

Environmental Concepts

by Sophia Tutorial



WHAT'S COVERED

This tutorial will cover environmental concepts, through the definition and discussion of:

1. I-PAT
2. Environmental Deficit
3. Ecology and Ecosystems

1. I-PAT

I-PAT is an equation that is used to illustrate the effects of human society on the environment.

$$I = P \times A \times T$$

$$\text{Impact} = \text{Population} \times \text{Affluence} \times \text{Technology}$$

Impact, the first term, is equal to Population multiplied by Affluence, multiplied by Technology. In this case, impact is defined as the effect on the environment. Given that you multiply these terms together, increasing or decreasing any one of them will have wider effects on the impact in the environment.

If you contrast hunter-gatherer societies and industrial production societies, their impact on the environment is markedly different. Hunter-gatherer societies had smaller populations, so 'Population' value is much lower. They were also less affluent (the 'A' in the equation)--they had fewer material possessions, meaning those possessions that required materials from the environment in order produce them. They were more technologically simple (the 'T' in the equation), so the overall impact was cumulatively less.



BRAINSTORM

If you have 100 million people in the society, for instance, and society is at a medium level of affluence and a high level of technological sophistication, what happens when the population increases and starts to get more affluent? Current debates surround the right of China to develop in the same way as the U.S. How can America justify saying that China can't develop in the same way as the U.S? How can the U.S. deny them

affluence, even though it's going to have environmental impacts?

Truthfully, if the rest of the world tries to live like Americans, it will have a huge environmental impact. Yet what right does America have to deny them that ability, given that Americans have enjoyed it?



TERM TO KNOW

I-PAT

An equation that attempts to explain how much of an impact a population has on the environment.

2. ENVIRONMENTAL DEFICIT

As the values change in the equation, the impact of the environment will change. The world has been running an **environmental deficit**, which is the idea that humans cause damage to the environment in a negative fashion. This means that people are taking more from the environment than they're giving--they are destroying the environment more than they're protecting it. This can be very harmful for humans down the road because they are privileging short-term gains over long-term sustainability.

IN CONTEXT

In the short term, perhaps, people can argue that it's favorable to wrest all those materials from the environment, to produce things and expel pollution into the air, because in return, they have nicer material things in the here and now. There's a short-term gain, but it could have long-term negative effects on the natural environment.

The **natural environment** consists of the material reality of the natural world--anything found on the Earth's surface or in the atmosphere can be considered part of the natural environment. Plants, animals, rocks, clouds, oceans, and even storms like hurricanes are considered a part of the natural environment, and these are damaged when humans run an environmental deficit.



TERMS TO KNOW

Environmental Deficit

The idea that humans are causing lasting damage to the natural world, we're taking more than we're giving.

Natural Environment

The material reality of the natural world found on the Earth's surface and atmosphere.

3. ECOLOGY AND ECOSYSTEMS

Ecology is the study of how organisms interact with each other and the natural environment. Sociologists are particularly interested in human ecology, or the study of humans interacting with their environment, like the fact of producing an environmental deficit.

An **ecosystem** is a more specific look at organisms in a particular space, interacting with each other and with

the natural environment to create a system in a particular locality.

🔗 **EXAMPLE** Lake Superior is an ecosystem. The rainforest is an ecosystem. Even your neighbor's pond can be a micro-ecosystem.

Because these things are systemic, **ecology** forces us to think about things in a systemic fashion--nature is a system that people are continually coming to understand in a more nuanced fashion. Nature is affected by human environmental impact in ways that can't necessarily be predicted. Running an environmental deficit can cause serious problems down the road, because nobody accurately understands the extent to which nature is systemic. It could potentially be intimately systemic in broader ways than is recognized and understood.



TERMS TO KNOW

Ecosystem

The natural interactions of organisms within an environment.

Ecology

The study of systemic interactions within the environment.



SUMMARY

Today you explored a sociological take on environmental topics, learning about the relationship between humans and their environment. You learned about the **I-PAT** formula, an equation that attempts to explain how much of an impact a population has on the environment. You also learned about our current state of **environmental deficit**, as well as **ecology and ecosystems**.

Source: This work is adapted from Sophia author Zach Lamb.



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