

Burning Embers and Beyond: The Role of Typologies in Defining Dangerous Outcomes

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Abstract

This paper examines what kind of framework or frameworks are appropriate for generating shared understandings of dangerous outcomes. It will enable a more thorough understanding within the scientific community about the kind of thresholds or guiding posts relevant for analyzing climate impacts and their implications for policy in terms of the timing and range of options? This paper contributes to answering these questions by focusing on the current debates within the scientific community about understandings of dangerous climatic interference, identifying the merits and drawbacks of different frameworks or typologies in delineating the range of thresholds/guiding posts policy-makers would find useful in considering policy options to avoid dangerous impacts.

1. Introduction

In setting the agenda for the Exeter Conference, Prime Minister Blair asked that two “big questions” be addressed: what level of greenhouse gases in the atmosphere is *self-evidently* too much? And what *options* do we have to avoid such levels? But what we come to regard as *self-evident* depends on shared interpretations of the problem and framing processes that make those problems coherent with belief systems. And these in turn provide guiding posts for analyzing the range of *options* scientists identify as useful inputs for policy-makers to determine the timing, scale and nature of actions. A third big question Prime Minister Blair might have added then is what kind of framework or frameworks are appropriate for generating shared understandings of dangerous outcomes to enable a more thorough understanding *within the scientific community* about the kind of thresholds or guiding posts relevant for analyzing climate impacts and what are their implications for policy in terms of the timing and range of options?

We argue this third question is at least as important as the first two. And that it is particularly timely for the Exeter Conference to address as the scientific community commences preparatory work for the next IPCC Assessment Report and policy-makers gear up to how they will absorb and make use of scientific findings generated by the Exeter conference and, in due

course, the Fourth Assessment Report. This paper contributes to answering this third question by focusing on the current debates *within the scientific community* about understandings of Article 2, identifying the merits and drawbacks of different frameworks or typologies in delineating the range of thresholds/guiding posts policy-makers would find useful in considering policy options to avoid dangerous impacts.

2. Scope and Structure of Paper

The paper is structured as follows. **Section 1** briefly addresses the nature of dangerous anthropogenic interference set out in Article 2 of the UN Framework Convention on Climate Change. The section addresses the nature of the requirement of Article 2, that it is an environmental requirement, what scale of impact is appropriate for triggering the article, (global, regional, national, local), and what it implies given the inevitability of some level of climate change.

The core of the paper is set out in **Section 2**. It considers how the scientific community has tried to address Article 2 considering that determination of "dangerous" is a value judgment and should be left to political decision makers and international negotiators. This section describes the frameworks and typologies used by the scientific community to organize the scientific literature on climate impacts in a manner considered useful to policy-making. We focus, for example, on the contribution made by the "burning embers" framework set out in the IPCC Third Assessment Report, identifying the merits and drawbacks of that framework.

We show that much useful light can be shed on "dangerous" by an analysis of its potential meaning and interpretation. We try to provide this by analyzing how different typologies would illuminate our scientific understanding of outcomes (consequences) of climate change in spatial, temporal, and social terms. Thus we ask, for given levels of climate change who and what is at risk, where will these risks be manifested and at what time? We try to do so by focusing on issues raised by the three imperatives set out in Article 2 itself: allowing ecosystems to adapt naturally, avoiding threats to food production and ensuring that economic development proceeds in a sustainable manner. We do not attempt to provide a determination of "dangerous" or "dangerous level" but aim more modestly, through a process of deconstructing the possible meanings and interpretations relevant to Article 2, to elucidate how we might better organize our climate impacts knowledge in a way which clarifies the environmental, economic and social equity implications of different policy choices. This issue – of how best to organize and present our knowledge – often falls between institutional gaps – scientists are overly focused on *producing* knowledge and policy-makers focus on its *use* with neither engaging sufficiently on the nexus between the two. By encouraging debate on this issue, the Exeter conference would generate benefits to the scientific and policy making community alike.

Climate change is a relatively "young" international issue and its scale and complexity present many unique scientific, social, economic and political challenges. This gives rise to tendencies to disregard the body of academic literature and experience that has built up in other international and regional environmental regimes when dealing with complex scientific/policy problems. **Section 3** of the paper provides an account of how the scientific and policy-making organs established by other international environmental regimes have devised an effective "division of labour" that permits joint engagement with the problem whilst respecting the different types of expertise and roles scientists and policy-makers can, and want to play. We focus, in

particular, on the role different kinds of typologies have played in fostering this division of labour demonstrating that typologies play an important factor in the relative stability and subsequent policy coherence other regimes have been able to achieve.

The **concluding section** synthesizes key questions and comments that might lead to further debate on how the scientific and policy community can move together on understanding the challenges presented by organizing scientific knowledge about dangerous impacts. We argue that the value and implications of different ways of organizing our knowledge of climate impacts need to be understood more broadly - within the scientific and policy-making community – than is currently the case. In the early years of the regime, for example, there was little understanding and no common framework concerning the treatment of scientific uncertainties, leading eventually to analytical work and guidance which is now of use to scientists and policy-makers alike. The generation of common data sets aside, the development of the SRES scenarios also served the broader function of generating a degree of coherence about future development pathways. Thus far from being a distraction from the core task of producing knowledge, additional analytical work and a more focused process to enhance understanding of how the climate community responds to different literatures, disciplines and definitions of “dangerous” would advance the work of the scientific and policy making community.

3. Outline of Topics for sections 1-3 of the Paper

Section 1: Dangerous Impacts and Article 2: Background

- What role does Article 2 play in the climate change regime? Environmental goal, must be achieved at lowest cost – cannot be set aside because it costs too much.
- Who needs to determine what is “dangerous” i.e., at what scale is “dangerous” meant to apply?
- Can we avoid “dangerous” given existing concentrations and in-built inertia? How does this clarify the scope of “options” we put forward?

Section 2: Scientific Frameworks and Typologies

- What are frameworks and typologies and why do we need them?
- What ones are prevalent in climate impacts literature?
- What do these imply for what is defined as being of “value” in defining dangerous?
 - Ecosystems
 - Food production
 - Avoiding disruption to economic development
- Burning Embers? Icons? Human well-being approaches? Intrinsic value concepts?
- Merits and drawbacks of various typologies in terms of
 - Geographic scale: global thresholds, regional and community/household issues
 - Governance levels: do scales coincide with those will be the relevant decision-makers? And how do we link the two
 - Context: Comparison of climate change as a driver vis a vis other drivers
 - Time: What if what may be dangerous changes over time, e.g., becomes more dangerous or less dangerous?

Section 3: Typologies in Other Regimes

- Which regimes are useful?
- CITES (*endangered* animals, intrinsic value of wildlife focus changing slowing to sustainable development framework)
- Montreal Protocol (focus on precautionary avoidance of damage to human health)
- LRTAP & Air Pollution Protocols (focus on human health, ecosystem conservation & amenity, plus economic resources/efficiency gains - going from single pollutant to multi-pollutant approach)
- Role of scientific bodies and the dynamics of regime development: when did key developments in science lead to action and what contribution did typologies make?