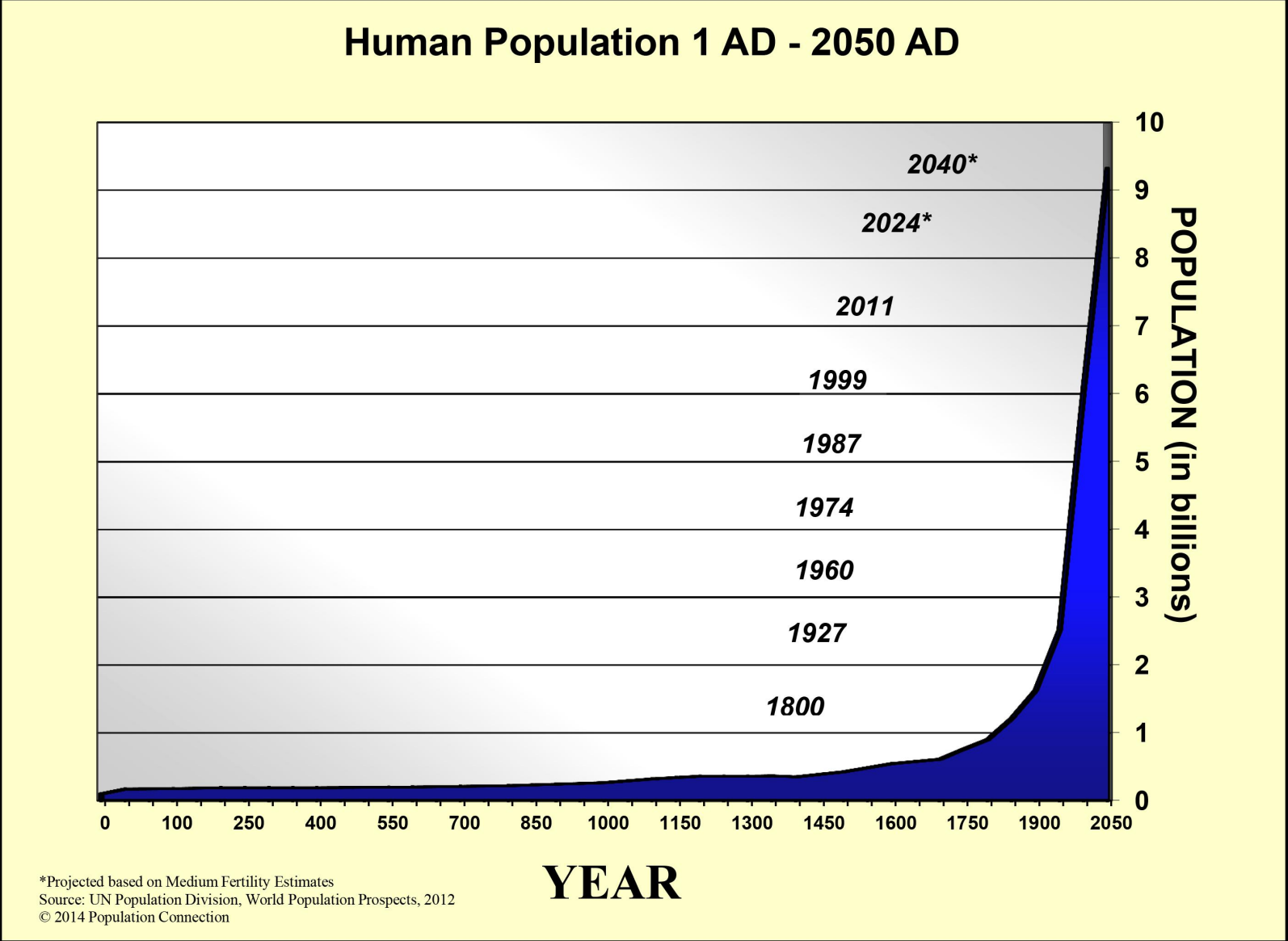
01. Human Impacts on the Environment
02. Sustainability and the Environment
03. Environmental Science
04. How We Handle Environmental Problems



# **PART 01**

# **HUMAN IMPACTS ON THE ENVIRONMENT**

# Human population growth





# POVERTY



# WHAT IS POVERTY?

A condition in which people are unable to meet their basic needs for food, clothing, shelter, education, or health. <\$2

**3.3 BILLION PEOPLE**

**1/2**

# The Gap Between Rich and Poor Countries

**highly developed countries** Countries with complex industrialized bases, low rates of population growth, and high per person incomes. **18%**

**moderately developed countries** Countries with medium levels of industrialization and per person incomes lower than those of highly developed countries.

**less developed countries** Countries with low levels of industrialization, very high rates of population growth, very high infant mortality rates, and very low per person incomes relative to highly developed countries.

# Population, Resources, and the Environment

Two useful generalizations about the relationships among population growth, consumption of natural resources, and environmental degradation

1) rapid population growth

2) increased consumption of energy (through such uses as heating, transportation, and manufacturing), material goods (such as cars, televisions, and cellular phones), and agricultural products (including food, animal feed, and wood products)

# Types of Resources



nonrenewable resources Natural resources that are present in limited supplies and are depleted as they are used.

renewable resources Resources that are replaced by natural processes and that can be used forever, provided they are not overexploited in the short term.




# Population Size and Resource Consumption

## highly developed countries

- ✓ 86% of aluminum used
- ✓ 76% of timber harvested
- ✓ 68% of energy produced
- ✓ 61% of meat eaten
- ✓ 42% of the fresh water consumed
- ✓



# Ecological footprints

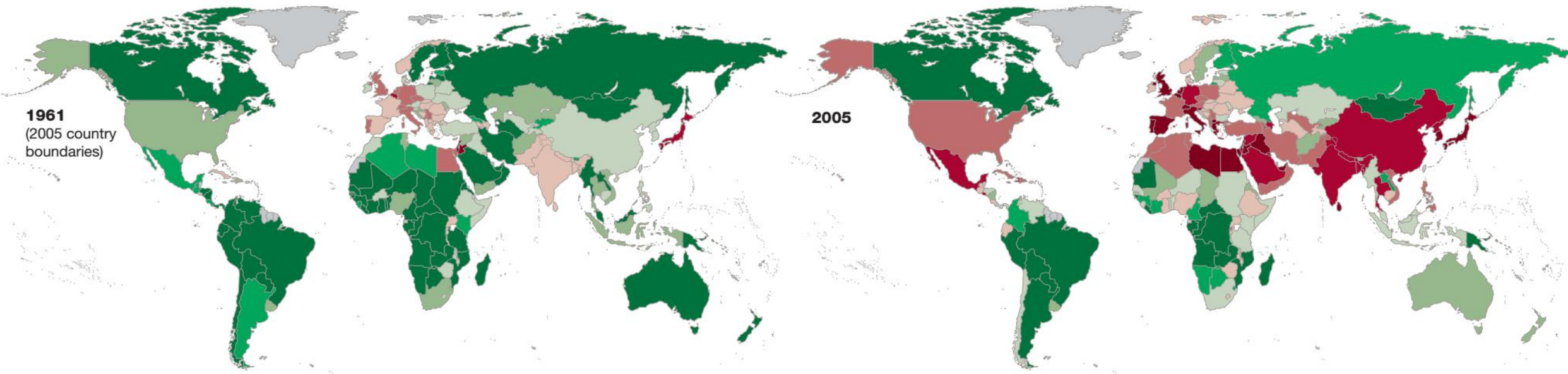


an amount of productive land, fresh water, and ocean required on a continuous basis to supply that person with food, wood, energy, water, housing, clothing, transportation, and waste disposal.

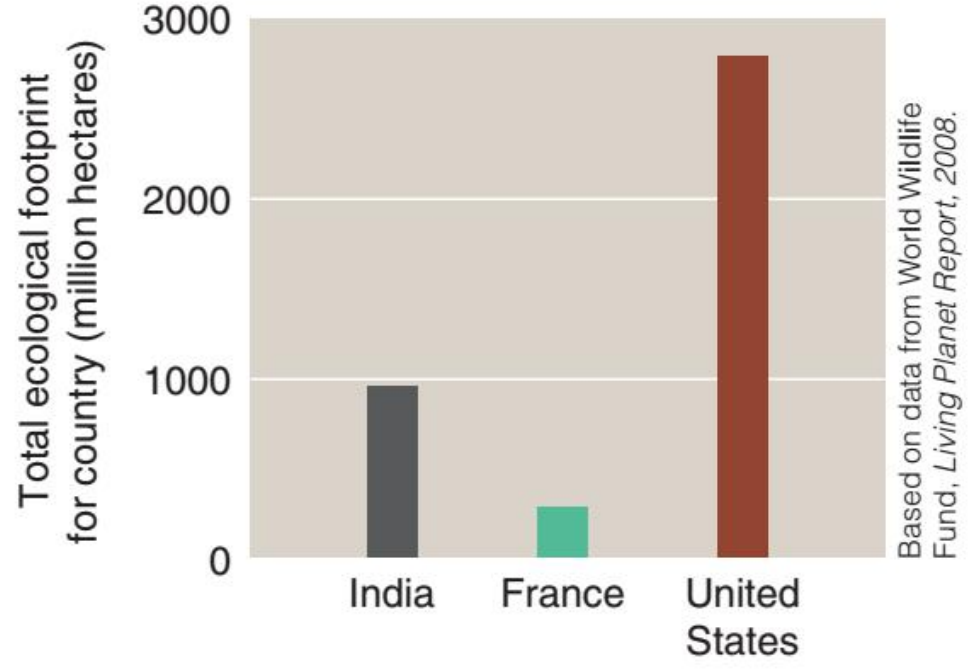
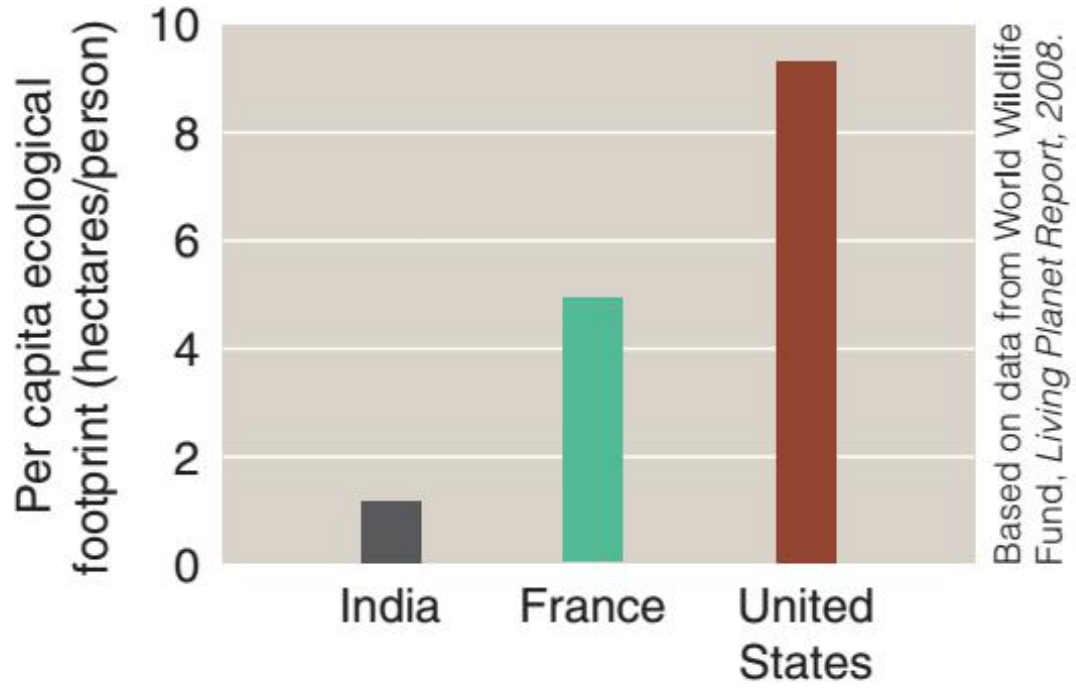


**Fig. 3: ECOLOGICAL DEBTOR AND CREDITOR COUNTRIES, 1961 and 2005**

**Eco-debt: Footprint relative to biocapacity** ■ more than 150% greater ■ 100-150% greater ■ 50-100% greater ■ 0-50% greater ■ Insufficient data  
**Eco-credit: Biocapacity relative to footprint** ■ 0-50% greater ■ 50-100% greater ■ 100-150% greater ■ more than 150% greater



Source: Living Planet Report 2008



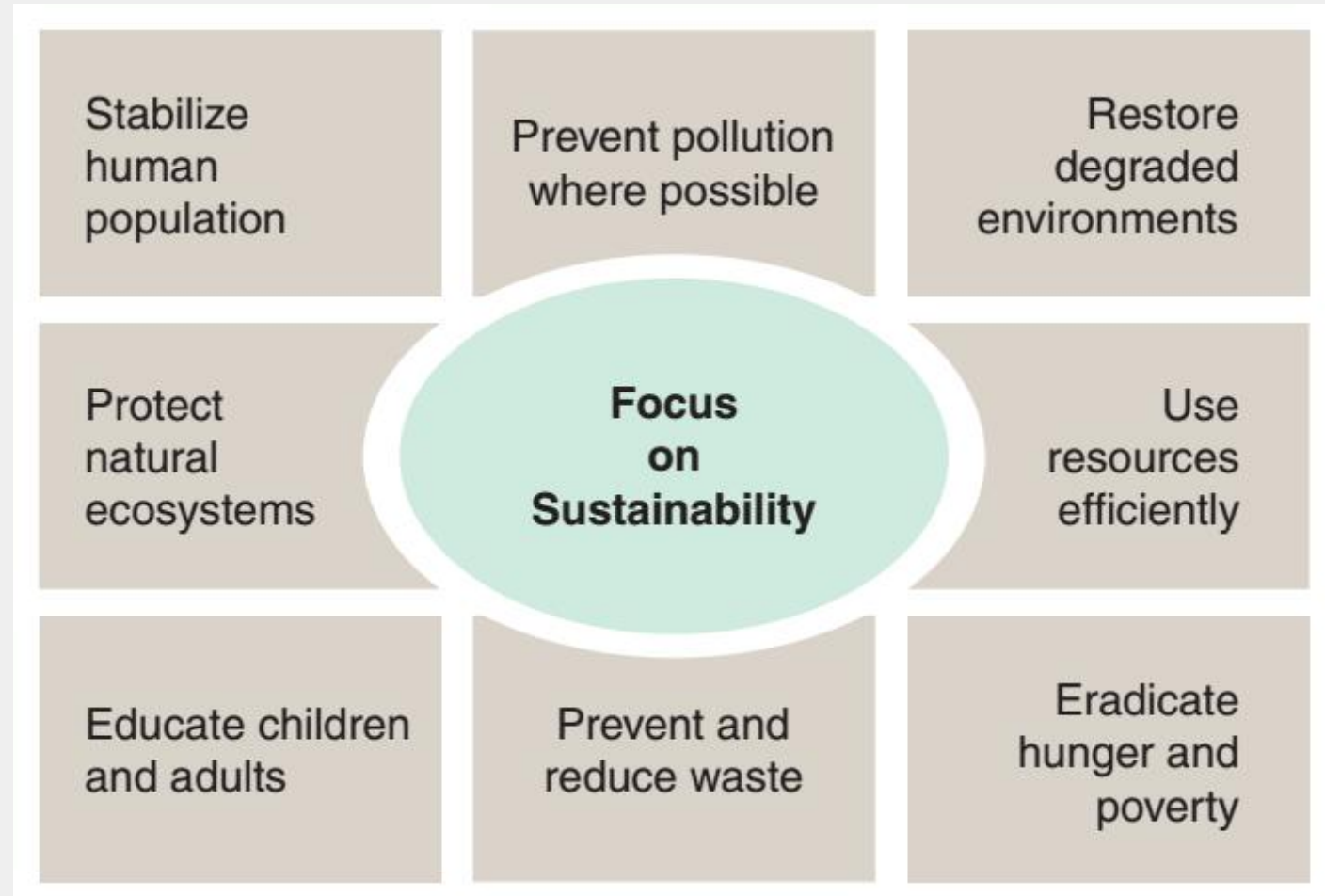


**PART 02**

**SUSTAINABILITY AND  
THE ENVIRONMENT**

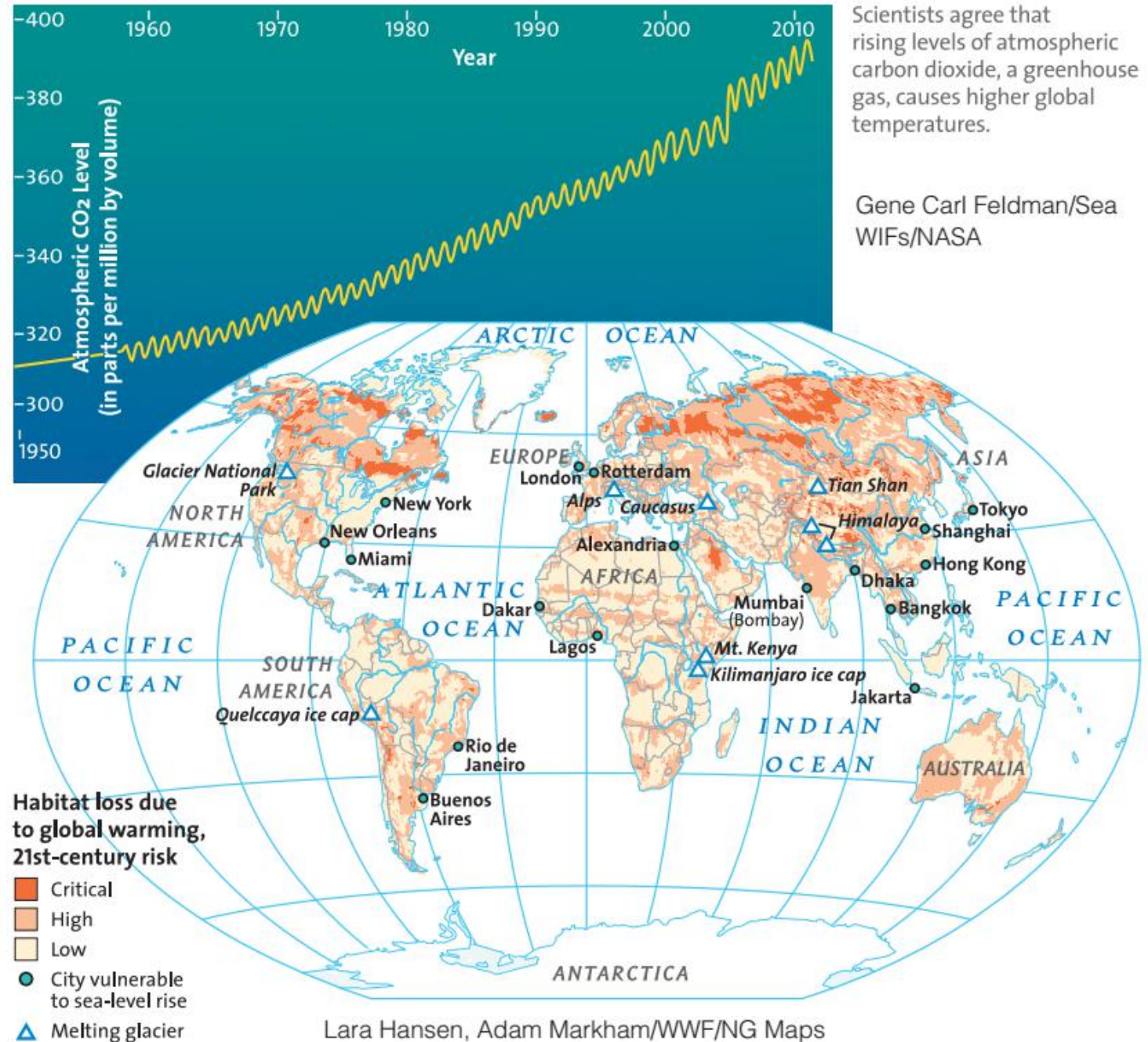
# SUSTAINABILITY

- The ability to meet humanity's current needs without compromising the ability of future generations to meet their needs.



# Global Environmental Issues

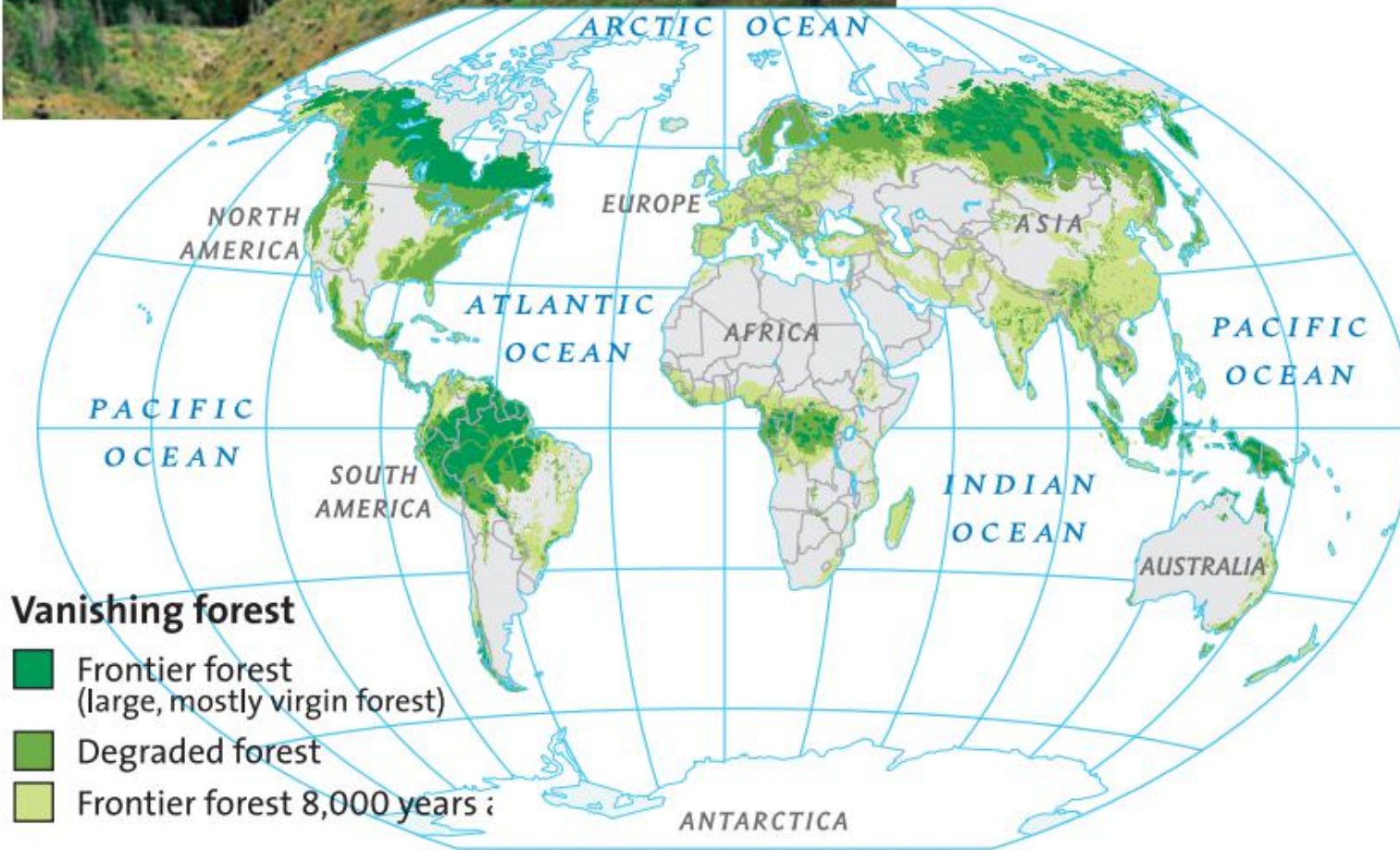
- Global warming
- Deforestation
- Threatened oceans
- Desertification
- Polar ice cap
- Ozone depletion





Clear-cutting large tracts of timber, without sustainable replanting, contributes to deforestation, erosion, and loss of habitat.

Photodisc/Getty Images



Global Forest Watch/WRI/NG Maps



**PART 03**

**ENVIRONMENTAL  
SCIENCE**

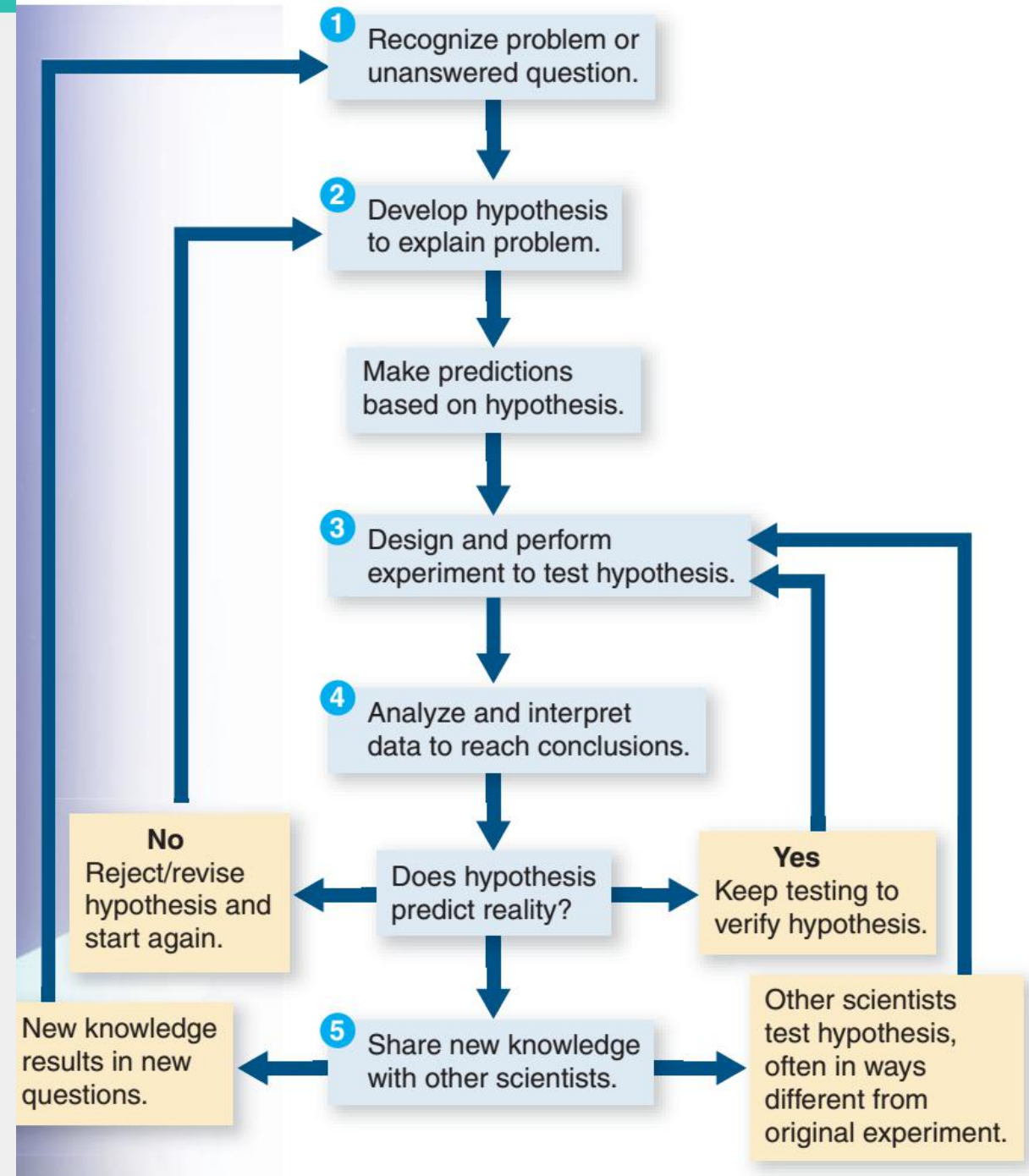
# The Goals of Environmental Science

**environmental science** The interdisciplinary study of humanity's relationship with other organisms and the physical environment.

- ✓ try to establish general principles about how the natural world functions.
- ✓ use these principles to develop viable solutions to environmental problems.



- ✓ Unfortunately, many questions that are most important to environmental scientists cannot be formulated as testable hypotheses.
- ✓ Despite the fact that theories are generally accepted, there is no absolute truth in science, only varying degrees of uncertainty.
- ✓ Uncertainty, however, does not mean that scientific conclusions are invalid.





# PART 04

# HOW WE HANDLE ENVIRONMENTAL PROBLEMS

# Five Stages in Addressing An Environmental Problem

## Scientific assessment:

Problem is defined, hypotheses are tested, and models are constructed to show how present situation developed and to predict future course of events.

## Public engagement:

Changing public attitudes involves explaining the problem, presenting available alternatives for action, and revealing probable risks, results, and costs of each choice.

## Long-term environmental management:

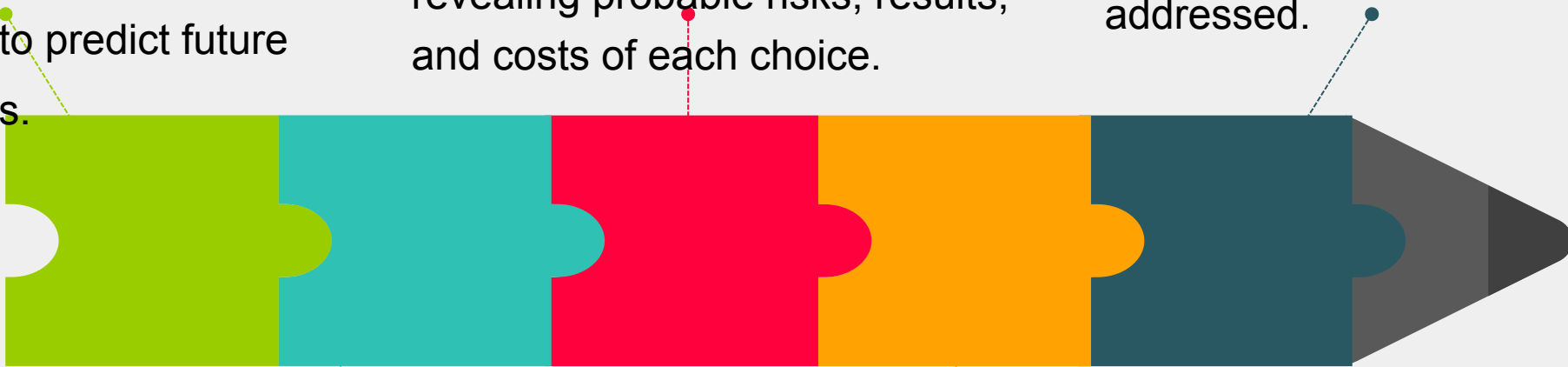
Results of any action taken should be carefully monitored to see the environmental problem is being addressed.

## Risk analysis:

Potential effects of various interventions — including doing nothing—are analyzed to determine risks associated with each particular course of action.

## Political considerations:

Elected officials, often at urging of their constituencies, implement a course of action based on scientific evidence as well as economic and social considerations.




# HOMework

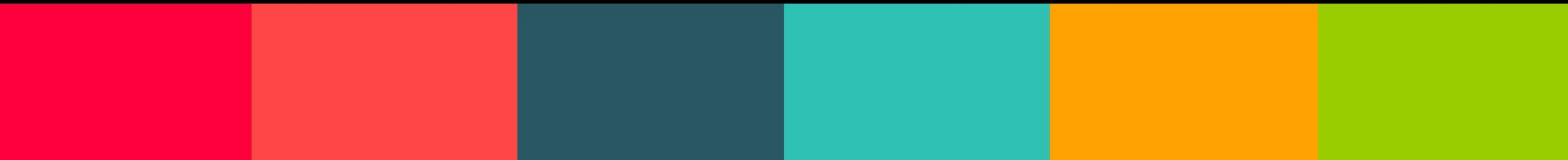
Provide arguments for and against the following statement:

“Population growth in developing countries is of much concern than is population growth in highly developed countries.”





END





# Trees Identification

## 树的识别









































(请大家画一片树叶)















EM












# SHAPE

 Acicular needle shaped	 Falcate hooked or sickle shaped	 Orbicular circular	 Rhomboid diamond-shaped
 Acuminate tapering to a long point	 Flabellate fan shaped	 Ovate egg-shaped, wide at base	 Rosette leaflets in tight circular rings
 Alternate leaflets arranged alternately	 Hastate triangular with basal lobes	 Palmate like a hand with fingers	 Spatulate spoon-shaped
 Aristate with a spine-like tip	 Lanceolate pointed at both ends	 Pedate palmate, divided lateral lobes	 Spear-shaped pointed, barbed base
 Bipinnate leaflets also pinnate	 Linear parallel margins, elongate	 Peltate stem attached centrally	 Subulate tapering point, awl-shaped
 Cordate heart-shaped, stem in cleft	 Lobed deeply indented margins	 Perfoliate stem seeming to pierce leaf	 Trifoliate/Ternate leaflets in threes
 Cuneate wedge shaped, acute base	 Obcordate heart-shaped, stem at point	 Odd Pinnate leaflets in rows, one at tip	 Tripinnate leaflets also bipinnate
 Deltoid triangular	 Obovate egg-shaped, narrow at base	 Even Pinnate leaflets in rows, two at tip	 Truncate squared-off apex
 Digitate with finger-like lobes	 Obtuse bluntly tipped	 Pinnatisect deep, opposite lobing	 Unifoliate having a single leaf
 Elliptic oval-shaped, small or no point	 Opposite leaflets in adjacent pairs	 Reniform kidney-shaped	 Whorled rings of three or more leaflets

# MARGIN

 Ciliate with fine hairs	 Crenate with rounded teeth	 Dentate with symmetrical teeth
 Denticulate with fine dentition	 Doubly Serrate serrate with sub-teeth	 Entire even, smooth throughout
 Lobate indented, but not to midline	 Serrate teeth forward-pointing	 Serrulate with fine serration
 Sinuate with wave-like indentations	 Spiny with sharp stiff points	 Undulate widely wavy

# VENATION

 Arcuate secondary veins bending toward apex	 Cross-Venulate small veins connecting secondary veins	 Dichotomous veins branching symmetrically in pairs
 Longitudinal veins aligned mostly along long axis of leaf	 Palmate several primary veins diverging from a point	 Parallel veins arranged axially, not intersecting
 Pinnate secondary veins paired oppositely	 Reticulate smaller veins forming a network	 Rotate in peltate leaves, veins radiating

leaf

树叶

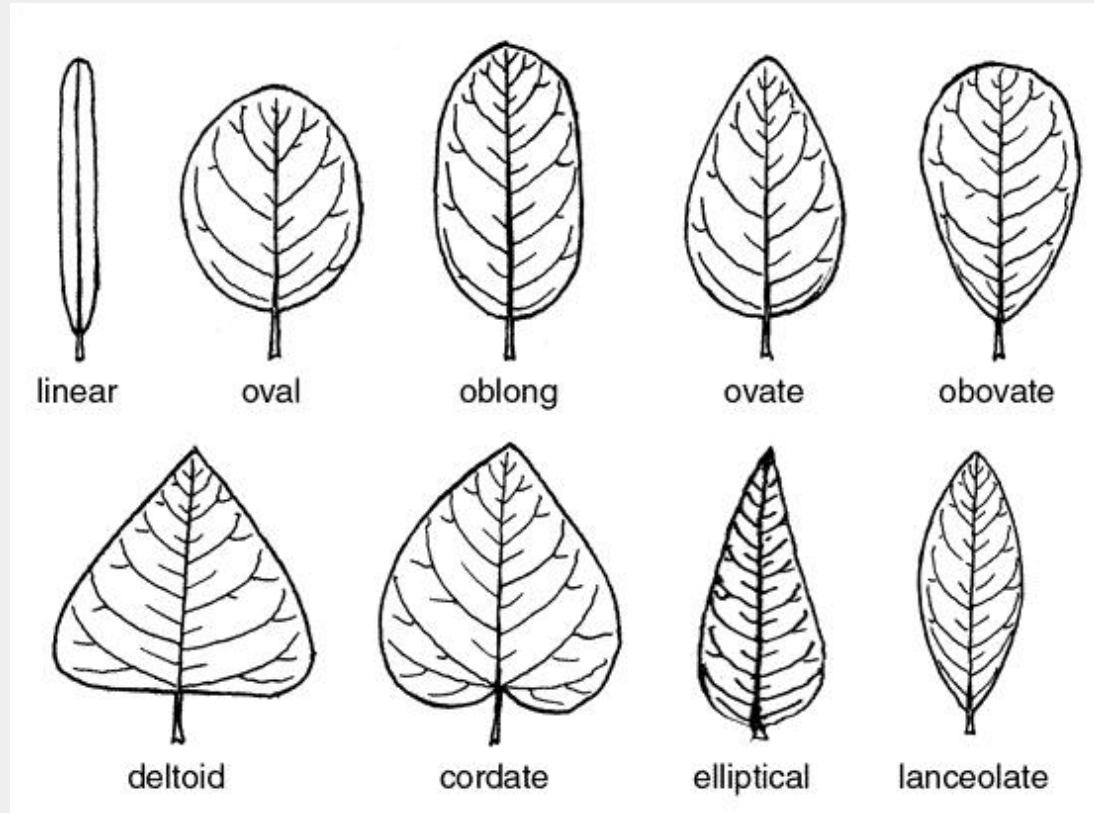


# Leaf shapes 树叶的形状



## simple leaf

线性  
椭圆  
长椭圆  
卵形  
倒卵形  
大三角形  
心形  
尖椭圆形  
矛尖形



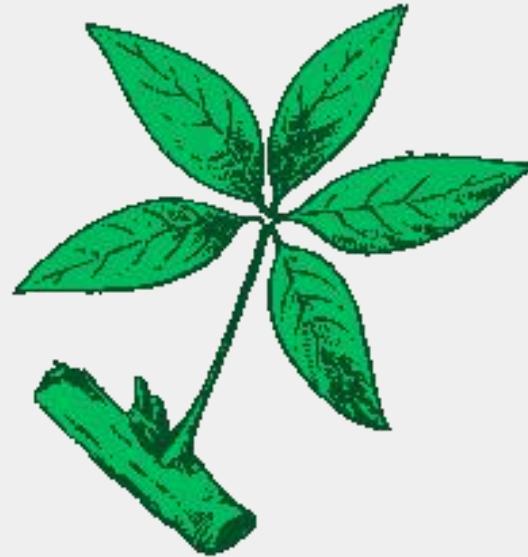
# Leaf shapes 树叶的形状



**Pinnately  
Compound**



**Twice  
Pinnately  
Compound**

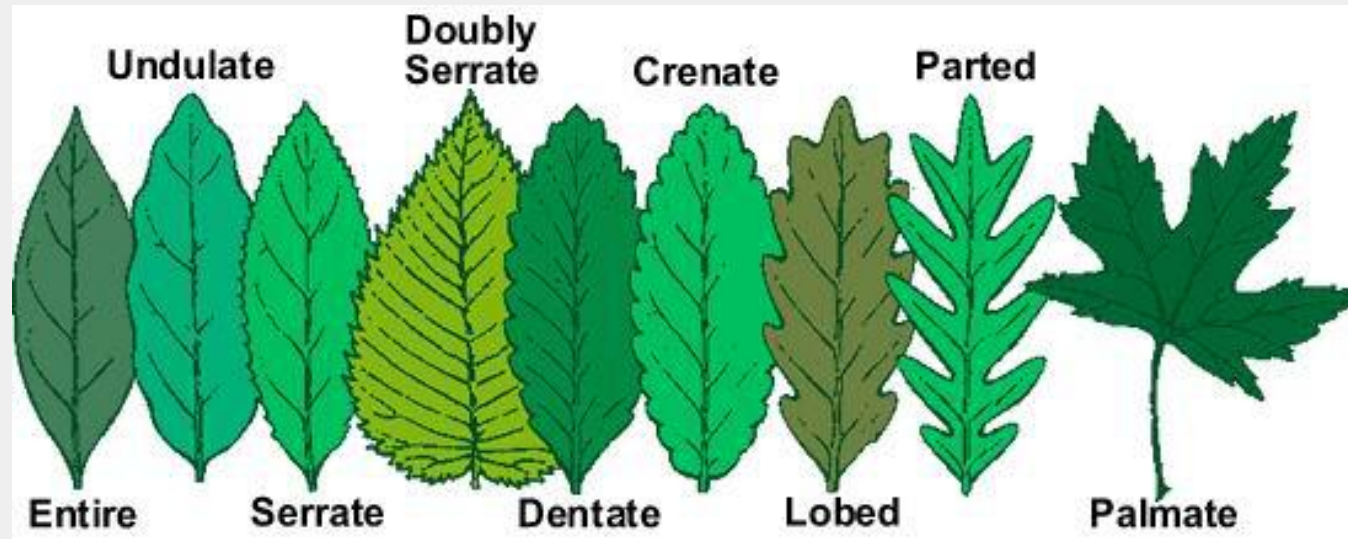


**Palmately  
Compound**

**compound  
leaf**复叶

羽状  
二回羽状  
掌状

# Leaf Edges 叶缘



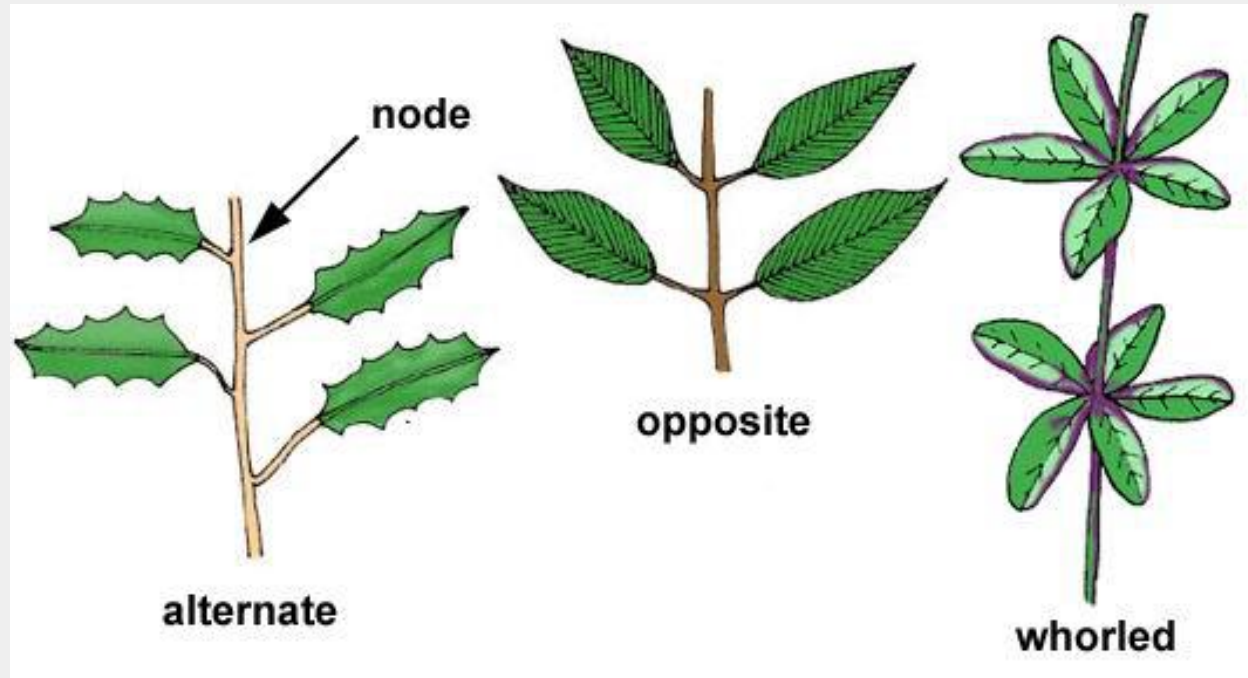
全缘叶  
Entire

锯齿叶  
Toothed

裂叶  
Lobed

掌状叶  
Palmate

# Leaf Arrangement 叶的排列



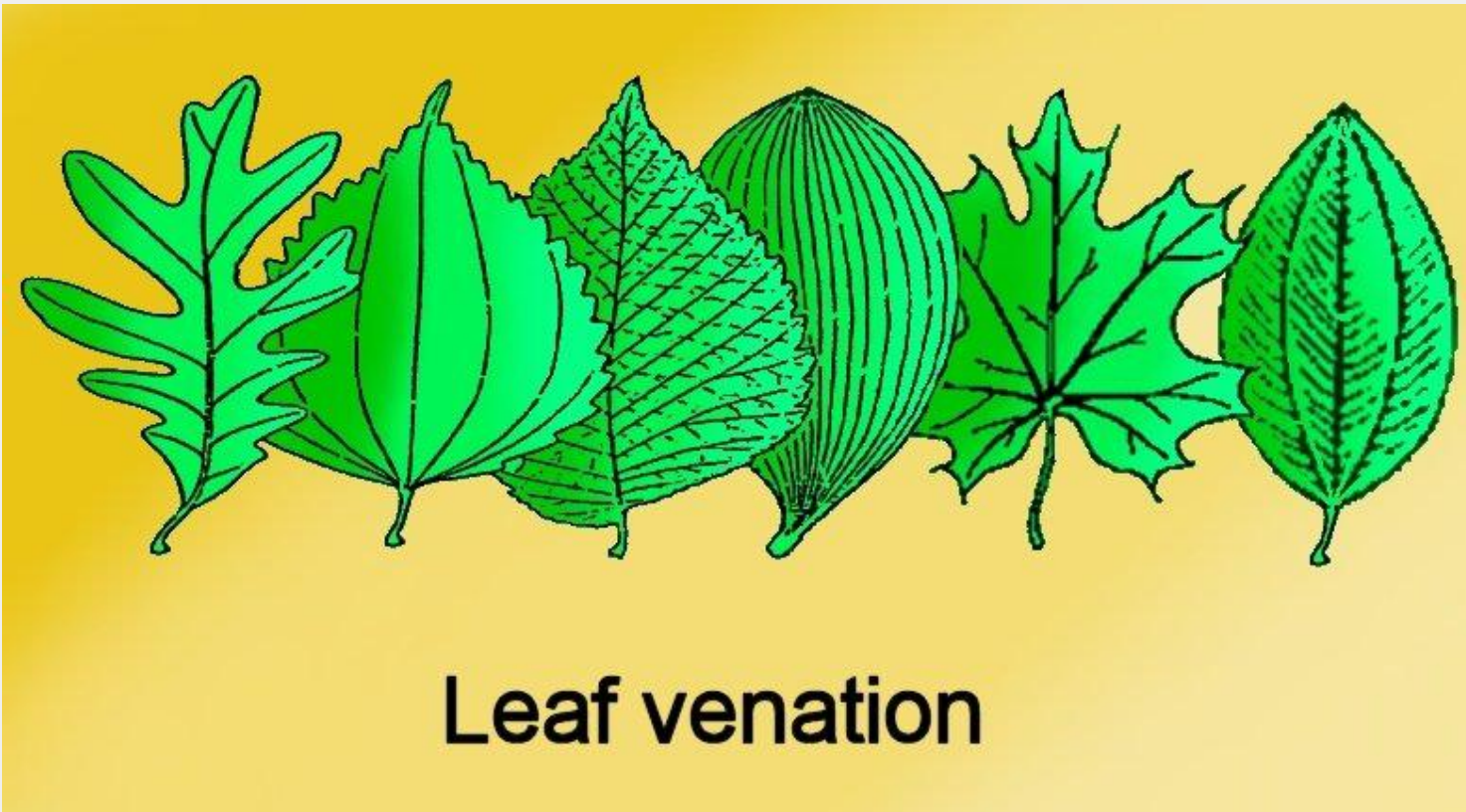
互生

对生

簇生

轮生

# 叶脉



Leaf venation

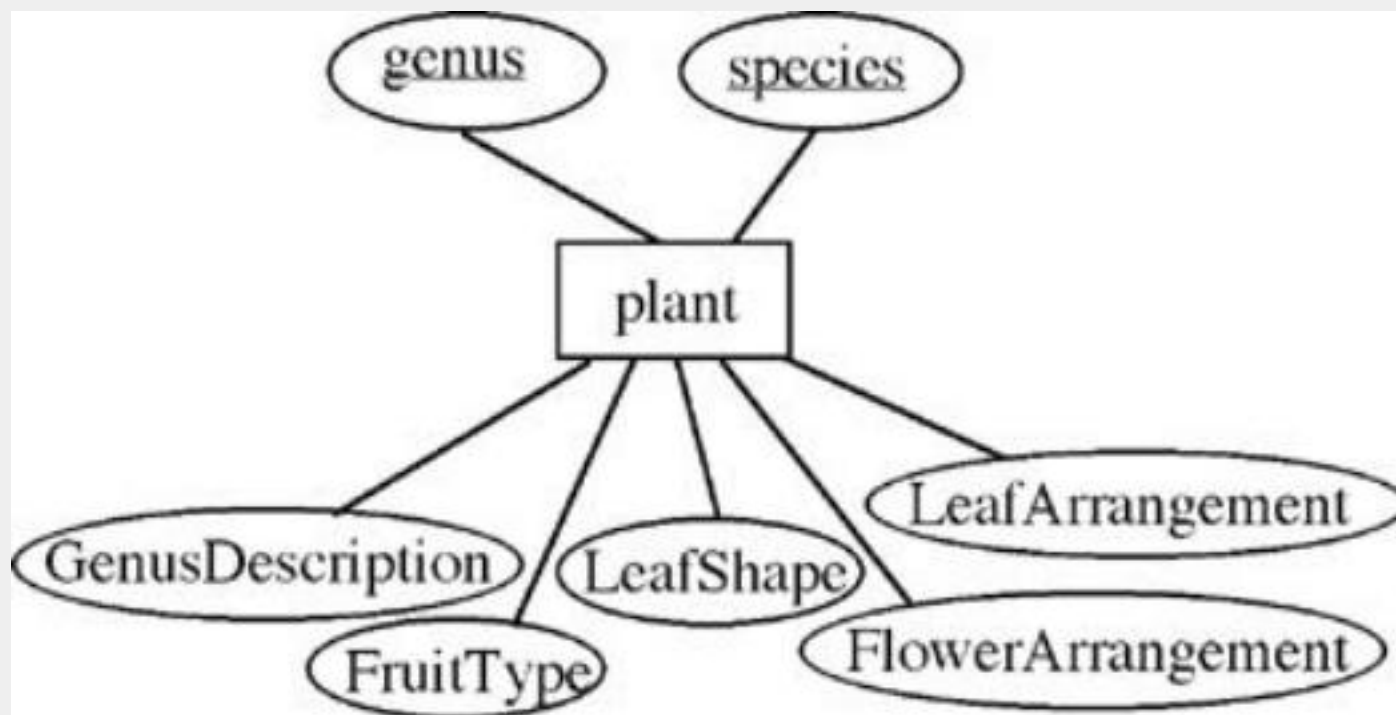
# Do it!



## 2.3.....



花  
果实  
树干  
种属



# Philosophy of trees



**Discuss.....树的价值**

**Your answers :**