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Brown University

A Review of Human Development and Environmental Outcomes

*Does schooling drive pro-
environmental behavior?*

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Why Does This Matter?



Worsening climate

Climate change impacts on human welfare are accelerating. Education is a proposed lever for mitigation and adaptation



Two-way relationship

Environment shapes education (heat, floods, displacement). But how does education shape environmental behavior?



Understudied direction

Most research flows one way: environment → human development. The reverse arrow is critically underexplored

The Central Question

Can formal schooling causally produce long-lasting pro-environmental behavior change?

— and how would we know?

How We Reviewed the Evidence

Scope: Formal schooling → individual environmental attitudes & behaviors

Sources & Search

- Scopus, JSTOR, ScienceDirect, Google Scholar
- World Bank, OECD, UNDP, FCDO repositories
- Keywords: education & climate, schooling & environmental outcomes, adaptation & mitigation, pro-environmental behavior

Classification & Analysis

31 Studies

total reviewed

27 Observational

correlational / descriptive synthesis

4 Causal

quasi-experimental design (13%)

How Education Reaches Environmental Behavior



Cognitive

Reasoning & information processing

Climate literacy & awareness

Critical thinking skills



Affective

Environmental concern & values

Emotional engagement with climate

Willingness to act



Situational

Higher earnings → more resources

Access to information networks

Ability to adopt green tech

→ **Pro-Environmental Behavior (recycling · sustainable consumption · green voting · energy conservation)**

Observational Evidence: Positive but Incomplete

Behavior Domain	Finding	Evidence Strength	Context
Environmental Awareness & Concern	Positive	Strong	Consistent across countries and measures
Waste Reduction & Recycling	Positive	Moderate	Higher education levels linked to recycling rates
Sustainable Food Purchases	Mixed	Moderate	Positive for years of schooling; some negative for level
Water & Energy Conservation	Weak / Null	Weak	Little relationship with total years of education

All 27 observational studies rely on cross-sectional data — cannot rule out confounders (socioeconomic background, values, political ideology, early-life experience)

The Causality Problem

The Endogeneity Trap

- Higher-educated people may have already had pro-environmental families
- Unobserved values or political identity drive both schooling & behavior
- Reverse causation: people who care about environment may seek more education
- Socioeconomic confounders span education, income, and environmental access

The Solution

Natural experiments (mostly using Compulsory Schooling Laws)

Reforms that change how long some cohorts must attend school create exogenous variation in educational attainment — isolating education's causal effect

Methods: RDD · IV · DiD

Causal Evidence

GB Powdthavee (2021)

England & Wales

Method: RDD – Compulsory schooling

✓ **Reduced climate change skepticism**

▀ *No significant change in actual behaviors*

EU Angrist et al. (2024)

Europe

Method: IV — Compulsory schooling

✓ **+ Pro-climate beliefs, behaviors, green voting**

▀ *Strongest multi-country causal evidence to date*

EU Meyer (2015)

Europe

Method: RDD — Compulsory schooling

✓ **+7 of 8 pro-environmental behaviors**

▀ *Limited to lower attainment distribution*

TH Chankrajang & Muttarak (2017)

Thailand

Method: IV — Compulsory schooling; teacher supply per 1,000 students

✓ **+ Knowledge-based environmental actions**

▀ *No effect on cost-saving measures or WTP*

What Causal Evidence Tells Us

Education can reduce climate skepticism and foster sustainable behavior — but context, outcomes, and time horizons matter.

01

Attitudes shift more easily than behaviors

Education consistently reduces climate skepticism and increases concern. Translating awareness into sustained behavior change is harder and less consistent

02

Context shapes outcomes

Effects differ across high & middle income countries, type of behavior measured (knowledge-based vs. cost-imposing), follow-up horizon

03

Cognitive pathway is most reliable

Schooling robustly improves reasoning and information processing. Affective and situational pathways depend on complementary policies and norms

Developing country evidence remains scarce. Cross-sectional data limits long-term inference

Implications for Policy & Practice

For Practitioners & Policymakers

Invest in schooling as a climate lever

Compulsory schooling reforms are among the most policy-tractable tools with demonstrable causal effect

Don't rely on awareness alone

Shifting attitudes is achievable; changing costly behaviors also requires enabling conditions (price signals, infrastructure, social norms)

Equity matters

Effects are largest at lower attainment levels — universal schooling policies are also climate policy

For Researchers

We need more causal studies

Only 4 of 31 reviewed studies use quasi-experimental design. Longitudinal panel data is urgently needed

Expand to developing countries

Most causal evidence comes from Europe; low- and middle-income country contexts may show different pathways

Measure behaviors, not just attitudes

Self-reported concern diverges from actual behavior — research designs should capture both

Key Takeaways

1

Education and environmental outcomes are linked, but causality is hard to establish — most evidence is observational

2

Causal studies using compulsory schooling laws confirm education reduces climate skepticism and fosters some pro-environmental behavior

3

Changing attitudes is more achievable than changing costly behaviors — policies need complementary incentives

4

More causal research, especially in developing countries and with longitudinal designs, is urgently needed



Discussion

Can awareness-focused education programs achieve durable behavior change — or do they require enabling conditions?

How should we design longitudinal studies to capture both attitude and behavior shifts from schooling interventions?

What role can practitioners play in bridging the knowledge–behavior gap in classrooms and communities?