HONR 229L: Climate Change: Science, Economics, and Governance

Discussion #7: Business and the Environment

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Class Web Site: http://www.atmos.umd.edu/~rjs/class/honr229L

ELMS Page: https://myelms.umd.edu/courses/1249026

25 September 2018
Hi Everyone,

Hope your third week of class has gone well.

I'm writing to relate a few matters with regards to HONR 229L.

Whereas last week we discussed two rather short readings (20 and 22 pages, respectively), the discussion on Tuesday will focus on a much longer chapter (46 pages). This is simply "how the cookie crumbles". You'll have to plan appropriately in terms of your time management to get through the chapter prior to class. The Admission Ticket (AT) questions focus on a few areas of the chapter I thought would be of interest for some thought, rather than covering the entire chapter. Nonetheless, in the template I have provided for David, I asked him to considering covering all (or most) of the topics of the chapter. The more folks who have read the chapter and are able to retain knowledge for class, the better the discussion.

For Thursday we will switch gears, using a reading from the famous IPCC (Intergovernmental Panel on Climate Change) that is their attempt to explain the science of climate change to a lay audience. For Thursday, I ask that you have a look at the AT questions before starting the reading, so you can can focus on being able to glean from this reading the topics I have chosen for this AT. Some will have an easier time than others in digesting this reading in its entirety. Try to get as much out of this reading as seems possible, given your background. I'll be working with Drew on a discussion for Thurs that goes beyond the ATs, but stops short of covering every aspect of the reading. Also, I have provided an ungraded last AT entry, in which you can write a question related to something in the reading you did not understand, that you'd like me to explain during the last word on Thurs. I'll do my best to address anything submitted by 10:30 am next Thurs (need a few hrs to prepare!).

We'll follow up with two more climate focused readings the week after next: one from an introductory text book on climate change (again, some will have an easier time digesting than others) and a chapter from the Nate Silver's book Signal and Noise, which was the first year book the first time this class was taught: https://umdrightnow.umd.edu/news/umd-selects-silvers-signal-and-noise-first-year-book
I think the Silver reading will be accessible to all. Need to use our psswrd of ATL3408 to open these readings.

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Finally, I am about halfway through the Paper Descriptions (PDs). I will complete the rest either later tonight or, at the latest, early afternoon on Sat. Many folks are getting a request for more information. Specifically, for the paper assignment, you are being asked to explore independent research on a topic of interest, telling a story that is based on material external to the class. Laura and I will gladly spend time with each student, helping you locate appropriate source material. If I think all elements of your PD is satisfactory, you will see a grade of 1.0 (1 extra bonus point ... yay to dat!) plus of course some feedback in the comments section. If there is a request for more information, I will enter a comment detailing the additional specific info that is being requested, along with a grade of 0.5. If you get a grade of 0.5, I ask that you email me and Laura once the PD has been modified, so that we can review your changes and, if satisfactory, your place holder grade of 0.5 will be changed to 1.0. Please note the use of 0, 0.5, and 1.0 is a super convenient way for me to track within ELMS those PDs that I either have not yet read (you'll see 0 or n.a.), have requested more info (0.5), or are complete (1.0). Of the PDs I have read so far, most (but not all) are getting a request for more info. Given the fact so many have chosen paper topics that bear a rather close relation to an assigned reading or readings, I'll re-iterate in class on Tues the desire for the paper to go beyond the class readings.
Hope everyone has a nice weekend and I look forward to the continued excellent discussions. So far, the Fall 2018 class has been exemplary for the quality of the discussions. Hopefully this will continue as we get into the core of this class, the science of climate change.

Cheers,
Ross
AT 07

Quiz Type: Graded Quiz
Points: 10
Assignment Group: Admission Tickets
Shuffle Answers: No
Time Limit: No Time Limit
Multiple Attempts: Yes
Score to Keep: Highest
Attempts: 3
View Responses: Always
Show Correct Answers: Immediately
One Question at a Time: No
Require Respondus LockDown: No
Browser: Required to View Quiz Results: No

Due: Sep 26 at 7pm
For: Everyone
Available from: -
Until: Sep 26 at 7pm
AT 6, Q 1:

What are the four “road map of factors contributing to failures of group decision making” outlined at the start of Chapter 14?

1) A group fails to anticipate a problem before the problem arrives

2) When the problem arises the group fails to perceive it

3) If the group perceives the problem, they may fail to try to solve it

4) They try to solve the problem but don't succeed
AT 6, Q 2: Provide an example of a society's **failure to provide** a solution of a vexing problem drawn either from your own experience or else from an example given in a chapter of Diamond's book that has not been assigned. Stat **key factor** essential for the society to not be able to overcome the problem.

- Flint Water Crisis: residents still need to use filters (funding; discrimination)
- Native Americans: succumbing to European diseases (lack of modern medicine; discrimination)
- Hawaii: Introduction of Mongoose to Control Rats (failure to anticipate)
- U.S.: School Shootings (NRA; cherished view of Second Amendment)
- Market Crash of 2008: denial of risk due to unprecedented success
- Extinction of the Carrier Pigeon (hunting and deforestation coupled with failure to anticipate)

[https://www.wisconsinhistory.org/Records/Article/CS366](https://www.wisconsinhistory.org/Records/Article/CS366)

“A boy in Ohio killed the last wild passenger pigeon in 1900 with BB gun”

“Passenger pigeons required large tracts of unbroken forest to support their flocks, colonies of even 5,000 birds could not survive.”

Last captive pigeon, named Martha, died in a zoo on 1 Sept 1914
AT 6, Q 2: Provide an example of a society's failure to provide a solution of a vexing problem drawn either from your own experience or else from an example given in a chapter of Diamond's book that has not been assigned. Stat key factor essential for the society to not be able to overcome the problem.

- Mount Vesuvius, 79 AD: failure to anticipate devastation of an eruption
- Anasazi of the US Southwest (Ch 4 of Collapse): deforested homeland, then other lands
- Norse Settlers in Greenland (Ch 8 of Collapse): deforested and failed to recognize soil was different than Norway
- Roman Empire: emperors devalued coinage and resulting inflation caused near-total economic paralysis
- Brazil: deforestation for agriculture and logging
- Guinea-Bissau: collapse of gold and diamond mining due to completion and corruption
- Torture and killing of 13 yr old boy who had drawn graffiti against government oppression, sparking civil war in Syria
Provide a real world example of the **rational behavior** on the part of one group that has translated into a disastrous situation for society:

- **Factory in teacher’s hometown freely polluted the air and water, since the EPA under the Reagan administration wouldn’t force them to pay heavy fines.**

- **Prior to Oil Pollution Act of 1990, shipping companies could therefore forgo the costs of precautions against oil spills because they were not responsible for impacts of the oil spill** [https://en.wikipedia.org/wiki/Exxon_Valdez_oil_spill](https://en.wikipedia.org/wiki/Exxon_Valdez_oil_spill). Yet, we still had the Deepwater Horizon spill in the Gulf of Mexico in 2010.

- **Fracking: creating large profit for some, energy independence for the U.S., but at the costs of contamination of ground water, earthquakes, and sunken investment into fossil fuel EGUs (electricity generation units).**

- **Storm water runoff causing algae blooms and oxygen depletion in the Chesapeake Bay.**


  See, *e.g.*, Philip J. Hilts, *Senate Backs Faster Protection of Ozone Layer as Bush Relents*, N.Y. TIMES, Feb. 7, 1992, at A1, A17 (unanimous Senate resolution to accelerate phase out of CFC and other ozone-harming chemicals). Roosevelt and various amici presented ample (and largely duplicative) argument on this essentially undisputed point.
AT 6, Q 3:

Provide a real world example of the *tragedy of the commons*

- Ocean Pollution (dumping of waste)
- Driving Cars and Air Pollution (one car can’t contribute that much)
- Traffic Congestion (especially if everyone uses same GPS technology to avoid problem areas)
- Ogallala Aquifer (one field can’t deplete that much water)
- Los Angeles water supply (everyone wants a green lawn)
- Overfishing of Cod, Grand Banks ecosystem near Newfoundland (any example of overhunting)
Provide an example of a society's **successful solution** of a vexing problem drawn either from your own experience (i.e., please use an example from outside any of the assigned readings) or else from something stated in a chapter of Diamond's book that has not been assigned, and state the **key decision** that was essential for the society to overcome the problem.

- **Ozone layer**: scientists quickly identified CFCs as cause of the Antarctic ozone hole
- **U.S.**: Endangered Species Act of 1973, **supported by both parties**, saved many species including bald eagles and humpback whales
- **U.S. recovery from Great Depression of 1929**: Roosevelt’s New Deal employed many in public works programs and included banking and monetary reform.
- **Australian’s treatment of their ecosystem** (Ch 13 of *Collapse*)
AT 6, Q 4:

Provide an example of a society's *successful solution* of a vexing problem drawn either from your own experience (i.e., please use an example from outside any of the assigned readings) or else from something stated in a chapter of Diamond's book that has not been assigned, and state the *key decision* that was essential for the society to overcome the problem.

- Recognition of Christianity by Constantine stabilized the Roman Empire
- Netherlands: much of country is below sea level, so have designed elaborate system of locks and dykes to re-direct water
- Residents of Ely, England dumped wasted into farm irrigation drainage canals, making their town prone to floods. After a terrible flood in 1947, Dutch engineers were hired to construct an elaborate system of mills and ditches.
- U.S. recovery from Great Depression of 1929: Roosevelt’s New Deal employed many in public works programs and included banking and monetary reform.
- Inca reforested and built terraces to prevent soil erosion
- Seychelles Island near the Madagascar preserved eco-diversity via a series of bottom up measures
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1. History of Haiti, from time of independence to today ✓
2. Environmental Determinism vs Human Decisions, Hispaniola ⇧ request for more info
3. Island of Hispaniola ⇧ request for more info
4. China ⇧ request for more info
5. Population ⇧ request for more info
6. Building Construction: Role in Exploitation of Resources and Energy Efficiency ⇧ request for more info
7. Relationship between extravagant consumption and climate change ⇧ request for more info
8. Analyzing the reasons for the collapse of Easter Island society and the success of Tikopia, and then comparing these different outcomes?
9. Societal collapse: Contrast of Successful and Unsuccessful Societies? 
10. Silviculture: Economics and Governance ⇧ request for more info
11. Effect of Capitalism on the Environment ⇧ request for more info
12. Business and the Environment ⇧ request for more info
13. Environmental and Economic Policy of China, EU, and US ⇧ request for more info
14. The Relation of Business and the Politics to Renewable Energy ✓
15. The Effect of Climate Change on Forests ✓
16. Capitalism ⇧ request for more info
17. Conveying information about climate change to the public ✓
18. The Effects of Air Pollution on Human Health ✓
19. Water Privatization ✓
20. Top-Down versus Bottom-Up Management ⇧ request for more info
21. Earth’s Carrying Capacity ⇧ request for more info
22. Earth’s Carrying Capacity ✓
Business and the Environment

David Golding

25 September 2018
What is Jared Diamond’s motivation for writing this chapter?
• Identifying the most effective changes that would cause environmentally harmful companies to be environmentally friendly
• Defining why companies adopt the policies that they do

What industries is Diamond investigating?
• Oil
• Hardrock mining and coal
• Logging
• Marine fishing
Compare and contrast the conditions at the Salawati oil field in what is known as Indonesian New Guinea to those at the Kutubu oil field of Papa New Guinea, in particular as these conditions relate to local wildlife and the concern of the operating company for the respective locales.

Salawati Oil Field:
- Run by an Indonesian national oil company, Pertamina
- Burning off natural gasses due to lack of technology
- Major areas of land cleared for roads preventing tropical rain forest animals from crossing them
- Numerous oil spills
- Reductions of species of pigeons due to overhunting

Kutubu Oil Field:
- Subsidiary of the Chevron Corporation
- Engaged the World Wildlife Fund to establish a conservation plan
- Minimized regions cleared for roads, maintaining much of tropical rain forests, and fostering growth of animal species
- No large structures visible for the oil field
- Inspection of luggage upon arrival to prevent overhunting
- Chevron clearly was interested in employee and environmental protection
https://images.pennnet.com/articles/ogj/thm/th_050801ogjxin01.gif

http://asopa.typepad.com/.a/6a00d83454f2ec69e20224e0391e5a200d-250wi
Salawati Oil Field vs Kutubu Oil Field: A Case of Top-Down vs. Bottom-Up?

Could Indonesian New Guinea’s top-down system have caused the government to allow a business to produce oil for economic success without regard to environmental damage?

How does this compare to Papua New Guinea’s bottom-down system and the resulting Kutubu Oil Field?
Describe the relationship between the Chevron managers of the Kubutu oil field and the indigenous folks who own land within the boundary of this oil field.

- High expectations of environmental protection for Chevron
- Local people relied heavily on gardens, forests, and rivers which would be gravely affected by oil spills
- Weak central government, police and army allows the locals to be disruptive with protesting to ensure they are successful
- Had to work with local communities to ensure their success in the region
Diamond seemed continually shocked by Chevron’s treatment of the Papua New Guinea land, were you similarly surprised and what was surprising?
Describe the impact of hardrock mining.
• Highly toxic pollutant
• On the decline in the United States, partially due to misdeeds within the industry
• Much more negative reputation than other non-renewable resources
• Water pollution
• Dumping of waste products of mining
• Disturbance of land surface
Describe how the fate of the Bougainville copper mine in Papua New Guinea and the Point Arguello oil field off the coast of California factored into Chevron’s approach for the management of the Kubutu oil field.

Bougainville:
• Shut down in 1989 due to environmental damage
• Never reopened due to mass scrutiny
• Warning of consequences of environmental damage in Papua New Guinea

Point Arguello:
• Unable to produce oil for 10 years
• Public disenchantment, local opposition and government regulation caused the delay
• Decreased value of potential asset
• Kubutu was a way to reduce disenchantment by building a positive reputation
How do the approaches to environment differ between oil/gas/coal industries and hardrock mining industry?
• Coal continually cleans and restores land as it is used, but hardrock mining only cleans after a mine is shut down
• Hardrock mining companies regularly try to avoid the debt incurred from cleanup and restoration costs by declaring bankruptcy
• Similar to the oil industry, hardrock benefits from cleaner environments, but does not act to clean the environment

How have the negative impacts of hardrock mining impacted public opinion in states, such as Montana?
• Failure to pay back debt, leads to tax-payers having to pay the debt
• US taxpayers could face $12 billion in liabilities
• Failure to clean the mining site in a timely manner
What are the three factors Diamond says are responsible for the difference in approach to environmental standards adopted by fossil fuel extraction industry versus the hardrock mining industry?
• Economics
• Mining industry attitude
• Society’s attitude

How have these factors affected the outcome of these industries?
• Hardrock mining has been declining
• Fossil fuel extraction continues to occur, with an increased emphasis on environmental protection to attempt to maintain positive attitudes from the public
What two ways do logging and fishing differ from the aforementioned resource industries?
• Trees and fish are renewable resources
• Trees and fish are valuable parts of the environment

What positive impacts are lost due to deforestation?
• Principal source of timber products
• Filter out Carbon Monoxide and other air pollutants
• Decreasing Carbon sink in forests and their soils
• Return water to the atmosphere
• Retain water in the soil
• Protect against erosion, landslides, etc.
• Major nutrient source in ecosystems
• Habitats for various species

How have Ikea and Home Depot helped to reduce deforestation?
• Working with the Forest Stewardship Council (FCS) to sell wood from certified forests
Our blaming of businesses also ignores the ultimate responsibility of the public for creating the conditions that let a business profit through hurting the public: e.g., for not requiring mining companies to clean up, or for continuing to buy wood products from non-sustainable logging operations.

Thoughts?
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Last Word: Business and the Environment

Ross Salawitch
Nearly every item with an on-off switch contains rare earths.

From 1940 to 1990, the United States produced and mined its own rare earths. One huge mine in southern California, called Mountain Pass, was the biggest resource in the U.S. The invention of the color TV in the mid-1960s, which required the rare earth europium to produce the color red, put Mountain Pass on the map. Up until the late 1980s, the mine was the world’s biggest supplier of rare earths.

But cell phones aren’t the only products affected by the monopoly. They are found in electric cars, wind turbines, solar cells, and batteries—key components of a future powered by alternative energy. Demand for rare earths is high and certain to grow in the coming decades. A hybrid Toyota Prius, for example, uses nearly 20 pounds of rare earths in its battery alone. There are more than 2 million Priuses on the road, and it’s just one of many hybrid and electric vehicles being sold today. A restricted supply of rare earths could thwart efforts to wean ourselves off oil.

Further Information: Rare Earth Metals

It wouldn’t last. Mountain Pass was shut down in 2002, having been knocked out by a one-two punch of environmental violations and globalized markets. One of the dirty little secrets about rare-earth mining is that a major by-product is radioactive waste in the form of thorium. As early as 1985, ground-water samples showed the tailing ponds were leaking. By the late 1990s, Mountain Pass had leaked 300,000 gallons on seven separate occasions, spoiling the surrounding desert, which is habitat for the endangered desert tortoise. But the real knockout blow came from China, which has its own substantial deposits. It also had cheap labor, so it could mine the minerals at lower prices. Deng Xiaoping, an influential politician in China, recognized the importance of rare earths in 1992, when he said, “The Middle East has oil, but China has rare earths.” Production in China grew rapidly between 1990-2000, from 16,000 to 73,000 metric tons, an increase of 450%. Meanwhile, production in other countries dropped by 60%.


Can learn more at http://www.pbs.org/wgbh/nova/physics/hunting-elements.html
Where do you think this photo was taken?
Colorado EPA Spill: ‘The Magnitude Of It, You Can’t Even Describe It’

DURANGO, Colorado (CNN)-

The city of Durango and La Plata County, Colorado, have declared a state of emergency after a federal cleanup crew accidentally released mine waste into the water.

An estimated 1 million gallons of waste water spilled out of an abandoned mine area in the southern part of the state last week, turning the Animas River orange and prompting the Environmental Protection Agency to tell locals to avoid it.

“This action has been taken due to the serious nature of the incident and to convey the grave concerns that local elected officials have to ensure that all appropriate levels of state and federal resources are brought to bear to assist our community not only in actively managing this tragic incident but also to recover from it,” said La Plata County Manager Joe Kerby.

According to the EPA, the spill occurred when one of its teams was using heavy equipment to enter the Gold King Mine, a suspended mine near Durango. Instead of entering the mine and beginning the process of pumping and treating the contaminated water inside as planned, the team accidentally caused it to flow into the nearby Animas River. Before the spill, water carrying “metals pollution” was flowing into a holding area outside the mine.

Colorado Parks and Wildlife officials have been watching for any effects on wildlife since the incident began on Wednesday. They are optimistic that the effects of the spill on terrestrial wildlife will be minimal, the EPA said. Fish are more sensitive to changes in water.

Officials said they believe the spill carried heavy metals, mainly iron, zinc and copper, from the mine into a creek that feeds into the Animas River. From there, the orange water plugged steadily along through the small stretch of winding river in southern Colorado and across the state border to New Mexico where the Animas meets the San Juan River.

Chevron in Ecuador

For more than three decades, Chevron has chosen profit over people.

While drilling for oil in Ecuador’s Amazon rainforest region, Texaco – which merged with Chevron in 2001 – operated without concern for the environment or local residents. The company deliberately dumped billions of gallons of toxic wastewater into rivers and streams, spilled millions of gallons of crude oil, and abandoned hazardous waste in hundreds of unlined open-air pits littered throughout the region. The result is widespread devastation of the rainforest ecosystem and local indigenous communities, and one of the worst environmental disasters in history.

Due to Chevron’s toxic contamination of their soil, rivers and streams, and groundwater, local indigenous and campesino communities continue to suffer an epidemic of cancer, birth defects, miscarriages, and other ailments. Chevron has never carried out a meaningful clean up of the mess it is responsible for, and its infrastructure continues to poison the communities of the Ecuadorian Amazon.

Today, more than 30,000 Ecuadorians are fighting for justice with an international campaign and a landmark class action lawsuit in Ecuadorian courts. Despite Chevron’s repeated efforts to sabotage the trial, the local people remain determined to hold Chevron accountable, demanding clean-up costs and compensation for the devastation the company caused.

Since 2002, Amazon Watch and our Clean Up Ecuador Campaign has been working with shareholders, consumers, and other concerned people to support justice for the communities of the Ecuadorian Amazon.

https://amazonwatch.org/work/chevron
Chevron in Ecuador

International Arbitration Vindicates Chevron

On September 7, 2018 the Permanent Court of Arbitration in The Hague unanimously issued an award in favor of Chevron and Texaco Petroleum Company. The decision concluded that the judgment in Ecuador was fraudulent, corrupt and “should not be recognised or enforced by the courts of other States.” The amount Ecuador must pay to Chevron to compensate for damages is yet to be determined. The award found that Ecuador violated its obligations under international treaties, investment agreements and international law. The Court of Arbitration’s findings of fraudulent activities included:

-That the evidence placed before the Court is “the most thorough documentary, video, and testimonial proof of fraud ever put before an arbitral tribunal."

-That the plaintiffs blackmailed an Ecuadorian judge, triggering him to order the appointment of an “expert” friendly to the plaintiffs.

-That Ecuadorian government prosecutors “actively cooperated” with the plaintiffs.

-That the plaintiff's bribed the “experts” and ghostwrote their report.

-That the plaintiff's paid a retired judge to draft the acting judge’s orders—and that the same judge solicited bribes that Chevron refused to pay, but not the plaintiffs. [72]

https://en.wikipedia.org/wiki/Lago_Agrio_oil_field
Before you rush out to buy stock in Chevron:

https://link.springer.com/content/pdf/10.1007%2Fs10584-017-1978-0.pdf
We have some good news late last week:

Exxon Mobil and Chevron will join global energy giants in climate initiative, reversing position

Tom DiChristopher | @tdichristopher
Published 9:49 AM ET Thu, 20 Sept 2018 | Updated 2:26 PM ET Thu, 20 Sept 2018

- Exxon Mobil, Chevron and Occidental Petroleum will become the first U.S. energy companies to join the Oil and Gas Climate Initiative.
- Members pledge to cut emissions and boost energy efficiency and contribute to a $1 billion fund to support clean tech and business models.
- The initiative was launched in 2014 and currently has 10 members.

U.S. oil giants Exxon Mobil, Chevron and Occidental Petroleum will join a coalition that aims to reduce greenhouse gas emissions from the oil and gas industry.

The move marks a reversal for the American oil heavyweights, which did not join the Oil and Gas Climate Initiative when it was formed in 2014. The initiative currently has 10 members, including European oil majors Total, Royal Dutch Shell and BP, as well as state oil companies Saudi Aramco, Mexico’s Pemex and China's CNPC.

States have also sued big oil firms over the cost of mitigating the impact of climate change, though several of the suits have been dismissed.

Exxon, Chevron and Occidental will become official members on Monday. ⇐ Yesterday!

We Have Some Good News Late Last Week:

**Why it matters:** The companies are the first U.S.-based members of the group, called the Oil and Gas Climate Initiative. This is one of the strongest signs yet of how America’s biggest oil companies, under pressure from investors and lawsuits, are joining most other U.S. corporations in working to reduce greenhouse gas emissions despite President Trump reversing America’s course on the matter.

**The group’s purpose is twofold:**

1. Work toward cleaner operations, particularly in the area of emissions of methane, a potent greenhouse gas that’s the primary component of natural gas. These efforts are continuing and growing despite Trump repealing methane regulations.

2. Investment in new technologies, for which members contribute to a $1 billion investment fund. The primary goal is to commercialize technologies that capture carbon dioxide, but also include ones like reducing methane emissions, lowering transportation sector pollution and improving energy efficiency. The new member companies will contribute $100 million to the fund, according to a press release issued after publication of this story.

**The other side:** Environmentalists and others skeptical of the industry say commitments by oil companies to address climate change ring largely hollow absent more aggressive action urging governments to price carbon emissions. The group’s mission is expressly not geared toward influencing any government policy.

**Between the lines:** CEOs of several major, publicly traded oil companies say they support carbon taxes and back a separate group writing a proposal for one. But the companies are not actively lobbying Congress to embrace the policy. That disconnect will grow harder to reconcile as their public commitments to address climate change, such as through groups like this, grow.

https://www.axios.com/exxon-mobil-chevron-global-industry-climate-group-33d5f4e6-d636-4b70-929b-c83a2e22e834.html