



Technology & Ethics

Marist CLS Fall, 2021

Paul Stoddard



Climate Change & Geoengineering



What is our ethical duty with regards to Climate Change?

●○ Poll # 1

●○ Do you think human caused climate change is a serious problem?

- Yes
- No
- Undecided

●○ Which of the following is most important when considering climate change and other environmental concerns?

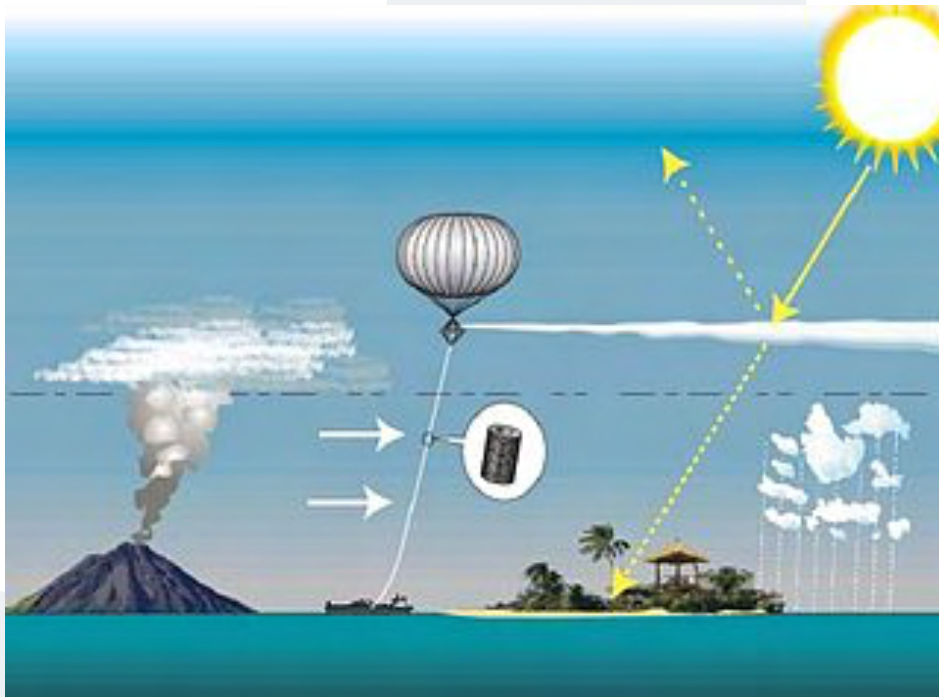
- Humans
- Animals
- Atmosphere and Oceans
- None of the above
- All of the above

●○ Do humans have an ethical relationship with the planet – plants, animals, air, water, earth?
Or is the relationship limited to what's best for humans?



Solutions?

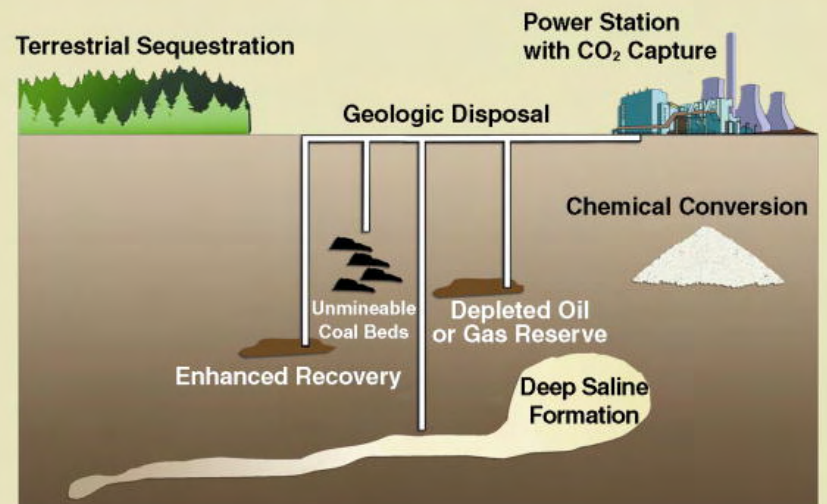
- If we have a duty, and if climate change is a serious problem, some have suggested **Geoengineering** as a technological solution.
- What is [Geoengineering](#)?
There are two kinds:
 - Greenhouse Gas Removal
 - Solar Radiation Management
 - 3 minute UC [video](#)
 - 5 minute PBS [video](#) (radiation at 2:34)



Solar radiation management example

Geoengineering (aka Climate Engineering)

Carbon Sequestration Options



Geoengineering

PBS Nova TV program called "[Can We Cool the Planet?](#)" explains more geoengineering research.

- [SCoPEx](#) experiment (researching stratospheric aerosols)
- Carbon [XPRIZE](#) to recycle CO2
- **A combination of solutions is necessary.**

Questions: *How do you feel about geoengineering?*

How risky is it to tamper with climate at a global level?

What if it benefits some regions but harms others?

- Should we allow some geoengineering? How much? Should this decision be based on how many people are benefitted?
- Will the prospect of geoengineering persuade some people that we don't have to cut back on emissions?





Geoengineering

Poll #2

- How do you feel about the idea of atmospheric geo-engineering (also called solar radiation)?

Answers:

- It's too risky and should not be done
 - It should be considered after more research is done
 - It's inevitable that we will need to use it
 - I have a different answer
- If practical geo-engineering methods are developed, do you think most people will relax in other efforts to stem climate change?
 - Yes, most people will relax
 - No, most people will continue to work hard to reduce human caused climate change
 - I have a different answer

If atmospheric geo-engineering harms some regions of the world, but benefits the United States...

- Then we should go ahead with it
- We should not do it
- We should calculate how many people are benefited and how many are harmed and do whatever benefits the most
- I have a different answer



Geoengineering

Questions: *How do others feel about geoengineering?*

- Should scientists experiment [to shade a warming planet](#) by lacing our atmosphere with sun-reflecting particles? Nat Geo and *Morning Consult* polled 2,200 Americans on their views. Overall, 41 percent of respondents supported the idea while 36 percent opposed them (the remainder did not know or select an opinion). October, 2021



Geoengineering guidelines

- Oxford Principles

- Principle 1: Geoengineering to be regulated as a public good.
- Principle 2: Public participation in geoengineering decision-making
- Principle 3: Disclosure of geoengineering research and open publication of results
- Principle 4: Independent assessment of impacts
- Principle 5: Governance before deployment

- Side effects?

- UN Environment Assembly in Nairobi could not even agree to launch a study of geoengineering (14 March, 2019).

Other Energy Options



The Gates Foundation funded a project to design safe nuclear reactors. Terrapower.com (See Netflix show called “Inside Bill’s Mind”)

- A pilot project planned with China was stalled by US – China trade wars.
- Fukushima Daiichi nuclear disaster has reignited public fear of nuclear.

Poll #3 Should we build modern, safer nuclear power plants?

Is nuclear an ethical option?

Is it an inevitable option?



Lifestyle, Technology, and Climate Change

Do we have a duty for ethical investing?



- ESG = **Environmental, Social, Corporate Governance** goals.
- Success is based on more than just financial results.
- ESG issues have gained increasing importance in the last 2 decades, but it has a much longer and interesting history (Wikipedia [article](#)).
- ESG ratings are important for determining risk (which is important to insurance companies as well as investors).
- But ESG measures are often difficult to quantify.

Ethical Investing



- Investing Strategies:
 - Invest in stocks that are consistent with ESG goals (example: renewable energy)
 - Divest stocks that are deemed contrary to ESG goals (example: oil companies)
 - Retain non-ESG stocks and try to change the corporation through shareholder activism (examples: ExxonMobil and Chevron – Guardian [article](#))

Ethical Investing

- There are lots of investment funds focused on ESG.
- Example of an organization that rates investment funds based on ESG considerations: www.fossilfreefunds.org
- Freakonomics [episode](#) about National Economic Council Director, Brian Deese, talks a lot about ESG investing.
- There are a number of organizations working on ESG accounting, including:
 - Sustainability Accounting Standards Board (SASB)
 - the Carbon Disclosure Project (CDP)
 - the Global Reporting Initiative (GRI)



Goals & Metrics



UN 17 [Sustainable Development Goals \(SDG\)](#).

The UN also has 6 [Principles for Responsible Investment](#)



[Stakeholder Capitalism Metrics](#) from the World Economic Forum (September 2020) – Principles of Governance, Planet, People, Prosperity (summary [article](#))



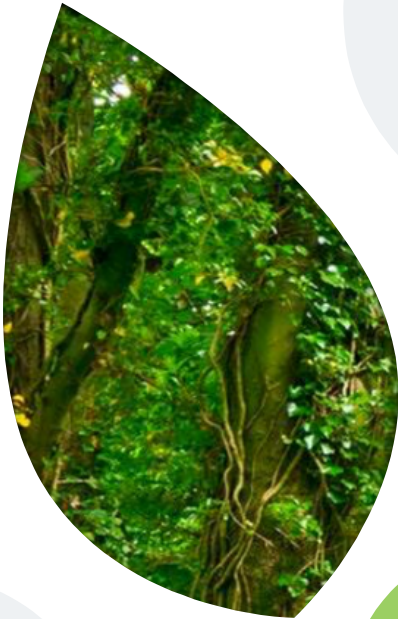
Electric Vehicles

- Electric vehicles are being widely promoted as one answer to reducing CO₂.
But where will we get the materials to make all those batteries?
- Most cobalt is now mined (unethically) in the Democratic Republic of Congo.
- Research is underway to mine materials from the ocean floor in International waters (which are governed by the UN International Seabed Authority).
- Environmentalists are concerned that this may cause irreversible harm to the oceans.
- Hopeful answers? New kinds of batteries; recycling existing batteries.

What should you and I do? Buy electric? Drive less?
Can you think of other options?

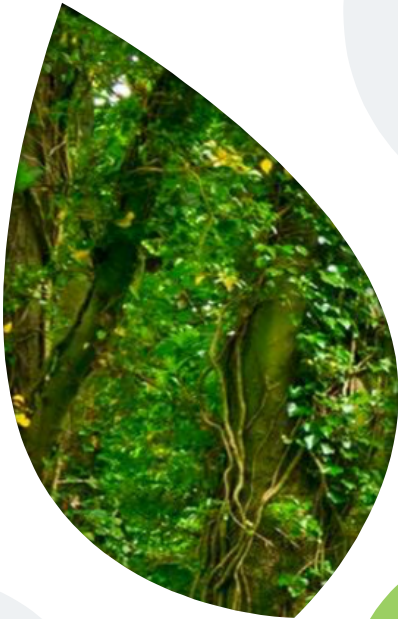
Summarized from *Time* magazine article “Deep Questions” by Aryn Baker (Sept 21, 2021 issue)

Recycling



- ❖ Reduce, reuse, recycle was a motto popularized in the 1970's.
- ❖ But manufacturers have managed to get the focus almost entirely on recycling, and it's been made the responsibility of consumers and local governments. Manufacturers have also caused confusion with recycling labels on plastics. [What do the numbers mean?](#)
- ❖ Recycling is not working. China and other countries no longer accept our recyclables. The US doesn't currently have facilities to recycle.

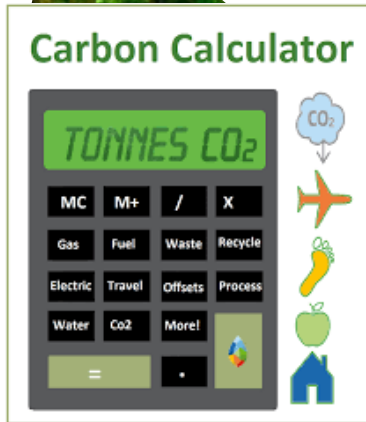
Recycling and Reuse



- ❖ Maine and other states are passing laws that require manufacturers to bear responsibility for the packaging they use.
9/8/2021 WNYC [report](#) (12 minutes).
- ❖ Perhaps the Internet is helping us improve “reuse” with websites like Craigslist and [Freecycle](#).
You can also donate furniture to the Habitat for Humanity ReStore.
- ❖ Questions:
 - *Should we throw away less stuff?*
 - *Should we buy less stuff?*
 - *Would that harm economic growth?*



Reducing



- ❖ *Should we try to reduce our personal “carbon footprint”?*
- ❖ Example [Carbon calculator](#) website (there are many others)
- ❖ Wired [article](#) on reducing your carbon footprint

Should we eat less meat?

- The livestock industry is a major contributor to climate change; it also uses a lot of water and land.
- “Beyond Meat” and other plant-based meats are getting pretty good.
- Many countries eat insects – is US revulsion just a cultural thing?



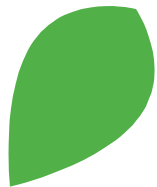
Reduce, reuse, recycle

Poll # 4

- Which of the following do you think we need to do more of to help the environment?

Multiple answers allowed:

- Buy fewer things
- Drive electric vehicles
- Drive less
- Fly less or not at all
- Eat less meat
- Modernize our recycling capabilities
- Move investments to ESG funds
- Other ideas (please explain to class)
- None of the above



Circular Economy

- ❑ *About 53.6 million tons of e-waste was produced globally in 2019, according to the United Nations.*
- ❑ *Much of it goes to scrapyards like Agbogbloshie in Ghana, where informal workers burn it to recover some metal. This is very harmful to them and to the environment.*
- ❑ *This [article](#) from Computing says much of the metals can be recovered using a technology by Canadian start-up Excir.*



Circular Economy

Some tech companies are starting to move towards a "circular economy" model of manufacturing. (Examples: IKEA, Dell Computers, lots of small startups.) One feature is to design things that are easy to repair or take apart. But watch out for "greenwashing".



LINEAR ECONOMY



TAKE MAKE DISPOSE

CIRCULAR ECONOMY





End