THE STANDARD

Populations & Earth's Systems

Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.

DCI
DISCIPLINARY CORE IDEA

ESS3.C · Human Impacts on Earth Systems

> *Typically as human populations and per-capita consumption of natural resources increase, so do the negative impacts on Earth unless the activities and technologies involved are engineered otherwise.*

Two numbers shape how humans push on Earth's systems. The first is how many people there are. The second is how much each person uses on average. Both have climbed for most of recent history, and the impacts (on land, water, air, and other species) typically climb with them. **Technology can bend the curve in either direction.**

SEP
SCIENCE & ENGINEERING PRACTICE

Engaging in Argument from Evidence

> *Construct an oral and written argument supported by empirical evidence and scientific reasoning to support or refute an explanation or a model for a phenomenon or a solution to a problem.*

Students aren't sharing opinions about population. They're building an argument from data. That means a claim, evidence pulled from a real database, and reasoning that connects the two. The argument has to be defensible. **"I think" is not the same thing as "the data shows."**

CCC
CROSSCUTTING CONCEPT

Cause and Effect

> *Cause and effect relationships may be used to predict phenomena in natural or designed systems.*

This standard is a cause-and-effect machine. More people plus more per-person consumption tends to mean more land cleared, more water pulled, more energy used, more waste produced. The cause-and-effect chain is what students trace. **Spotting where the chain branches or weakens is part of the work.**