Scale, Time, and Degree of Impact
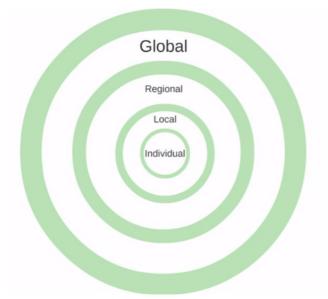
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In this lesson, we will cover the topics of scale, time, and degree of impact. We will discuss environmental issues in relation to their geographical scale of impact, time and duration of impact, and degree of impact. Specifically, this lesson will cover the following:

1. Scale of Impact

Environmental issues can vary in their geographical scale of impact. The scale of impact, as shown in the image below, could be at the individual, the local, the regional, or the global level.

IN CONTEXT

Consider the impact of environmental issues caused by a coal plant at various levels.

- **Individual Impact:** A coal plant in a particular location might cause an employee respiratory problems from pollutants.

- **Local Impact:** Pollution emitted to nearby waterways could impact the local water systems, cause environmental damage, and lead to human health problems.

- **Regional Impact:** The air pollution in the plant could travel large distances and contribute to regional acid rain deposition, damaging regional ecosystem stability.

- **Global Impact:** Greenhouse gases produced by the plant could contribute to global climate change.

2. Temporal Impact

Environmental issues can also vary in their temporal impact.

> ➔ EXAMPLE An industrial plant could improperly manage its heavy metal waste and dump it in large quantities into local water systems. People drinking that water might experience immediate effects such as stomach irritation and dizziness. Over decades, drinking that water with heavy metals could lead to various forms of cancer in the local population. Generations of impact could result as the heavy metals damage the local marine ecosystem so severely that fish populations aren't be able to recover for 50–150 years, which would also affect local economic fisheries.

A majority of environmental problems are long-term processes, making them difficult to address, because humans are usually concerned with short-term needs and have a hard time understanding long-term time frames. Addressing long-term environmental issues is also challenging because popular media only focuses on environmental issues in the short term, and policymakers tend to be concerned in the short-term duration, usually for the time they serve term or will serve if reelected.

3. Degree of Impact

Not all environmental impacts are equal, and the degree of impact will vary depending on the type of ecosystem being affected. This is because some ecosystems provide a larger number of ecosystem services than some others. Some ecosystems are also more vulnerable to human impact than others.

> ➔ EXAMPLE Wetlands provide a large number of ecosystem services such as biodiversity and natural water treatment. They are also more vulnerable to impacts.

Human population density is also a factor. A more densely populated area impacted by environmental damage is more significant than a less populated area because more people are involved.

> ➔ EXAMPLE Consider accidental poisoning of water sources for New York City versus Poultney in Vermont. Which would be considered more impactful?

The economic status and interests of the human population impacted are other factors. Developed and developing nations can have different environmental concerns relative to their people. In addition, environmental issues tend to affect developing and developed nations differently because of economic resources and population density.

> ➔ EXAMPLE Consider a drought in India versus one in the United States. The United States has a much smaller population versus its economic wealth compared to India. The result is that if both countries experienced a drought of similar severity at the same time, the degree of impact would be

much greater for India because it has less economic strength to draw on.

☑	SUMMARY

In this lesson, we learned about environmental issues in relation to their geographical **scale of impact**, time and duration of impact or **temporal impact**, and **degree of impact**.

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