

Global Environmental Politics

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Previous class: introduction to cooperation

- Climate change has diffuse, long-term impacts:
 - Global impacts, but disproportionate in developing countries.
 - May induce scarcity: ↓ agricultural yields + ↑ climate migration.
 - ... leading to conflict over resources.

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 - Collective action problems undermine cooperation.
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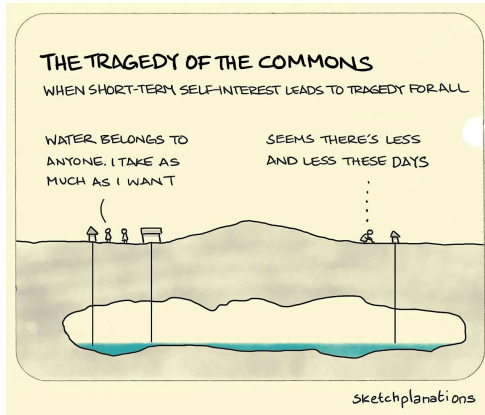
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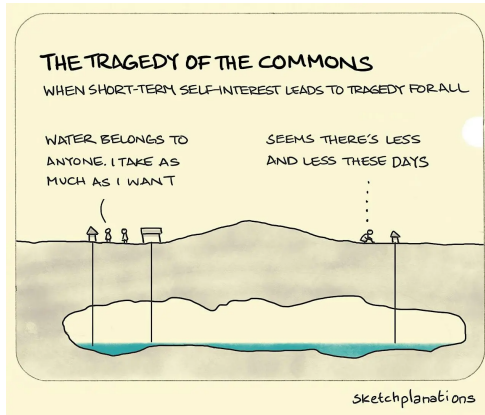
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- Phasing out CFCs was less costly; lengthy; hard to replicate.
 - ... also imperfect: HFCs ⇒ green house effect.

Tragedy of the commons



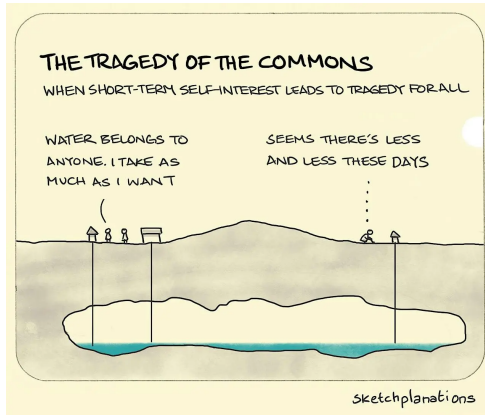
- A public resource is overused by A, to the detriment of others (B).
- Creates a *negative externality*.
- How would you try addressing this?

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Contracts and their limits

- Party A *pays* party B a compensation for the negative externality.
- May need a third party to be enforced; (+) probability A doesn't pay.
 - E.g., local or national government.
- Much harder internationally, why?

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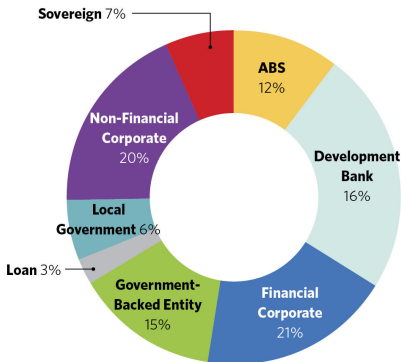
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 - Recall, there's not really a third party that can enforce contracts.

Contracts and their limits

The \$1 trillion: green bond issuers



© Climate Bonds Initiative 2020

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The prisoners dilemma and no cooperation

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		Cooperate	No cooperate
A	Cooperate	1,1	-2,2
	No cooperate	2,-2	-1,-1

- Two actors: A and B
- Two actions: cooperate, not cooperate
- A's (B's) pay-offs depend on his action, and that of B (A).
- We seek for a *Nash equilibrium*...

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- The outcome is that which makes them worse off!

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$$\sum_{t=0}^{\infty} \delta^t 1 > 2 + \sum_{t=1}^{\infty} \delta^t (-1);$$

$$\frac{1}{1-\delta} > 2 - \frac{\delta}{1-\delta};$$

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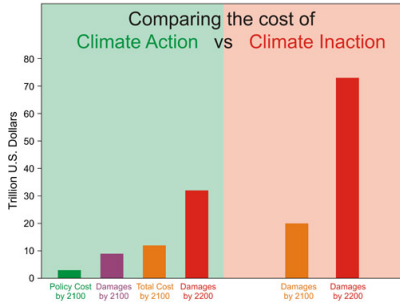
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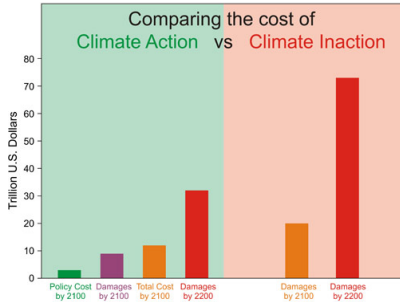
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But there is evidence for inter-temporal inconsistency!



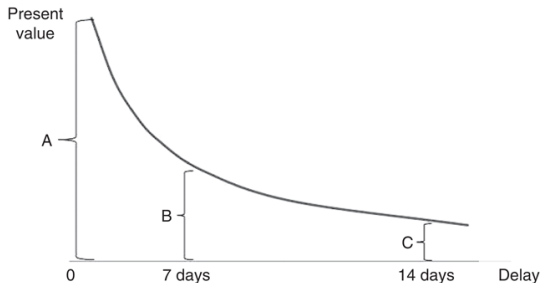
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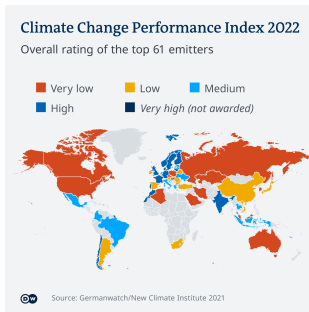
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Source: Authors' own elaboration

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Assume $p(n) \in [0, 1]$ falls with group size (n):

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- Likelihood of no cooperation increases with group size!
- Harder to punish when there are many (heterogenous) actors!
 - Higher cost of conflict, sanctions, etc., encourage cooperation. (why?)
 - It works with repeated interactions because threat is more credible.

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- To sustain cooperation we need to redistribute the gains, compensating the losers!

Class exercise...

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[reset](#)

Five years ago, a country said that it would reduce its use of fossil fuels and work with the UK and other nations on the problem of global warming. In the past five years, the country has increased its use of fossil fuels by a large amount, and it is refusing all efforts to reduce the use of fossil fuels. The country is now encouraging businesses to drill for more fossil fuels. Experts think that the country's use of fossil fuels will double over the next twenty years. The country has high levels of trade with the UK.

Class exercise... cont'

- 1 I will now read a number of alternatives that the UK can use to punish this country.

Class exercise... cont'

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- 2 Raise your hand if you agree with the alternative I mention.

Class exercise... cont'

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- 3 ...but before close your eyes; responses will be anonymous.

[reset](#)

Five years ago, a country signed a treaty, in which it promised under international law that it would reduce its use of fossil fuels and work with the UK and other nations on the problem of global warming. In the past five years, the country has increased its use of fossil fuels by a large amount, and it is refusing all efforts to reduce the use of fossil fuels. The country is now encouraging businesses to drill for more fossil fuels. Experts think that the country's use of fossil fuels will double over the next twenty years. The country has high levels of trade with the UK.

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- 6 ...if you change your answer; this will be completely anonymous.

[reset](#)

Results from the original experiment

Table 5. Preferred Methods of Responding to a Country That Increases Consumption.

	Other country signed treaty		
United States should	No	Yes	Effect of Treaty
Selected options			
Increase U.S. use of fossil fuels	3	2	0 (-3 to 2)
Criticize the country publicly	48	59	11 (4 to 19)
Cut off trade with the country	37	51	14 (7 to 21)
Take military action against the country	2	3	1 (-2 to 3)
Not take any action in this situation	19	11	-7 (-12 to -2)
Volunteered options			
Decrease U.S. use of fossil fuels	7	6	-1 (-5 to 3)
Help the country decrease its use	8	7	-1 (-5 to 3)
Engage in private diplomatic talks	22	19	-3 (-9 to 3)
Refer the problem to the UN	3	2	-1 (-3 to 1)

Next class...

Strategic challenges for achieving cooperation!