

GV103: Introduction to International Relations

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The Global Environment

Introduction

- Two goals for this lecture
 - Discuss **tragedy of the commons**
 - Apply to two environmental challenges

The Tragedy of the Commons

- A lake is fished by 100 families
- If >200 fish caught per day, population will collapse

Number of fish caught by other families	$u_i(2)$	$u_i(3)$
< 198	$2f + \beta$	$3f + \beta$
198	$2f + \beta$	$3f$
> 198	$2f$	$3f$

Hegemons and the Commons

- Now suppose we have a much larger lake
 - H has a whole fleet and can catch up to 1000 fish per day
 - M_1 through M_3 can catch up to 200 fish per day
 - 200 other families can catch up to three
 - Population expected to collapse if > 2000 fish caught per day
- Let's focus on H
 - Suppose everyone else fishes to extent of ability
 - Only real question is whether $u_H(800) \geq u_H(1000)$
 - Iff $\beta \geq 200f$, H ensures lake is not over-fished

Applications

- Two recent challenges to global environment
 - Depletion of ozone layer linked to release of CFCs
 - Increase in global temperatures linked to CO₂ emissions
 - Montreal Protocol ratified by every UN member-state
 - Ozone layer on track to fully recover by 2050
 - Kyoto Protocol ratified by most, but not US
 - Global temperatures continue to rise
- Explaining the difference
 - In 1980s, US produced roughly 30% of CFCs
 - Currently, US produces roughly 15% of CO₂
 - Banning CFCs was costly, but not terribly so
 - For many states, reducing CO₂ emissions very costly