Addressing Climate Change

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Outline

- motivation: the Paris Agreement won't work
- addressing climate change $\equiv$ managing shared atmospheric resources
- a constructive alternative: the Themis Mechanism

Framing Climate Change

There are many ways of characterising our climate problem:

- a technology problem
- a life style problem
- an inequality problem
- etc . . .

which can lead to proposals such as

- tax breaks on investments in renewable energy technologies
- frequent flyer levies
- voluntary payments to international Green Fund
- unilateral promises of NetZero by 2050
- etc . . .

but these are not solutions to climate change. Focussing on them distracts.

Framing: Managing our Shared Atmospheric Resource

This is not the usual framing, but should be uncontroversial:

A *resource* has value and exists in limited quantity.

It's really the atmospheric assimilative capacity for greenhouse gases at a given temperature which is the resource.

The atmosphere is shared: it doesn't have location.

Bottom line:
Emitting greenhouse gases is equivalent to using a limited shared resource.

Current Management of our Atmospheric Resource?

We pretend the atmosphere has no value; an unpriced externality.

Consequence: when you use fossil fuels you get all the benefit, but the cost is shared globally.

This asymmetry makes it individually rational to use fossil fuels, although it's collectively disastrous.

Solution: Price carbon emissions.

What is climate fairness?

In 1992 the UNFCCC adopted the Common But Differentiated Responsibilities and Respective Capabilities (CBDR-RC) principle:

> *The Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities. Accordingly, the developed country Parties should take the lead in combating climate change and the adverse effects thereof.*

Problem: imposible to operationalise.

The Equitable Atmosphere Declaration

We, the undersigned, believe that:

1. All people must share equal rights and responsibilities to Earth's atmosphere.
2. Failure to explicitly value atmospheric resources leads to overexploitation through accumulation of greenhouse gases; this failure is one of the root causes of climate change.

Therefore, to limit climate change, greenhouse gas emissions should be priced. Reflecting equity, larger than average per capita emitters should pay for using more than their fair share, and lower than average per capita emitters should be paid for using less. Pricing emissions will create economic pressure on everyone to reduce emissions.

Proposal: The Themis Mechanism

The Themis Mechanism works in the following yearly cycle:

1. countries are invited to join the cooperative for a single year, at a pre-fixed price p €/ton CO_2e
2. at the end of the year, countries
   - report their greenhouse gas emissions (using UNFCCC reporting rules)
   - pay their contribution: emissions, times the price p
3. the cooperative immediately re-distributes all the proceeds according to population of the member states (reflecting equitability)
4. member countries vote (by open ballot median vote) for next year's price p.

The first year, the price is set to $p = 0$ €/ton CO_2e.

Some properties of the cooperative

The cooperative is designed to co-exist with (not replace) other initiatives.

A nation's net contribution or payout depends *only* on per capita CO_2e emissions.

The cooperative *immediately* creates strong economic pressure on *all members* to reduce emissions.

Because of the annual cycle, the cooperative builds trust. No long term difficult to verify promisses *necessary*.

Simplicity:

- the cooperative is governed by a single number p
- there is no room for *any* negotiation (which has obstructed past schemes).
- every nation has a single annual binary choice: to join or not.

Transparency: nations only agree to a single year at a fixed, given price p.

Nations can join *conditionally*, eg. only if certain other countries join (the "I will if you will" reciprocity principle).

Themis dynamics

Nations in the global south who typically have low per capita emissions benefit immediately.

Why would higher emitters join:

- it's an effective mechanism which will bring down emissions
- it's based on principle of equitability
- the transparent annual cycle may put pressure on non-members
- no persuasive alternatives

Once a nation has joined, it'll be to their advantage to get other, higher per capita emitters to join.

Non-members must be sanctioned. If you believe in equity, non-membership is unacceptable.

Adjusting the price annually enables the cooperative to adapt to future demands.

The cooperative could be successful without universal membership.

What Themis doesn't do

Themis doesn't address widely differing *historical* emissions.

Insisting on coupling solutions to future and historical emissions may be dangerous.

Conclusions

It is difficult to know whether humanity is able to rise to the climate challenge.

It's important to acknowledge that the Paris Agreement is very unlikely to succeed and why.

Sound mechanisms addressing the fundamental problem: price carbon emissions using the principles of equity.

Much climate awareness is centered on protest. Instead we need concrete, practical solutions. Themis is such a solution.

Next steps: Actually implement the Themis Mechanism.

All truth goes through four stages:

first, it is ignored

second, it is ridiculed

third, it is violently opposed

fourth, it is accepted as self-evident

— adapted from Arthur Schopenhauer

Atmospheric CO_2 concentration and growth rate