Cambridge, July 29th 2025

Response to call for proposals:
Mechanisms for Enhancing and Redistributing Revenues from Solidarity Levies

Proposal: The Themis Mechanism

Terminology clarification:
whereas the call uses the term "solidarity levies", this proposal uses "carbon payments" to describe the same thing: a redistribution of assets to help reduce the effects of climate change.

1. Concept Note

Themis is a proposal for an international mechanism to reduce global greenhouse gas emissions in a fair and effective way. Themis is built on four foundations:

- Our atmosphere is a shared resource, a *commons*. Fossil fuel users reap the full benefit from fuel consumption, while the CO_2 induced climate cost is spread globally. This dilution effect makes continued use rational for individuals but collectively disastrous. To prevent this, we must cooperate to guarantee positive climate results.
- The root cause of climate change is the failure to account for the true cost of emissions. By treating the atmosphere as a free resource, we encourage overexploitation. Themis corrects this *unpriced externality* by pricing greenhouse gas emissions.
- Urgency is paramount. Societal change takes time, but the incentivising mechanisms must work on a faster timescale: this year's emissions, not some time in the future.
- Effective cooperation requires a fair guiding principle. Themis upholds *equity*: that our atmospheric resources should be shared equally between all humans.

A straight forward consequence of pricing greenhouse gas emissions and equity is that above average emitting individuals should pay for using more than their fair share, and individuals emitting less than average should be paid. However, both reporting emissions and handling payments at the personal level in a world with more than 8000 million inhabitants would be highly impractical. Therefore, a practical implementation needs to be hierarchical, using nations as an intermediate level between individuals and humanity as a whole. This works well because nations already have both emission reporting procedures and infrastructure to legislate and handle payments in place. So, Themis will be a combination of a cooperative agreement between member states, and national implementations between individual nations and their citizens. Whereas the international agreement will have identical conditions for all nations (depending only on their emissions and population size), nations are free to implement the national level agreement in any way they wish, reflecting individual circumstances, culture, etc (these are considered internal affairs).

Themis is built entirely on immediate annual commitments. Adherence is verifiable by partners, enabling the building of mutual trust. Themis is governed by a single number, p, the price of emitting one ton of carbon dioxide equivalent, or CO_2e. The annual cycle has four steps:

1. each year, nations report their emissions according to UNFCCC reporting standards.

2. with complete knowledge of all nation's emissions, every nation submits their decision on whether to join Themis at the fixed predefined emissions price, p.
3. at the end of the year, each nation makes (or receives) their payment. The national excess emissions are: the difference between national per capita emissions and the overall Themis member average per capita emissions, multiplied by the size of the population. Then compute the payment value by multiplying the national excess emissions by the pre-specified price, p. Nations with above average per capita emissions will be net contributors, nations with below average per capita emissions will be paid, reflecting equity.
4. members vote on next year's price: Each nation's vote is weighed by their population size. The new price is determined as the median (the middle value) of the weighed votes. The median is chosen to avoid extreme votes having outsized effects on the outcome.

Note, that overall the Themis Mechanism is cost neutral: the sum of the contributions exactly equals the sum of the payments to be received. Also, only per capita emissions are relevant, the absolute size of a country makes no difference. Payments are made for emissions two years previously, because of reporting lag.

The Themis Mechanism creates economic pressure on *every country* to emit less. Large per capita emitters can lower their payments by emitting less, and small per capita emitters can receive larger payments by further reducing their emissions. The Themis Mechanism is deliberately as simple as possible. It is designed for efficiency, eliminating complex negotiations that would delay urgent action. Themis can coexist with other initiatives, including the Paris Agreement.

When deciding whether to join, countries can set conditions: for example, the UK may join only if Germany and France also join, or only if countries responsible for at least 50% of emissions join. Conditions will help implementing reciprocity: I will if you will. If a country which was previously a non-member wants to become a member, then payments must be made right back to the inaugural year; this is to prevent nations from postponing membership, and prevent buildup of new unpaid emissions.

Why will nations join? The main reason to join is that Themis provides a fair and effective mechanism against the effects of climate change. Since climate change is a practically universal problem, it will be in virtually every nation's self-interest to join. This is important: nations don't join because of altruism, but because they value their own nation's future prosperity. There may also be specific national co-benefits to joining: for example, below average per capita emitters will have an immediate monetary interest in joining, nations with few own fossil fuel sources will become less dependent on imports whose prices they can't control, etc.

Themis does not require universal participation to be effective; widespread adoption is sufficient. Universal membership is not necessarily a desirable property, as it gives single nations too much leverage. Therefore a coalition of the willing such as Themis, is more suitable. Members may in time seek to sanction free-riding non-members, but this is not an integral part of Themis. Themis handles embodied emissions: products which require large emissions during their manufacture will rise in price (assuming that free-riders are sanctioned), passing on the price to the end consumer. No pressures to move production to other nations result from Themis, as the emission price, p, is the same everywhere.

The price, p, will start at zero to encourage wide initial adoption and is likely to rise with time. Even when the price is too low to massively reduce emissions, the mere existence of the mechanism and annual membership decisions and the open ballot price vote are a welcome recurring opportunities for nations to show their hand.

Implementation may face some challenges: enforcing emissions reporting standards may be difficult when payments become dependent on emission reporting. However, the possibility of cheating doesn't undermine the Themis idea (like tax-fraud doesn't lead to abandoning income tax). Fraud may result in exclusion. Themis does not resolve differing historical emissions. A different mechanism is needed for historic reparations. Insisting on coupling accounting for historical and future emissions may severely hamper our ability to act urgently. Some nations may choose not to participate for economic or ideological reasons. Nevertheless, for the majority of nations, Themis will be better than its absence.

While Themis is not a complete solution, it is a crucial step toward fair and effective global emissions reduction. Supporting Themis means taking immediate, verifiable action toward a fairer and more effective global climate strategy.

2. Operational Framework

Themis operates on an annual timeline. The annual key milestones are:

- April 14th: UNFCCC reporting deadline for annual national greenhouse gas inventories
- May 14th: Themis membership commitment deadline
- Dec 31st: contribution payment deadline
- Jan 14th: funds redistribution and vote for the coming year's price, p.

The timeline is designed to integrate with the UNFCCC reporting deadlines. All relevant information will be available to every nation one month in advance of the Themis commitment deadline. After commitment, nations will have more than six months to prepare for payments. In the unfortunate, but possible, event that net contributors don't meet their payment obligation by the deadline, they will be excluded, and two weeks delay will be made for other nations to adjust their payments, accounting for the excluded member.

The first operational year will be 2026; for this year, the price, p, will be fixed at zero. This means that on May 14th 2026, every country can join Themis, at no possible cost. Nations who chose to join will then be able to cast their vote for a price for the following year, in January 2027. There is no commitment to join the following year.

Since Themis has been designed for simplicity, governance and oversight should be simple. There are no negotiable terms whatsoever in the mechanism, only the annual price vote (for members) and statement under what conditions a nation will join are possible. In this way Themis is fully specified, on a take it or leave it basis. This structure is necessary to avoid possibly protracted negotiations, which can no-longer be afforded due to the climate emergency. The primary managerial roles will be dissemination of information about the scheme and the annual financial transactions. A small secretariat will have to be established to service these functions.

The operations of the Themis Mechanism will be fully transparent. The reporting of emissions from the UNFCCC process is already open. The decisions to commit to membership, including possible conditions will be made publicly available immediately. The payment of contributions wil be publicly acknowledged, and each nation's price vote will all be reported openly immediately.

3. Financial Considerations

The Themis Mechanism itself is cost neutral by design: the fees are exactly equal to the payments. The management of Themis should be extremely light touch, by leveraging existing mechanisms. The emissions reporting is integrated from the UNFCCC reporting rules as well as timeline. Population estimates (for the emission year) can be obtained from the United Nations Population Division.

The Themis Mechanism has huge potential for leveraging additional funding in both developing and industrialised nations. That's because it strengthens the economic incentives to reduce greenhouse gas emissions. Since Themis is based on a mechanism, rather than donations, the longer term viability of the funding paths are less uncertain, boosting investment confidence. Obviously, the future price of emissions isn't guaranteed, but the annual, transparent price vote builds trust between partners.

The financial management is limited to the annual collection of fees and payments. Disbursements are made 2 weeks after the fees are due on the last day of the year. To limit exposure to currency fluctuations, fees and payments are made using a mixture of currencies: US dollar USD, euro EUR, Chinese renminbi CNY, Japanese yen JPY, and British pound sterling GBP in equal proportions of value. To be specific, when nations vote for next year's price, they can express their price vote in any of the five currencies. The outcome of the vote will be expressed as a sum of five elements in the five denominations (representing equal value at the exchange rates on the day of the vote). All payments are made using a combination of all five currencies (whose exchange rates may have changed by the payment due dates). The small secretariat to implement Themis should be paid for separately; it is an important principle that payments are not seen as taxes, but payments for the use of a resource.

4. Impact and Accountability Measures

The Themis Mechanism will remove a negative externality by pricing carbon emissions. Since current national per capita greenhouse gas emissions are very different, and highly correlated to wealth, paying for emissions and distributing proceeds uniformly to all people via international payments will have an equalising effect. Less developed countries who have generally contributed less to causing climate change will benefit.

Metrics for evaluating effectiveness and impact are two-fold: firstly the size of the monetary transfers will be transparent; secondly, the economic pressure on greenhouse gas emission is expected to cause reductions. The size of both of these effects will depend on what emission prices nations vote for. Accurately assessing the effects of Themis will be difficult as it requires comparison to the counterfactual of events in the absence of Themis.

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