Introduction

Econ 1661 / API 135 Section 1
January 28, 2022
Jake Bradt and Paichen Li

Today's Agenda

- Introduce TFs and Course Overview
- Review of Economic Concepts
  - → Thinking at the margin: MC and MB
  - → Efficiency and deadweight loss
  - → Why markets fail

Announcements

- The first problem set will be posted on Wed, February 2 and is *due on Wed, February 16*. There will be a total of five problem sets and we will post each problem set two weeks before its due date.
- If you haven't filled out the Study Team availability survey, please do so *today*.
- TF office hours are today from 3PM-5PM. The link can be found on Canvas

Who are we?

Jake

Fourth-year Public Policy PhD student. Undergrad in environmental science and public policy/economics at Harvard College.

Studying environmental, climate, and energy economics. Research includes

- Methods used to value non-market environmental amenities
- Distributional impacts of flooding and flood adaptation investments
- Effects of climate and climate policy in energy markets

Research combines economic models with empirics

Who are we?

Paichen

Third-year Public Policy PhD student. Undergrad in environmental science and energy engineering at the University of Tokyo. Master's in environmental management at the Nicholas School at Duke.

Studying environmental, climate, and energy economics. Research includes

- Energy markets (e.g. transportation fuels, electricity, renewables, etc.) and welfare implications of subsidies
- Trends in consumer preference for environmentally friendly or energy efficient products
- Distributional implications of climate change policies

Why this class?

- Economists often appeal to the first and second welfare theorems to conclude that government intervention is at best unnecessary or possibly even harmful.
- In this class, economics directs us towards potentially very beneficial policy interventions … We need people like ***you*** to figure out how to design smart policies in the face of huge environmental and energy risks with a full awareness of the implications of those policies.

Class Overview

- Develop a framework to assess alternative environmental policies (basic science, economic theory and policy analysis tools).
- Examine real-world policies: international agreements, national, and subnational policies, assessing policy-design (and the consequences of that design!) throughout
- Designing “good” environmental policies requires clear ethical framework/goals, theoretical modeling, empirical analysis and institutional & historical knowledge
- Market-based mechanisms are a valuable policy tool, but not a panacea…recognize the real-world political economy constraints that determine actual policy outcomes.

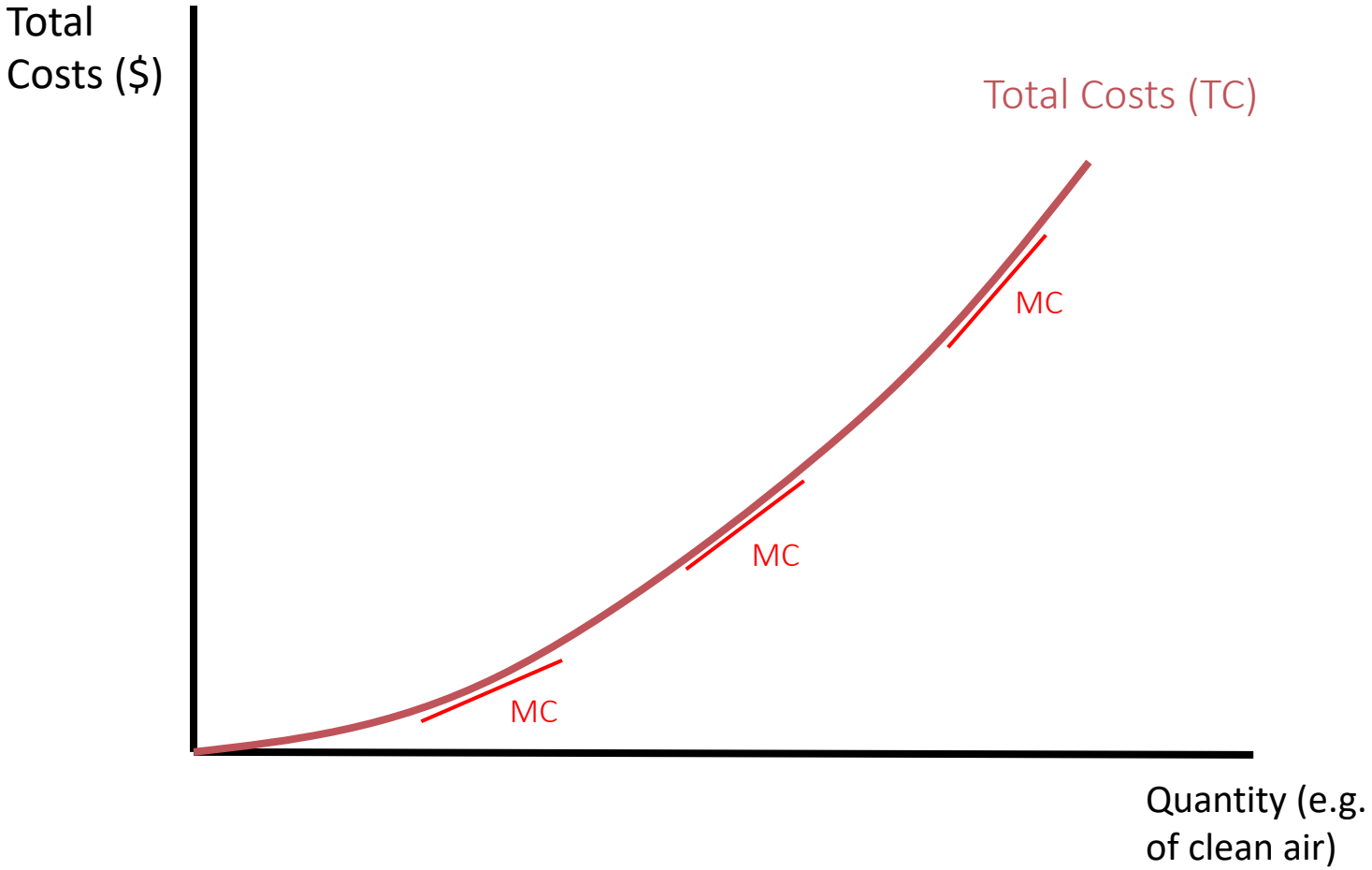
Overview of Learning Materials

Source	Most useful for…
Lecture Slides and Recordings	Reviewing content prior to Study Team meetings and Wed sessions
Study Team	Preparing for discussions, clarifying questions
Tuesday Assignments	Checking your understanding and asking questions of the course staff
Live Interactive Session	Applying lecture and readings to discussion of more challenging, often subjective policy-relevant questions
Markets and the Environment [TEXT]	Easy-to-read explanations of concepts with good examples and figures. This will often parallel the lectures closely.
Economics of the Environment [EOE]	Selected research articles. ***We will ask questions about the required readings on exams (but not optional readings)***
Problem Sets and Practice Problems	Very important to solidify your comprehension of the course material and help you prepare for the exams
Sections Slides and Recordings	Review of concepts and practice problems. These sessions may cover new material, but you are not responsible for any additional material

Review of Fundamental Concepts

Costs

Total costs increase as quantity increases, and at an increasing rate (increasing marginal costs)



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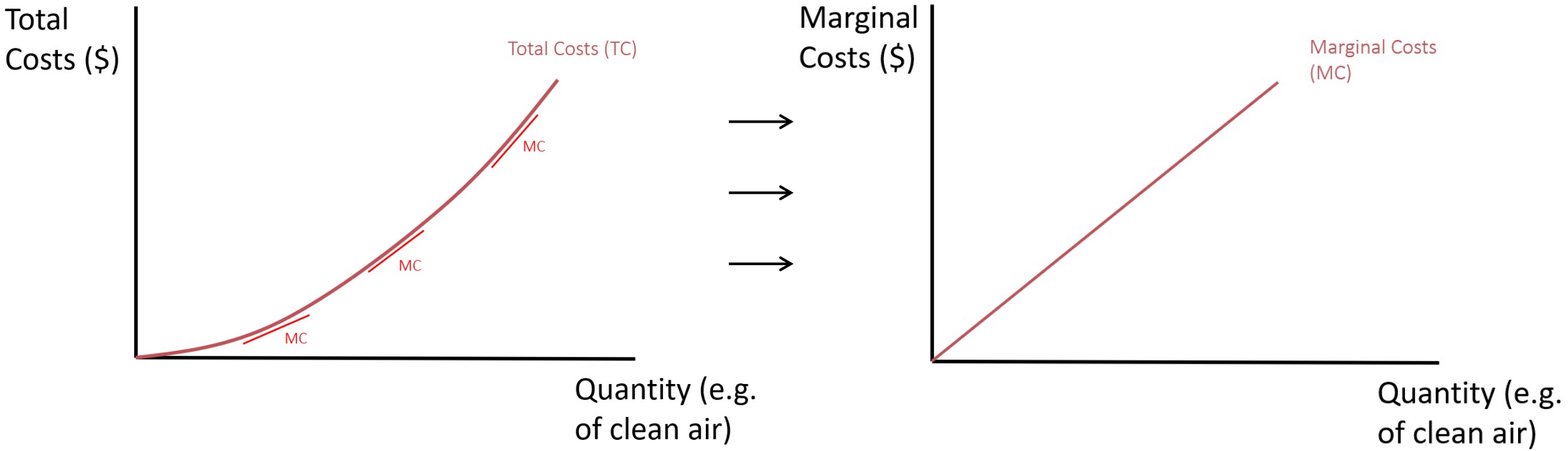
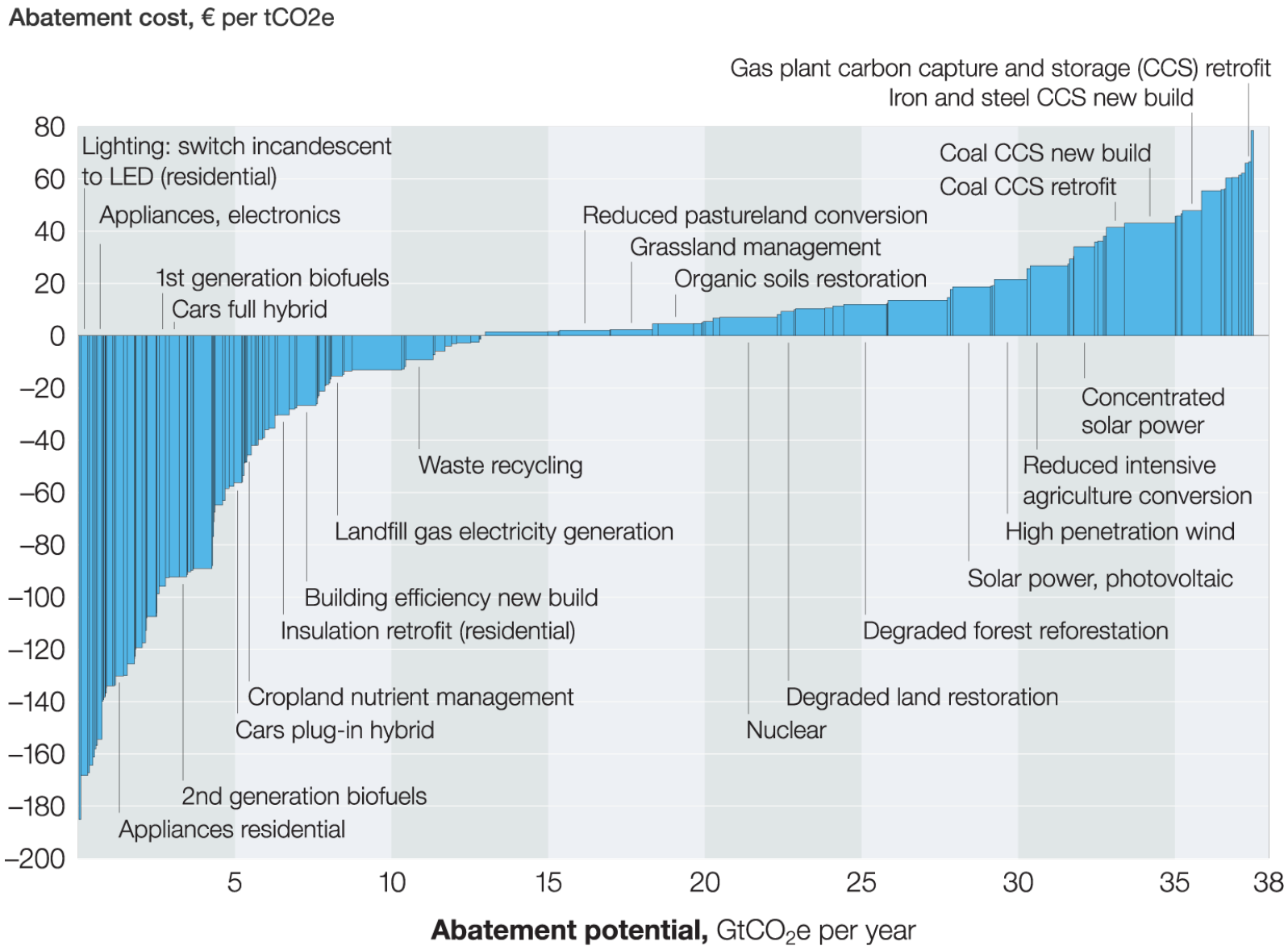
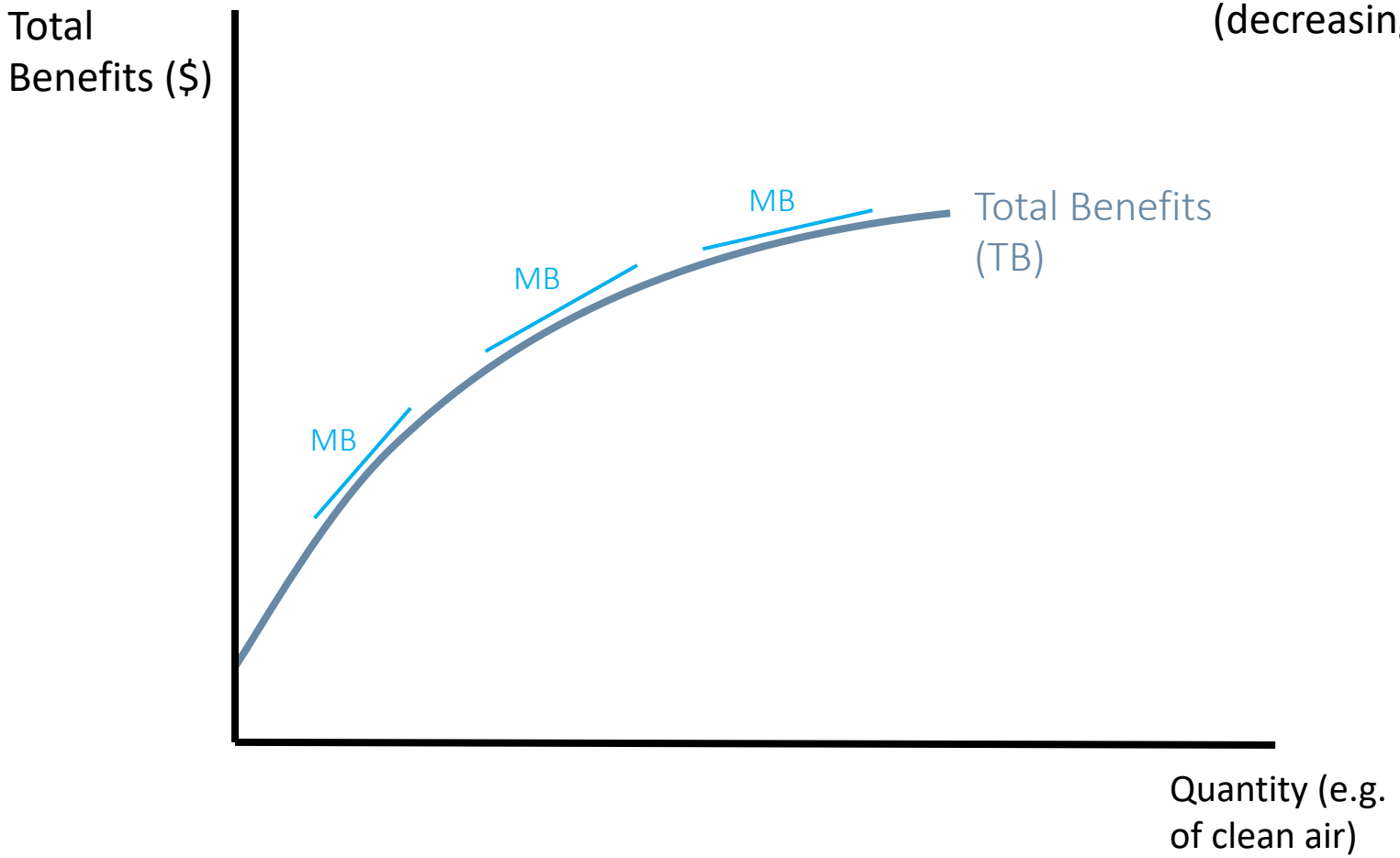


Costs in the real world: (In)Famous McKinsey Cost Curve



Benefits

Total benefits increase as quantity increases, but at a decreasing rate (decreasing marginal benefits)



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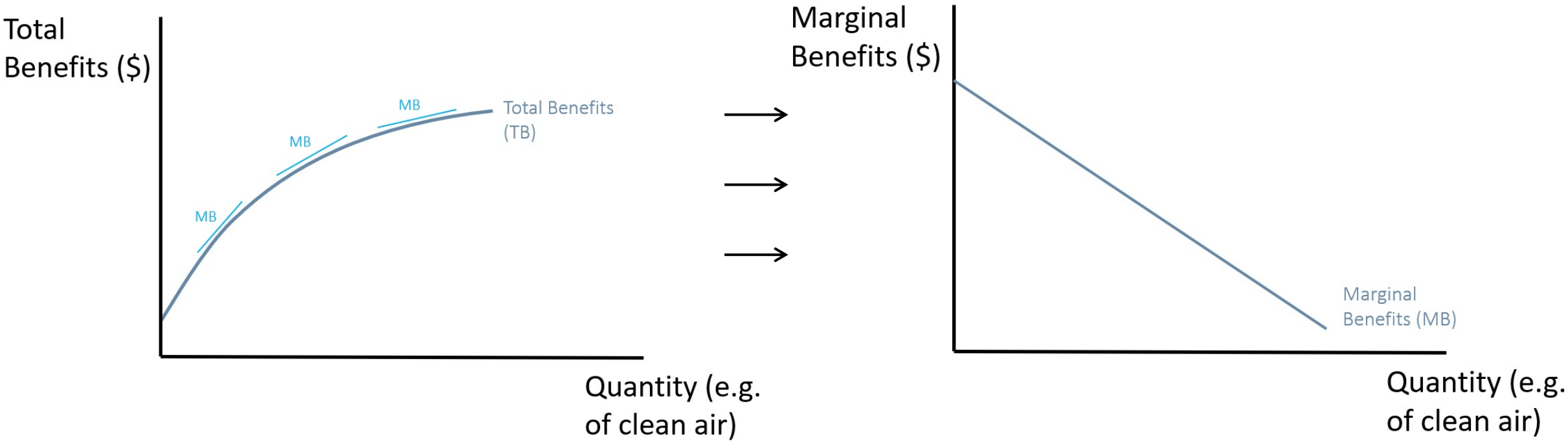
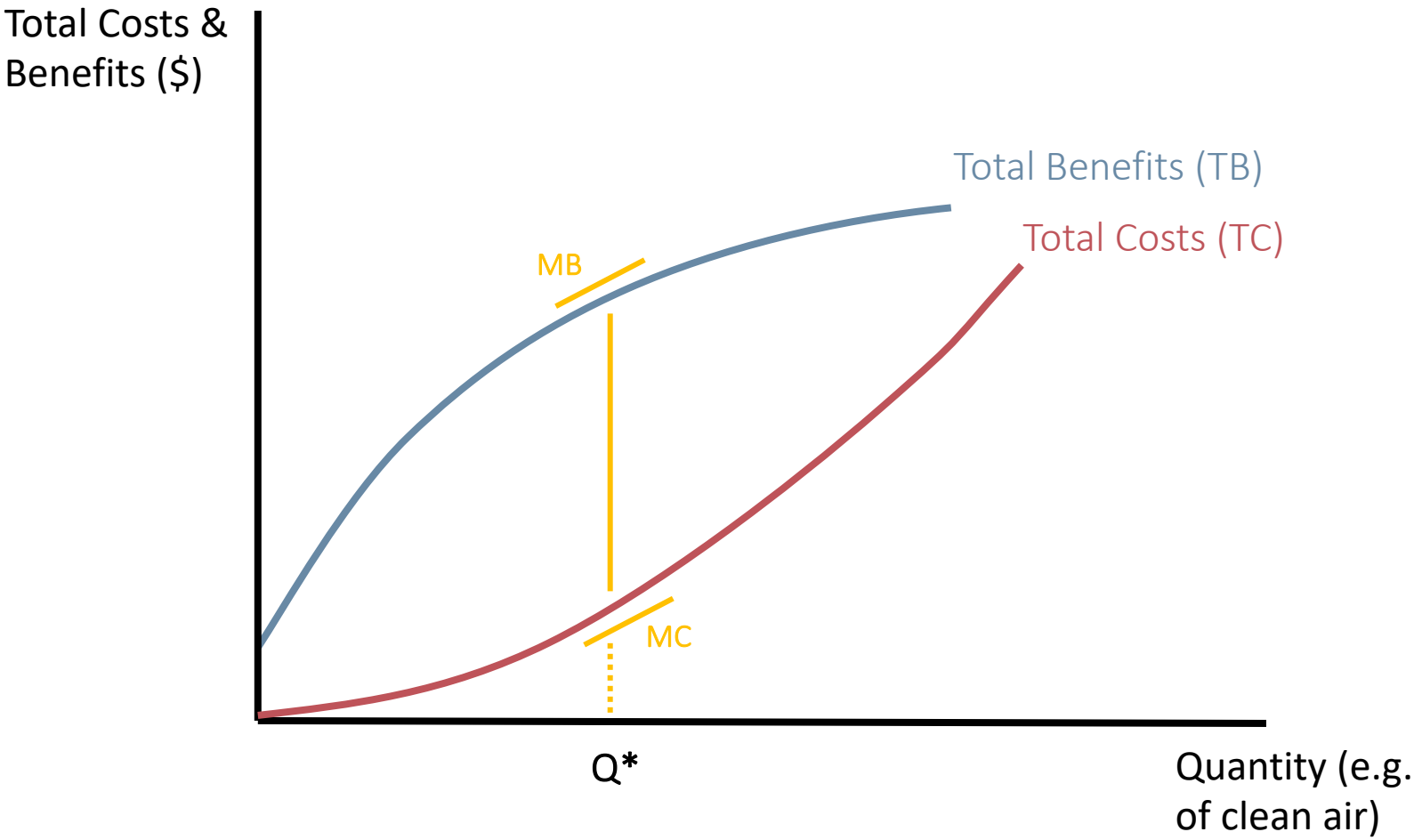


Efficienct Quantity (to an economist)



"To an economist, being efficient means maximizing net benefits"

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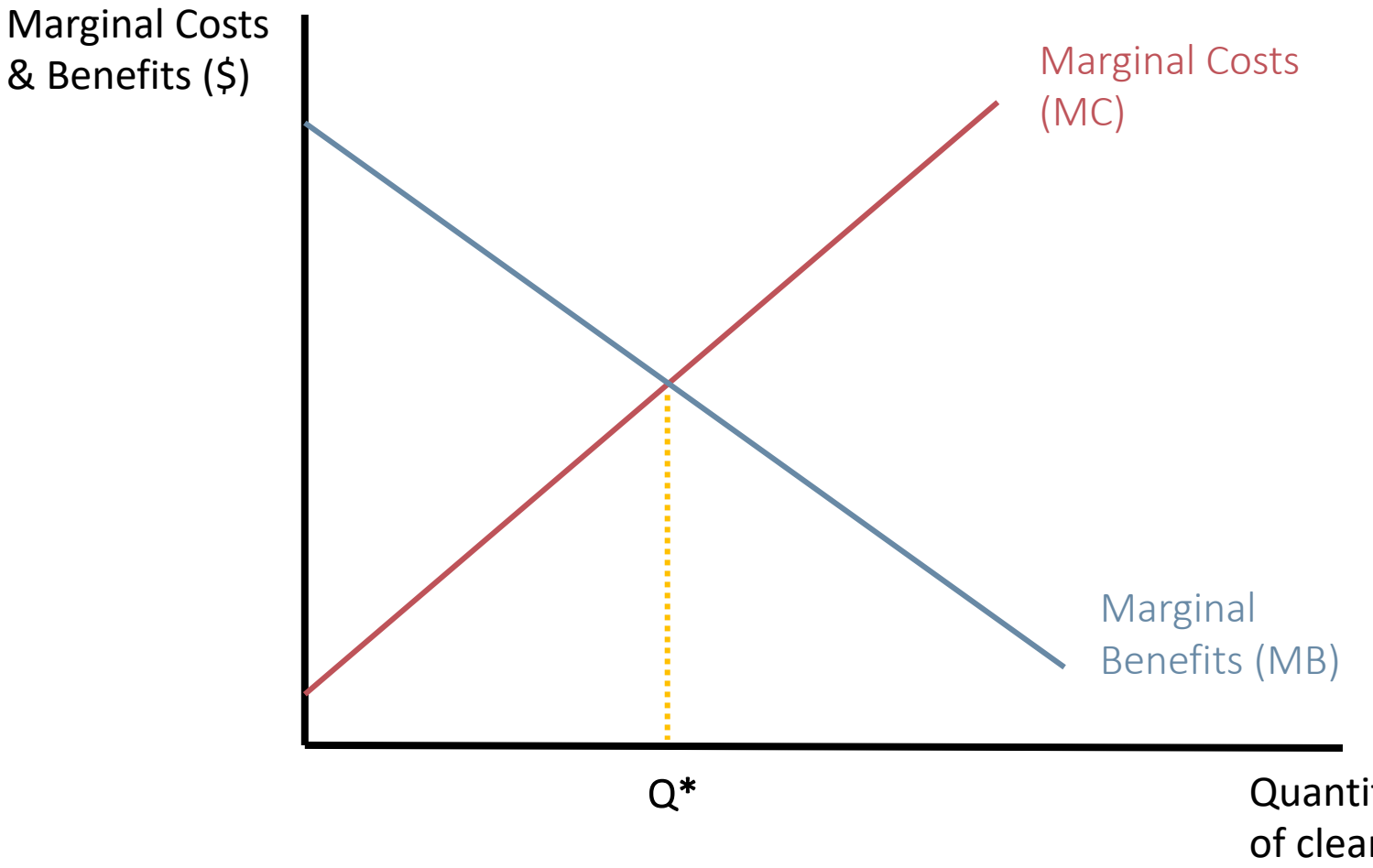
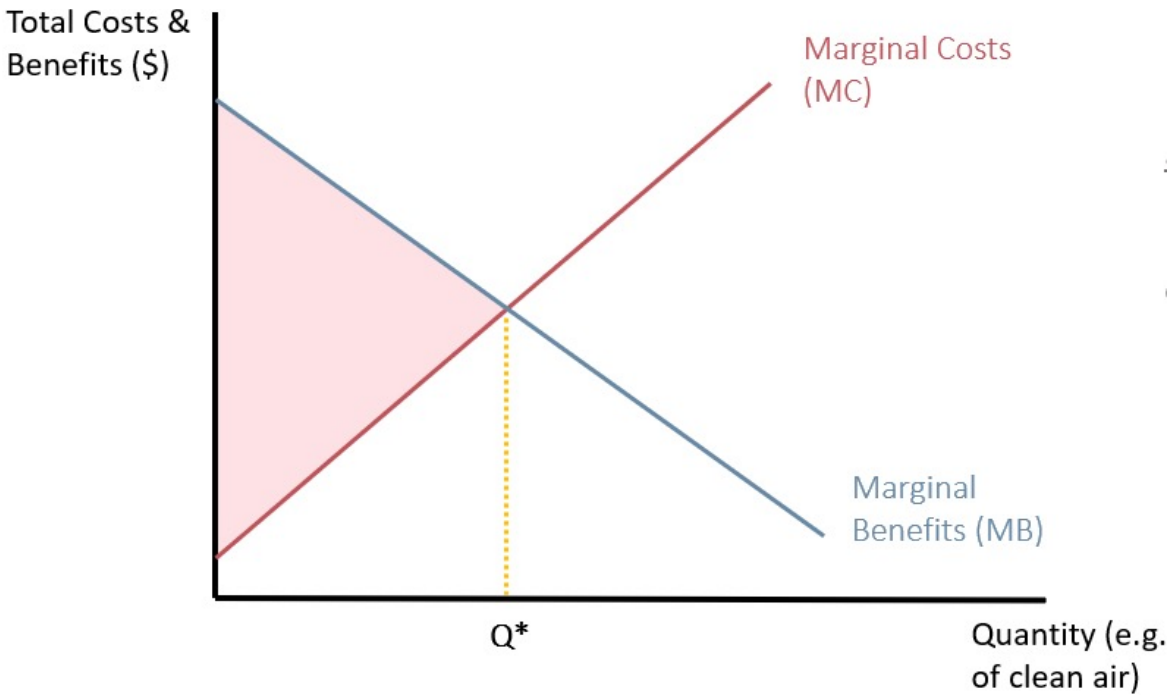


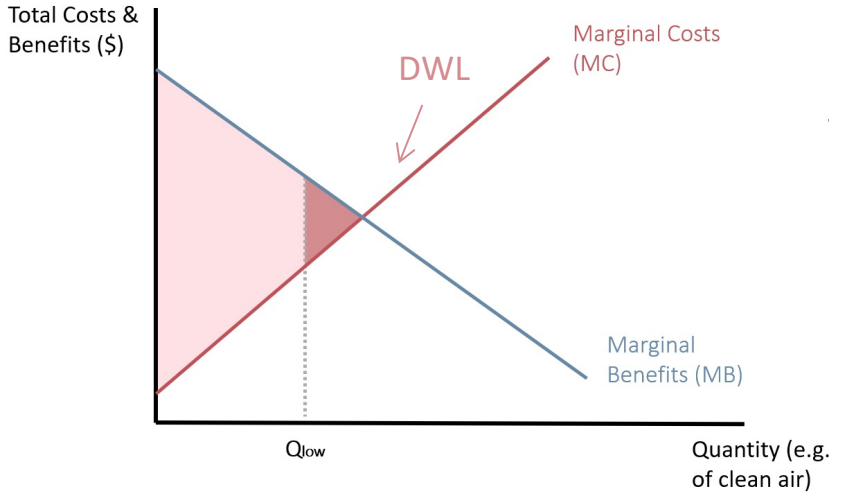
<u>Equimarginal rule:</u>

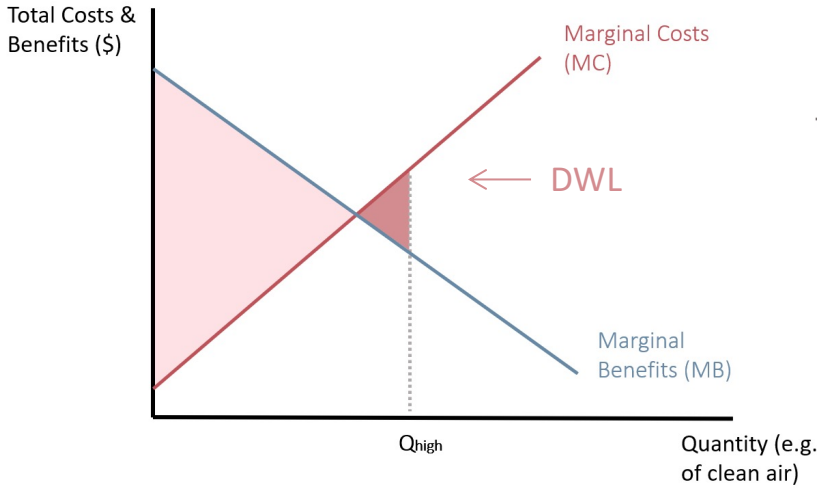
The efficient level of abatement (Q) occurs where MB = MC*

Efficienct Quantity (to an economist)

Deadweight loss: loss in social surplus resulting from the economy producing an inefficient (not social-surplus maximizing) quantity







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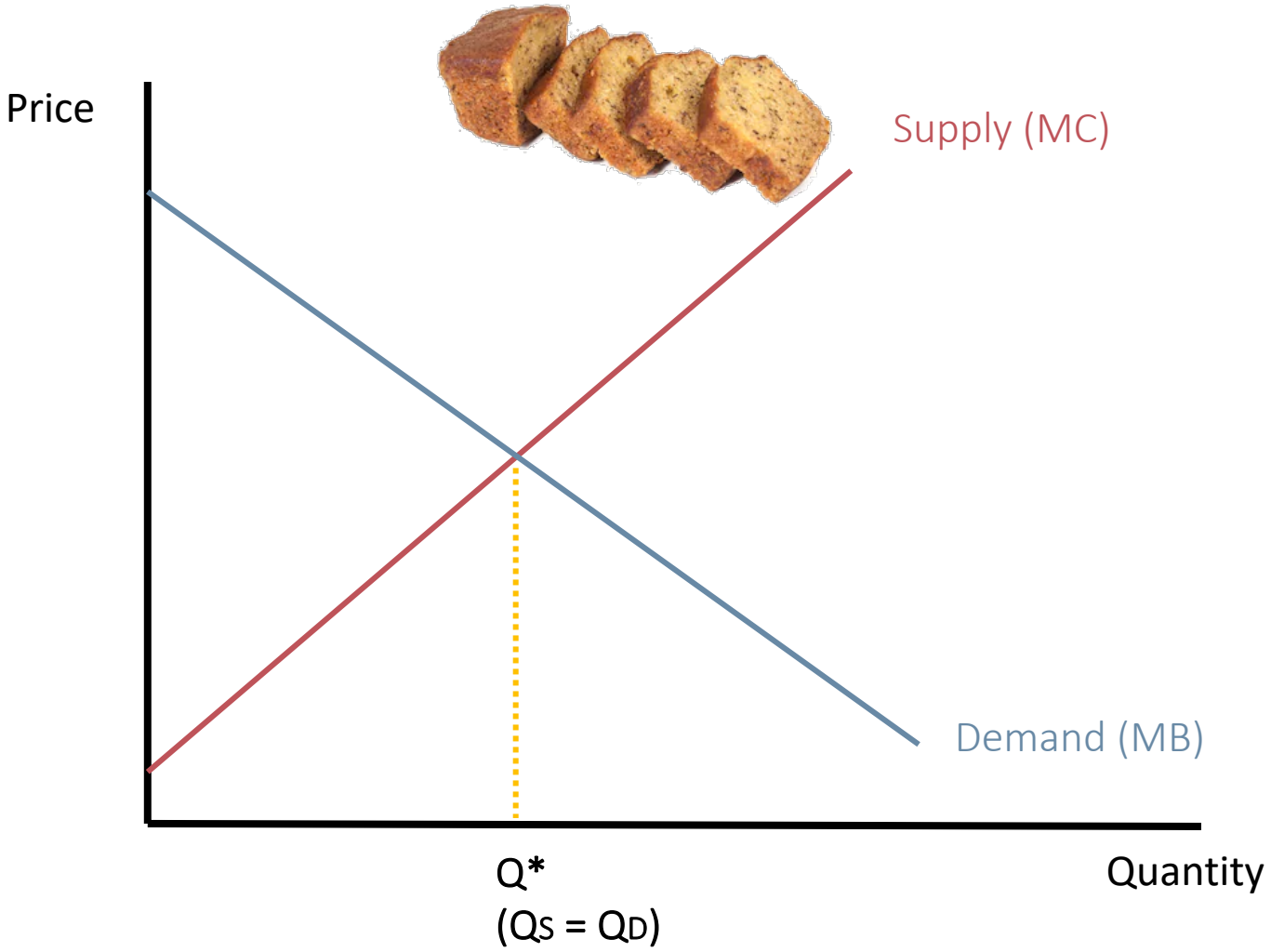

What do decision-makers want?

Put yourself in decision-maker's shoes

- Producers maximize profit ($Total\ Revenue - Total\ Private\ Costs$)
- Consumers maximize utility

  → Both types of decision-maker's only care about *private benefits and private costs*

- Social planners (i.e. policymakers) maximize total net benefits ($Net\ Benefits = Total\ Benefits - Total\ Costs$)

  → Social planners care about *social benefits and social costs*

What do decision-makers want?

Key Takeaway: If social and private costs and/or benefits differ (if there are *externalities)*, the unregulated market will not meet the social planner's goal!

Put yourself in decision-maker's shoes

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Why do environmental markets so often fail?

Markets often fail to capture environmental quality.

- The harm caused by pollution is often “external” to decision-making *(negative externality)*
- Environmental amenities are often enjoyed by many. Free-riding may lead to the under-provision of these amenities *(public goods)*
- Individuals may exploit shared resources *(tragedy of the commons)*
- Markets may also fail because of information problems, transaction costs (collective action problems), behavioral biases, lack of market participation (unborn can’t vote), etc.

Solution? Private Bargaining

Is government intervention needed?

Coase Theorem: Private bargaining between two parties can lead to an efficient outcome, as long as property rights are held by one of the parties (regardless of *who* holds them) and certain conditions are met.

Conditions

(1) No transaction costs

(2) No income effects

(3) No third-party impacts

Thank You!