

Unrealistic Approaches

What we've got here is a failure to communicate —
Captain.

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Start With Poll

Review the poll from the first class.

Best Estimates For World

- ▶ The world will be changing **greatly!**
- ▶ It would (collectively) be better off with fewer GHG emissions.
 - ▶ A good “efficiency” benchmark is \$50/tCO₂.

Trigger Warning

- ▶ The welfare function is quite flat.
 - ▶ If nothing is done, the world will be modestly worse off, but it will not come to an end.
 - ▶ No models have more than 1-2% damage estimates. Most are at 0.2–0.5% damage estimates.
 - ▶ This is about one year of historical real growth

These are estimates from IAMS (IPCC etc.).

There are also other problems: poverty, habitat destruction, overfishing, chemicals, comets, epidemics, etc.

Central Problem?

1. Guilt and anxiety? or

PS: Fritz Bauer, You can only be proud or guilty for what you did. != Catholic Church, where you were born guilty.

2. Warming

- ▶ 50 GtCO₂ per year,
- ▶ 410 ppm CO₂ in the air?

How do you want to solve it?

1. Feel better about *yourself*? or
2. reduce CO₂ in the atmosphere?

Different problems → different solutions.

Performative Wellness?!

The following cannot work (unless they spread like Omikron):

- ▶ Advocate for a global CO₂ tax.
- ▶ Work for international treaties.
- ▶ *Just Say No* to fossil fuels.
- ▶ Lower your carbon-footprint.
- ▶ Shame the polluters.
- ▶ Most local sacrifice solutions.
- ▶ Country-specific sacrifice solutions.



When it comes to CO₂ in the atmosphere:

- ▶ The above are 'wellness' solutions: unrealistic, ineffective, or both.
- ▶ Their advocacy may make you feel better, but is probably counterproductive.

To lower CO₂ in the atmosphere, we need brutal honesty!

Clarification

- ▶ Small is beautiful — but can work only if they spread and aggregate up.
- ▶ To plausibly reduce worldwide CO₂, solutions will have to be in the self-interest of many parties.
- ▶ What does *not* work are solutions that are against the many's self-interests.
- ▶ I only ever criticize the stupid parts:
 - ▶ it is a good idea to bicycle.
 - ▶ stupid if you think it can be an effective solution to reduce worldwide CO₂.

Clean Energy Transition?

- ▶ Easy? **No!**
- ▶ Must be super-big. (Biggest thing ever!)
- ▶ Must span generations.
- ▶ Must span most countries.
- ▶ Climate change is slow motion:
 - ▶ Will only really show results in 30+ years.
 - ▶ The public cares about problems of today.

Sin #1: Think Too Big

Global Co₂ Tax

- ▶ Would you like a world government?
 - ▶ Benevolent ideal boffin politicians, or corruptible and real politicians?
 - ▶ Democratic? Vote by person or by country?
 - ▶ Modernist or medievalist?
 - ▶ Is it enlightened?
 - ▶ Dominated by which tribes?
 - ▶ Dedicated to your kids or Africa's kids today?
 - ▶ Poor people today or poor people in 100 years?

Who Should Pay?

- ▶ Oil barons? (Haha!)
- ▶ The “donor class” will escape:
 - ▶ Think Panama and Pandora.
 - ▶ Not enough in donor class anyway.
- ▶ Poor people?
- ▶ They don't have enough anyway.

Who Would Have To Pay?

- ▶ Mostly ***YOU***:
 - ▶ (Upper) middle class, educated in Western universities,
 - ▶ struggling to afford car, health care, tuition, mortgage, and annual vacation.
 - ▶ You 0.1 billion will have to pay for 8 billion!
 - ▶ useless to imagine proportional sharing.
- ▶ Sketch Only
 - ▶ Higher income pay a little more. Think rent.

How Much?

Order of Magnitude:

- ▶ Say 40 GtCO₂
- ▶ Say \$50/tCO₂. (up to \$200?)
- ▶ Think \$2 trillion.
 - ▶ 10% of US GDP, 5% of OECD GDP,
 - ▶ but could be more.
 - ▶ Think \$20,000 per year if \$0.1 bln.

How Much?

- ▶ Fighting CC now ‘the traditional way’:

we will talk about cheaper better ways later.

- ▶ Pull out your checkbox and write \$5,000-\$10,000 check for this year.
 - ▶ If not you — self-selected wealthy students interested in climate — who will?

How Much Willingness?

Young Germans (14-29yo):

- ▶ CC is biggest threat and anxiety, but
- ▶ 80% not willing to give up car, and
- ▶ 70% not willing to give up flying.

Wow! What exactly are they willing to give up?

How Much Willingness?

Americans:

- ▶ Majority now believe climate change is real...better late than never.
- ▶ Avg willing to pay?
 - ▶ \$10-\$200 per year!
 - ▶ We need min \$2,000-\$5,000
- ▶ Will they give up cars and flying?

What exactly are Americans willing to give up?

How Much Willingness?

China, India, Africa:

- ▶ Will they be willing to forego enjoying cars, travel, health care, education, easier jobs?
- ▶ Better jobs require energy,
 - ▶ typically lots of it.

World Tax On Co₂

- ▶ IAM: \$50-\$80/tCO₂.
 - ▶ Proportional US: $15 \times \$50 = \750 / year.
 - ▶ must be way-above-proportional!
- ▶ Average willing: \$100/year.
- ▶ They won't pay $> \$5,000$ / year.
 - ▶ ...whether you like it or not 🚫.

but it's irrelevant.

News Flash:

There is no world government.

Rescued by the bell?

Treaties As Substitute?

Not everyone is as pessimistic as I am, but hear me out.

- ▶ Countries exist!
 - ▶ Check!
 - ▶ Yeah!
- ▶ Realistically, selfish, just like us.

Treaties Vs. Treaties

- ▶ NATO, EU, Arms Reduction can exclude non-signers from benefits.
- ▶ CO₂ treaty could not exclude non-signers from enjoying reduced global warming.

Multilateral Coordination

- ▶ How do you deal with 200 countries?
- ▶ Non-signers are *always* better off.
 - ▶ Large cartels, conspiracies, and secrets can never work because defectors are better off.
 - ▶ Only morons believe in large cabals.
 - ▶ Pretend to be late or uninterested.
- ▶ Countries have **unequal cost and harm**.
 - ▶ Tougher to sort out *fair* share.

Politics By Popular Demand

- ▶ Environmentalist lip-service gets votes.
- ▶ Environmentalist actions do not.
 - ▶ So just don't do/enforce much.
 - ▶ Leave sacrifice beyond your term.
- ▶ 50 year commitment needed, not 5 year.
 - ▶ 20 year sacrifice upfront before first teeny-tiny reduction benefit,
 - ▶ and it will still be bad.

- ▶ All politics is domestic.
- ▶ Do you want to be reelected?
 - ▶ go have courage, lose election!
 - ▶ Unshamed candidates promise higher living standards or mailing checks.
 - ▶ Foreign citizens do not vote.
- ▶ Politics are domestic. What emissions are?
 - ▶ Pay to suck out China's emissions?
 - ▶ What if it is dirt cheap (\$5/tCO₂)?

Mixing-In Of Demands

- ▶ CC is easy hostage for other disputes.
 - ▶ Give up on human rights and IP theft?
 - ▶ Agree to send lots of money?
 - ▶ Fair or unfair is irrelevant.
 - ▶ Sending large amounts is unsupportable among OECD voters.

Enforcing Treaties

- ▶ Who would be the enforcement police?
 - ▶ Invite United Nations as enforcer?
- ▶ Would Americans accept int'l supervision?
 - ▶ Countries would rather dissolve than submit.
- ▶ And how about China and India?

Enforcement In Past Treaties

- ▶ No penalties ever,
- ▶ because targets were never mandatory!

- ▶ No enforcement, no teeth.

Past Treaty Promises

- ▶ Book lists some empty country promises.
- ▶ Many are laughable if one reads the fineprint, like:
 - ▶ The US reducing emissions the most.
 - ▶ Most promises are decades into the future
 - ▶ Relative to *what they would be otherwise*.
 - ▶ No one will remember these promises.
 - ▶ = teach horse to talk

Carbon Shaming?

- ▶ Russia?
 - ▶ China?
 - ▶ India?
 - ▶ Nigeria?
-
- ▶ Where were Russia and China in Glasgow?
 - ▶ Why did India come?

Popular X-Country Demand

- ▶ Who wants to clean up China's emissions?
 - ▶ Yes, we can suck it out of the air,
 - ▶ not only *hypothetically*, but also *realistically*!
 - ▶ (On the margin, via trees, as low as \$10/tCO₂!)

Raise your hand to tax yourself just \$1,000 to suck out China's emissions.

What A Treaty Would Require

- ▶ Think 'only' 10% of your income,
 - ▶ assuming that primarily OECD will pay,
 - ▶ which is really the only halfway realistic path.

- ▶ \$5,000:
 - ▶ free higher-ed for everyone?
 - ▶ or 0.1C less in 50 years?

Past Real-World Cc Agreements

Am I too harsh? Take a hard look:

- ▶ Most were “aspirational” only.
- ▶ Fake promises, ingenuine, unenforcible.
- ▶ Nothing ever has been binding.
- ▶ China and Russia have left the room.
- ▶ India and others want trillions of dollars:
 - ▶ Think \$2,000 from you.
 - ▶ Hope Congolese warlords will spend it right!?
- ▶ and this was in good times!

What If Lights Go Out?

- ▶ Sudden wider hysteria in 2021.
- ▶ All CO₂ reduction promises went out of the window when the lights might go out.
- ▶ Even — yes — Norwegians want consumer energy subsidies when price goes up.
- ▶ Coal hit records in 2021.
- ▶ Oil reached long-time high.

PS: No energy → no jobs.

Montreal Treaty On Ozone

- ▶ Greatest success, but ...

In-Time Montreal Estimates

Party	Benefits	Costs
US only (unilateral)	\$1,373	\$21
US only (multiilateral)	\$3,575	\$21
World	e2,220	e200

Montreal

- ▶ If it only were so for GHGs...
- ▶ **Sunstein** describes further problems.
 - ▶ compares Kyoto to Montreal
 - ▶ similarly shared pain and gain.

PS: Is Bangladesh's real problem not CC in 80 years or poverty today?

Caveat

- ▶ I have a very pessimistic view of international negotiations.
- ▶ Some smart people do not share my view.


Even More Radical Change?

- ▶ Replace capitalism with more government?
 - ▶ Fails majority support.
 - ▶ You would *not* want this even if you could decree it.
 - ▶ More than one problem on this earth.
 - ▶ Capitalism is not fair or ethical or moral.
 - ▶ Yet, versions have provided the best long-term outcome for the most people.
 - ▶ Dilemma.

Arguments for free-market capitalism (FMC) or for meritocracy (with unequal starting points) should never be about fairness. They are not fair, rich people's whining notwithstanding. I wish I had Obama's talents, Bezos' wealth, and Vanderbilts' inheritance. We like FMC only for its long-term outcomes. (PS: All of us here are far on the sunny side, though.)

The problem of FMC in the CC context is its suitability. CC is the mother of all public goods problems. But FMC is dynamic and can be nudged towards the better. We also still need FMC to help solve other problems.

More Government Then?

- ▶ Would you like more government?
- ▶ What about even/just in the US?
 - ▶ Progressives:
 - ▶ think not Obama & Biden, but Bush & Trump.
 - ▶ Conservatives: think reverse.
 - ▶ think not Trump & Bush, but Biden & Obama.
- ▶ Do we have enough government already? 

Who wants to be a politician?

What would be my chances of surviving a primary in the USA, either party?

Solo Corporate Initiatives

Should/can corporations take over this principal function of governments?

Discussion is not about profit-maximizing parts. Making cleaner products when customers are demanding them is profit-maximizing and wonderful. Saving energy in production is great. Etc.

Discussion is about trying to coax corporations to shoot themselves in the foot on behalf of green causes.

As activist, try to define precisely:

- ▶ What do you want to accomplish?
- ▶ How can you measure it?
- ▶ What will happen upon non-compliance?

Corporate reach is rarely if ever wide enough. Even biggest companies are too local and small, much smaller than big countries.

Customer Demand

- ▶ Some customers are willing to pay more.
 - ▶ Good, but doesn't scale very effectively.
 - ▶ and may not be long-term sustainable.

(nice when it does.)

These gorgeous Zara party dresses are made from carbon emissions

Carbon created by a Chinese steel factory is fermented with bacteria and then ends up in this capsule collection.



Long-Term Viability

- ▶ Like politics, corporate CC actions are often public relations (wellness).
 - ▶ great when it sells more product.
- ▶ Corporate climate activism is only real and sustainable when
 - ▶ corporate profits go up,
 - ▶ and executives earn more.
 - ▶ They can go up due to stakeholders,
 - ▶ but for how much and for how long?

Public Relations?

CS466079



"Meet Jason and Pam...they're currently

Competitive Market Survival?:

- ▶ Click on Expedia for ticket price?
 - ▶ how many travelers will pay 30% extra?
 - ▶ PS: why via link to flight then? Always pay!
 - ▶ What if competitors sell cheaper products?
 - ▶ Try competing as an airline on more expensive green fuel...good luck. RIP.
- ▶ Try to compete against half-truths?
 - ▶ 'Race to the bottom'.
 - ▶ Who would ever buy fenced goods?

Broader Industry Initiatives

- ▶ Pays for lots of consultants and PR
 - ▶ How exactly does one measure corporate CO₂ footprint???
 - ▶ Often seems empty and pretentious.

Shareholder Activism

Esg Ratings

- ▶ Most customers don't know what it means,
 - ▶ even MSCI environmental ratings.
 - ▶ Do you know what they mean?

Divestment And Boycotts

- ▶ Popular among students in universities.
- ▶ Evidence suggests never effective,
 - ▶ not even coordinated international legally sanctioned boycotts and embargos!
 - ▶ though not costly, either. unimportant.
 - ▶ PS: could never work without China.
- ▶ Key Effectiveness Problem:
 - ▶ See conspiracies and cabals.
 - ▶ When boycott works, profits of evasion go up.
 - ▶ Napoleon's original problem.

Puzzled

- ▶ I am still confused. Please explain.
- ▶ Let's assume, all evidence to the contrary, that divestment could succeed and leaders can force oil companies to their knees.
- ▶ Now what?
 - ▶ What targeted reduction?
 - ▶ What specific goals?
 - ▶ How to measure of progress?
 - ▶ First, second, third outcomes?
 - ▶ (Chances of success?)

- ▶ Or just anxiety, moral stand, etc?
- ▶ *'Gotta do something'?!
 - ▶ Illogical, unrealistic, ineffective.
 - ▶ (Ivory-tower boffins in the making?)*
- ▶ “Belong” to group with greater cause?
 - ▶ Without much thinking? **Yikes!**

Divestment Goal?

Just harm oil companies?

- ▶ They don't even raise capital any longer.
- ▶ Get them to stop providing fossil fuels?
 - ▶ Now, on behalf of humanity???
 - ▶ *Great Recession* and *Covid* would be pinpricks.
 - ▶ Think *Industrial Revolution* misery for masses and generations.
 - ▶ Vote shares instead?

Great Irony



- ▶ Research universities' competitive advantage:
 - ▶ (Clean-Energy) Research!
 - ▶ → Endow chairs for clean-energy research.
- ▶ Charge more tuition to invest?
 - ▶ But hard to coax students into engineering.
 - ▶ Engineering is notoriously 'unprogressive'.
 - ▶ UC voted for diversity initiatives, not energy research initiatives.
 - ▶ not an attempt at comparative value statement, but simple reality description.



Sin #2: Think Too Small

Is spending your environmentalist fervour on your carbon footprint most effective?

Personal Carbon Footprints

1. Could it happen/work at large scale?
 - ▶ Great if/when it does. Celebrate!
 - ▶ (Actions that scale are different. See below.)
 - ▶ 
2. If it happened nevertheless, will it be *because* of you?
 - ▶ On the margin analysis.
 - ▶ Don't ever say "if everyone did it"; explain *how* everyone will come to do it.
 - ▶ 

Spend your environmentalist fervour more effectively?

Setting An Example

- ▶ Realistically, if you set an example, who will care and follow?
- ▶ Fallacy: *if everyone does it*
 - ▶ your doing it won't make everyone doing it;
 - ▶ they will or will not do it anyway,
 - ▶ ...whether you like it or not.
- ▶ Exactly when and why will everyone do it?



Setting An Example

Is 'setting an example'

- ▶ performative wellness, or
- ▶ a realistic solution to 50 GtCO₂/year,
- ▶ and 410 ppm in the atmosphere?



Let's think about it...

Reduce World's Footprint

To improve billions of footprints, what's more important for people to do:

1. Use paper straws and don't fly to Europe?
2. Pray that humanity changes?

What aggregates better?

For billions of footprints, the expected effect of #2 may be larger. Maybe equal.

*(Expected = probability of success * effect)*

Personal Carbon Footprint

- ▶ Most advice is nice and healthy:
 - ▶ Follow it if you will.
 - ▶ Pad yourself on the back.
- ▶ But don't expect CO₂ level to change:
 - ▶ Ineffective...unless x billion people do.
 - ▶ Never *because* you are doing it.
 - ▶ What you do or not does not matter.
 - ▶ *Your* footprint is *utterly* unimportant.

Personal Carbon Footprints

What a Jackass professor!

From jackass: Do you think more people just don't know, so if you tell them it will change?

Footprint Primary, Mackay 2008

1. Stop flying!
2. Stop driving!
3. Reduce heating and cooling!
 - ▶ Wear sweaters.
 - ▶ Make sweat sexy again (MSSA)!

Promise? Raise your hand! The world is at risk!

Footprint Secondary

- ▶ Read electricity meters.
- ▶ Don't upgrade your cell phone.
- ▶ Use LED lights.
- ▶ Buy less, reuse packaging.
- ▶ Eat Vegetarian.

Promise? Raise your hand! The world is at risk!

Course Attendees

- ▶ You are highly selected:
 - ▶ Highly educated university students.
 - ▶ Fairly wealthy (OECD).
 - ▶ Self-selected by interest, enrolled in this course.

- ▶ Honestly, do even *you* follow them?
 - ▶ Did you not know *about* them?

Realistic Timeline

- ▶ When will x billion other humans follow footprint initiatives *religiously*?
 - ▶ When will this change CO₂ in the atmosphere?
- ▶ How much could your engagement realistically speed up adoptions?
 - ▶ and how?

Estimate Please

- ▶ How much could/have carbon footprint initiatives reduced worldwide CO₂ emissions?
 - ▶ I allow you to make optimistic assumptions.
 - ▶ What percentage of world problem?
 - ▶ Multiply number of people and per-person savings to obtain 'tCO₂ likely reduced'.

If Everyone Did It

- ▶ But they haven't and won't.
- ▶ And, yes, it would be great.
 - ▶ I would celebrate, too.
- ▶ But what would that have to do with your own marginal cost-benefit analysis?

New Yorker: No More ...

1. Cooking Meat...takeout only.
2. Flying...for family vacations.
3. Food Waste...eat it.
4. Shopping Bags. (Bubble wrap != plastic.)
5. Straws...when others are watching.
6. Toilet flushing...hate visitors.
7. No mo carbs...no food waste, either.
8. Gasoline car...drive Tesla.

(more funny choices)

Mix-In Social Ills

- ▶ Add in social justice
- ▶ Add in who is to blame
 - ▶ not easy: population *and* emissions
- ▶ Add in inequality and EDI
- ▶ Add in poverty

Allocate a lot of money, then let the causes fight it out, and see how much climate change (on behalf of great-great-grand...) will be getting?!

Free-For-All

- ▶ The cage fights have begun on the \$1 trillion *Build Back Better* bill of 2021.
- ▶ Out of direct view, by power groups
<https://www.nytimes.com/2021/12/03/climate/climate-change-infrastructure-bill.html>

How effective will CC fighting be?

Conclusion

- ▶ None of the above approaches will likely move the needle on CO₂:
 - ▶ Probably not even on the margin.
 - ▶ They are mostly 'personal wellness' only.
- ▶ If ***you*** truly want to contribute to moving the needle on CO₂, then
 - You Must Do Better!***
 - You Must Be More Effective!***