

Lesson Plan: Measuring Value of Abatement for Climate Policy

As an **Undergraduate Economics** teacher, you can use this set of computer-based tools to help you in teaching about implementation of environmental policies by **measuring the value of abatement**. This lesson plan will enable you to teach your students about assessing **the benefits of abatement** by analyzing a survey to measure the willingness of people to pay for climate change mitigation.

Economists often face the problem of placing a value on the abatement of environmental damage, to set against the cost of implementing abatement policies. Amongst the various methods used to estimate the value of abatement are **contingent valuation** and **hedonic pricing**. In this lesson plan, students will be able to learn about the challenges of placing a value on abatement through a classroom exercise in contingent valuation of the **willingness to pay** (WTP) to reduce carbon emissions to mitigate climate change.

Thus, the use of this lesson plan allows you to integrate the teaching of a climate science topic with a core topic in **Economics**.

Use this lesson plan to help your students find answers to:

- What is the value of abatement in environmental policies?
- Why is it important to measure the value of abatement?
- How is the value of abatement measured?
- Why is estimating the value of abatement important for climate change mitigation?

About the Lesson Plan

Grade Level: Undergraduate

Discipline: Economics

Topic(s) in Discipline: Value of Abatement, Contingent Valuation, Hedonic Pricing, Willingness to Pay (WTP), Cronbach's Alpha

Climate Topic: Climate Mitigation and Adaptation; Energy, Economics and Climate Change; Policies, Politics and Environmental Governance

Location: Global, Germany

Access: Online, Offline

Language(s): English

Approximate Time Required: 90-120 min

1 Contents

1. Teaching Module (30-45 min)

A teaching module to explain the measurement challenges of environmental policy, specifically the value of abatement.

This can be accessed at:

<https://core-econ.org/the-economy/book/text/20.html#206-the-measurement-challenges-of-environmental-policy>

2. Classroom/Laboratory activity (60-75 min)

A classroom/laboratory activity to measure the willingness to pay for climate change mitigation.

This can be accessed at:

<https://core-econ.org/doing-economics/book/text/11-01.html>

3. Reading (20 min)

A research article that discusses the scope for cooperation in the climate commons.

This can be accessed at:

https://www.ccep.ac.uk/wp-content/uploads/2017/01/working-paper-259-Carattini-et-al.pdf?from_serp=1

4. Suggested questions/assignments for learning evaluation

- What is the value of abatement in environmental policies?
- Why is it important to measure the value of abatement?
- How is the value of abatement measured?
- Why is estimating the value of abatement important for climate change mitigation?

2 Step-by-step User Guide

Here is a step-by-step guide to using this lesson plan in the classroom/laboratory. We have suggested these steps as a possible plan of action. You may customize the lesson plan according to your preferences and requirements.

1. Introduce the topic of value of abatement in environmental policies

Use the teaching module, '20.6: The measurement challenges of environmental policy' by CORE to explain the need to measure the value of abatement in the implementation of environmental policy.

This can be accessed at:

<https://core-econ.org/the-economy/book/text/20.html#206-the-measurement-challenges-of-environmental-policy>

- Describe the different methods to measure the benefits of abatement- contingent valuation and hedonic pricing using the examples given in text. Explain the differences in these approaches and how these are used to measure how people value a change in their environment. Discuss how this is measured by the citizens' willingness to pay (WTP) for the improved environment following the implementation of abatement policies. Enable student learning and evaluate understanding through the in-built exercises and questions.
- You may choose to navigate to the following sections (20.7-20.10) to explain how future technologies and lifestyles could affect people's preferences, discuss why addressing climate change is so difficult, and why policy choices matter in implementing environmental policies.

2. Conduct a classroom/laboratory activity to measure the willingness to pay for climate change mitigation

Use the project, 'Measuring willingness to pay for climate change mitigation' by CORE to conduct a classroom activity using data from an internet survey by the German government.

This project can be accessed at:

<https://core-econ.org/doing-economics/book/text/11-01.html>

- The online survey was conducted to measure the citizens' willingness to pay to reduce carbon emissions as a method of mitigating climate change. The data is made available in Excel, R, and Google Sheets formats.
- Direct your students to follow the instructions given in the text to analyze the data to answer the given set of questions.

The activity will enable them to 'construct indices to measure attitudes or opinions', 'use Cronbach's alpha to assess indices for internal consistency', 'practice recoding and creating new variables', and 'compare survey measures of willingness to pay'.

3. Reading assignment to enable discussion on the willingness of individuals to contribute towards the common good in the face of climate change

Ask your students to read the research article, 'Cooperation in the climate commons' by Stefano Carattini et al., published by the Centre for Climate Change Economics and Policy and the Grantham Research Institute on Climate Change and the Environment.

This can be accessed at:

https://www.cccep.ac.uk/wp-content/uploads/2017/01/working-paper-259-Carattini-et-al.pdf?from_serp=1

- Use the paper to initiate discussion on the willingness of individuals to reduce the demands on the environmental commons by adopting 'green' consumer behavior or by accepting expensive climate policies.
- Finally, use the review of cases and situations given in text to discuss whether individuals are willing to cooperate towards climate change mitigation.

4. Questions/Assignments

Use the tools and the concepts learned so far to discuss and determine answers to the following questions:

- What is the value of abatement in environmental policies?
- Why is it important to measure the value of abatement?
- How is the value of abatement measured?
- Why is estimating the value of abatement important for climate change mitigation?

3 Learning Outcomes

The tools in this lesson plan will enable students to:

- learn about the value of abatement in environmental and climate change mitigation policies
- describe the methods to measure the value of abatement
- discuss the willingness to pay (WTP) by individuals towards the abatement of climate change
- explain the importance of measuring value of abatement for implementing climate change mitigation policies

4 Additional Resources

If you or your students would like to explore the topic further, these additional resources will be useful.

1. Reading; 'Willingness to pay for climate policy: a review of estimates'

A working paper by Evan Johnson and Gregory Nemet, Robert M. La Follete School of Public Affairs at the University of Wisconsin-Madison.

This can be accessed at:

<https://poseidon01.ssrn.com/delivery.php?ID=596097013121103016071123015116126066063063059088049089096028113108100085088002087064036119005126028023035008071006011010065018114034029069015076023110078094120084006042041021067127104025072017007081123069126094095122090093027104086064116099124021013&EXT=pdf>

2. Reading; 'An Experimental Investigation of the Impacts of Persuasion and Information Acquisition on Non-Use Values for Climate Change Adaptation'

A working paper by Tanya O'Garra and Susanna Mourato, published by the Centre for Climate Change Economics and Policy and the Grantham Research Institute on Climate Change and the Environment.

This can be accessed at:

https://www.cccep.ac.uk/wp-content/uploads/2015/10/Experimental-Investigation-on-Non-Use-Values-for-Climate-Change-Adaptation.pdf?from_serp=1

5 Credits/Copyrights

All the teaching tools in our collated list are owned by the corresponding creators/authors/organizations as listed on their websites. Please view the individual copyright and ownership details for each tool by following the individual links provided. We have selected and analyzed the tools that align with the overall objective of our project and have provided the corresponding links. We do not claim ownership of or responsibility/liability for any of the listed tools.

1. Teaching Module; '20.6: The measurement challenges of environmental policy'

By [CORE-Economics for a changing world](#)

2. Classroom Activity; 'Measuring willingness to pay for climate change mitigation'

By [CORE-Economics for a changing world](#)

3. Additional Resources

[Robert M. La Follete School of Public Affairs](#) at the University of Wisconsin-Madison.

[Centre for Climate Change Economics and Policy](#) and the [Grantham Research Institute on Climate Change and the Environment](#).