POLICY BRIEF

MINES PARIS

UNIVERSITÉ PARIS SCIENCES & LETTRES

TTI1.5° The Transition Institute

#2 | NOVEMBER 2026

Effective and Fair Climate Policy: The Case for Adopting the General Average Rule

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KEY TAKEAWAYS

CONTEXT

Despite the climate urgency, policies often come up against deadlock. One of the main obstacles is equity [1]. Economic instruments for decarbonization, such as carbon taxes, are contested because of their unequal effects. However, there is no consensus on how to share the burden fairly. Overcoming this impasse requires rethinking how climate change is conceptualized: we argue that climate change not only involves a problem of common resource; it also constitutes a common peril.

OBSERVATIONS

Climate change is generally understood as a "tragedy of the commons" [2]: the atmosphere is a shared resource into which everyone can release greenhouse gases, yet its capacity to absorb these gases without disrupting the climate is limited.

Analysis of the general average principle of maritime law [3–6] provides a framework for conceptualizing a different situation: common peril [5, 7]. When a ship encounters a storm, the entire expedition is at risk. If the captain sacrifices part of the cargo to secure collective rescue, that sacrifice constitutes "general average". In other words, the rule requires that the cost be shared among all beneficiaries of the rescue, with each contributing in proportion to the value of their saver property.

Applying this analysis to climate change yields two main findings. First, climate change exhibits two defining features of what we call a common peril: no one can escape its consequences indefinitely if it remains unchecked; nevertheless, making sacrifices can preserve the threatened community. Second, in the face of such peril, the solidarity principle of general average provides a basis for efficient, fair rescue. By ensuring equitable cost-sharing, it facilitates identifying necessary sacrifices at the lowest cost. The application of this principle also legitimizes these sacrifices and, ultimately, makes rescue possible.

RECOMMENDATIONS

To overcome the current deadlock, we make four proposals:

1. **Recognize climate change as a common peril for humanity.** This recognition is urgently needed to underpin a collective response commensurate with the threat.
2. **Adopt the general average rule as a general principle for allocating costs.** The costs of decarbonization efforts would be shared in proportion to the properties to be preserved for each party – whether an individual, a local community, or a state – at scales ranging from the local to the international.
3. **Designate a legitimate authority to determine which activities must be scaled back, transformed, or phased out to meet global climate goals at the lowest collective cost.** The authority's decisions should draw on scientific knowledge and proposals from the actors concerned.
4. **Organize compensation under the general average rule**, both for those bearing these sacrifices and for loss and damage resulting from delays in undertaking them.

Context and background

Despite the now evident and increasingly indisputable climate emergency, climate policies remain largely deadlocked. Equity is one of the main obstacles.

The injustices caused by climate change are well documented: those most exposed to harm have often contributed the least to greenhouse gas emissions and possess the fewest resources to finance adaptation [8]. However, policies designed to address climate change tend to raise questions of justice: they struggle to reconcile economic efficiency with social equity.

Broadly speaking, climate policies fall into three main categories.

The first prioritizes a principle of equity. The Kyoto Protocol, for example, was based on the principle of "common but differentiated responsibilities" and imposed emissions reduction targets primarily on industrialized countries, which were historically responsible for a large share of greenhouse gas emissions. However, historical responsibility did not secure consensus as a criterion for allocating efforts. Many other equity criteria have since been proposed, but none has achieved consensus [9–11].

A second category prioritizes economic efficiency. Carbon taxes, for example, seek to encourage actors to reduce emissions wherever doing so is least costly. Yet they have strongly regressive effects, placing a proportionately greater burden on those with fewer resources [12]. The pursuit of economic efficiency can therefore conflict with social equity [13].

A third category relies on voluntary commitments, cooperation, and the exploration of solutions at different scales. The Paris Agreement partly follows this approach. While it facilitates participation by a wide range of actors, it guarantees neither that the targets adopted are commensurate with the problem nor that they will be achieved [14]. In addition, it does not ensure that the chosen decarbonization pathways are efficient or equitable.

To overcome this impasse, we propose revisiting how the climate problem is modeled. Climate change should be understood not only as a problem of managing a common resource, but also as a common peril [5, 7]. This reframing points to a specific solidarity rule, inspired by the maritime principle of general average, that could make a fair and efficient common rescue possible.

Observations and key findings

Conventional frameworks for analyzing climate change overlook two essential properties that fundamentally alter the nature of the collective action problem.

From a common resource problem to a common peril

Climate policies have generally treated the atmosphere as a common resource exposed to a "tragedy of the commons" [2]. The risk of overexploitation stems in particular from two properties well established in the literature on the commons.

- The atmosphere is accessible to everyone, and it is difficult to prevent actors from emitting CO_2 into it.

- Each actor derives individual benefits from emissions-generating activities, limiting their incentive to decarbonize, even though cumulative emissions must remain below a threshold beyond which the peril becomes certain.

However, this representation is incomplete. Climate change not only concerns a common resource, it also constitutes a common peril.

We derive the common peril model from an analysis of the maritime rule of general average [4, 16]. The rule is among the oldest laws of international trade, and establishes a principle of solidarity that enables a ship's captain to respond to a peril threatening both the vessel and its cargo [3, 7, 17]. The principle is straightforward. In the face of peril, the captain may decide to sacrifice certain goods – for example, by jettisoning cargo – when doing so is necessary to secure the common safety. Losses deliberately incurred for the common safety qualify as "general average." Their cost is not borne solely by the owner of the sacrificed property; it is shared among all those whose property has been rescued – cargo owners and the shipowner – in proportion to the value of each party's property saved at the destination.

This rule is particularly relevant to climate action because it provides a framework both for identifying a situation of common peril and for organizing a collective rescue that is economically efficient and socially fair.

Two additional attributes change the nature of the problem

The common peril model adds two critical attributes to the common resource model.

1. There is no "escapability" from the peril.

The atmosphere is indeed a common resource from which it is difficult to exclude anyone. Conversely, however, when that resource is severely degraded, no one can escape the consequences of climate disruption indefinitely.

2. Targeted sacrifices can provide a basis for collective rescue.

Individual incentives to reduce emissions are not spontaneously sufficient. Nevertheless, we know that abandoning certain emissions-generating activities could offer a route to rescue.

In a situation of common peril, therefore, the absence of a legitimate rule creates a high risk of conflict or arbitrarily imposed sacrifices.

The solidarity rule separates rescue decisions from the allocation of their costs

In the face of a common peril, the general average rule offers a way to avert such violence. The solidarity rule is established ex ante: the sacrifices necessary for rescue can be chosen on the basis of their efficiency, while their costs are subsequently shared among all those who benefit from the rescue.

This separation has two major effects.

First, it makes climate action legitimate and equitable by treating it as an extraordinary effort undertaken for collective rescue. Indeed, sharing the burden in proportion to the value of what is preserved for each party is the only criterion consistent with the purpose of rescue; any other allocation would require some parties to bear the cost of saving the wealth of others. This could be perceived as unfair and thus obstruct action.

Second, the rule enables an efficient rescue, i.e. achieved at the lowest cost. The captain,

drawing on their expertise, has the leeway to determine which sacrifices are strictly necessary to secure collective rescue. However, since all parties involved will contribute to the total rescue cost, all also have an interest in minimizing it. The rule thus encourages cooperation and creates a collective incentive to find solutions that reduce the overall cost of rescue.

Recommendations and implementation

The common peril model derived from the general average rule fundamentally reframes climate policy. It leads us to make the following recommendations.

1. Recognize climate change as a common peril for humanity

Given the urgency, it is essential to recognize that climate change exhibits both of the defining characteristics of a common peril:

- If the climate is severely disrupted, no one can find lasting refuge on an uninhabitable planet. There is therefore no lasting "escapability," even though the damage is distributed very unevenly.
- Scaling back or abandoning certain emissions-generating activities can provide an effective route to rescue. However, sacrifices must not be imposed in authoritarian, arbitrary, unjust, or violent ways.

2. Adopt a solidarity rule that allocates the costs of decarbonization in proportion to the values to be preserved

At the international level, countries with greater wealth and capabilities should contribute more to the cost of collective rescue. While this criterion may overlap with historical responsibility for emissions, it is distinct: a developed country that has substantially reduced its emissions would still contribute to collective rescue in proportion to its wealth, because that wealth represents the benefit it would derive from being rescued.

The rule could apply at different scales: local and regional authorities, states, regional groupings, and the international community. Internationally, its adoption could be placed on the climate negotiation agenda and debated at a forthcoming Conference of the Parties (COP).

3. Designate a legitimate authority to determine the sacrifices needed to achieve climate goals at the lowest collective cost

Applying the general average rule to climate change requires an international organization capable of identifying and coordinating the sacrifices necessary for rescue. Although there is no global "captain," such an organization could draw on an existing infrastructure of expertise and cooperation.

The first task would be to identify the necessary sacrifices and explore transformations that would enable climate goals to be achieved at the lowest cost. This process could draw on multiple sources of expertise, notably the Intergovernmental Panel on Climate Change (IPCC), as well as cooperation among states and the actors concerned.

The next task would be to coordinate decisions and organize their implementation. The bodies of the United Nations Framework Convention on Climate Change (UNFCCC)

and the Paris Agreement provide forums for decision-making and coordination whose mandates and resources could be adapted to implement the agreed sacrifices within specified time frames.

4. Organize compensation for those bearing the sacrifices, in accordance with the solidarity-centered general average rule

The general average rule pools the cost of sacrifices among all those who benefit from rescue, corresponding to the value of what is preserved for each.

Pooled compensation mechanisms already exist and could be mobilized to organize compensation under the general average rule. These include France's natural catastrophe insurance scheme, Cat Nat; the European Union's Just Transition Mechanism; and, internationally, the Green Climate Fund (GCF) and the Global Environment Facility (GEF). These instruments would not necessarily need to be merged, but their action should be coordinated, for example under the auspices of the COP.

Implementing compensation would, however, require agreement on several issues.

First, the sacrifices must be assessed and what is to be preserved must be valued, in order to determine each party's contribution. This valuation should extend beyond financial wealth to encompass human development, educational capabilities, infrastructure, and natural and cultural heritage.

Second, the rule's temporal scope must be defined. This requires collective agreement on a date from which a decarbonization effort can qualify as "general average": a sacrifice necessary for the common rescue that therefore qualifies for collective cost-sharing.

Finally, this compensation approach could be extended to loss and damage caused by climate change. To the extent that such harm results from insufficient or delayed sacrifices necessary for collective rescue, its costs could be shared under the same solidarity rule. COP27 established the Fund for Responding to Loss and Damage (FRLD) to support particularly vulnerable developing countries. However, its funding has relied on voluntary contributions, which are insufficient. The general average approach would provide a basis for financing the fund at a level commensurate with needs.

5. Extend the model to other common perils

The common peril model can apply to other situations. Biodiversity collapse, soil degradation, and threats to water resources also exhibit the characteristics of common peril. It is therefore urgent to explore, in each case, the conditions for establishing a solidarity rule inspired by general average, in order to organize protective action that is effective, equitable, and collectively acceptable.

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