



## Eugene Linden, *Fire & Flood: A People's History of Climate Change, from 1979 to the Present*

Allen Lane, 2022, 291 pp., ISBN: 978-0241565551

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Published online: 6 July 2022

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A young climate activist from Uganda, Hilda Nakabuye, told political leaders at a recent UN Climate Conference: “You’ve been negotiating for the last 25 years, even before I was born. I am the voice of the dying children, displaced women, and people suffering at the hands of a climate crisis created by rich countries.” It is a stark reminder of the long-term failure by states, institutions, companies, and individuals to arrest the climate change–led degradation of planet Earth both for present and future generations. In this award-winning book, author Eugene Linden seeks to explain how this failure has come about by chronicling, decade by decade, the personalities and events that have contributed to placing the planet on the edge of potentially catastrophic climate tipping points.

The first impression for a reader, however, is simply how well written this text is. It is the product of an experienced proponent of word craft that compels the reader to assimilate a deeper understanding of the catalogue of missed opportunities that have left us in our present jeopardy. Linden takes the reader on a journey through time that exudes a most professional approach based on insight and an intimate familiarity with the topic acquired over a three decade long involvement. This involvement has extended to interaction with distinguished climate scientists, US Presidents, Presidential candidates, and senior White House officials, as well as bringing the climate change message to a popular audience through his writings in *Time* magazine and various opinion pieces in mainstream media outlets.

Like many other histories of the climate change narrative, the text is written from a US perspective and identifies the early stirrings of concern as dating from Jules Charney’s report to President Carter in 1979 and Jim Hansen’s testimony

to the US Senate during the sweltering summer of 1988. While these were key events in sensitising people and decision-makers to the emerging issue of climate change in the USA, it could be argued that these concerns were imported rather than originating there. Indeed climate scientists outside the USA were active on the topic years earlier. The author does not really acknowledge the role of the International Council for Science (ICSU) and the World Meteorological Organization (WMO) who, in response to a UN General Assembly Resolution of 1961, triggered the formation of the WMO World Weather Watch and Global Atmospheric Research Program. From these bodies, concerns regarding climate change were already emerging in the 1970s and, from them, the United Nations Framework Convention on Climate Change and the Intergovernmental Panel on Climate Change would ultimately develop. But a rather narrowly focussed US scope is about the only criticism that can be levelled at this otherwise great read.

Linden charts the missed opportunities and obstructive barriers to taking effective action on emissions reductions in a series of chapters, each dealing with a theme predominating during that decade. So for the 1980s, for example, he focuses on the missed opportunities of the Reagan years when tax benefits for the emerging technologies of solar power were removed and when industrial interests began to mobilise in opposition to any attempts to threaten their monopolies. The stifling of renewable energy technologies is identified by him as especially unfortunate. One statistic quoted is particularly poignant. When President Carter took office in 1977, a watt of solar power costs \$77—today the same unit costs less than 70 cents. Where would we be today is the question left hanging if successive Presidents such as Regan and Bush had been more supportive? Good intentions often wither on the branch once politicians assumed office and still do to the present day. Linden recounts how George H. Bush honoured a campaign pledge to convene a wide-ranging international conference on

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climate change after his election. But the briefing papers for his cabinet members warned them against using phrases such as ‘global warming’ or ‘greenhouse effect’—something rather difficult to do in such a conference!

It was in the 1990s that the author believes the battle was lost. Despite growing scientific consensus, he suggests the political system responded instead to a fossil fuel lobby that drowned out the scientific message and sought to demonise climate scientists. Despite the growing certainty provided by major advances in climate science, the weaknesses inherent in science communication meant the public were not being made aware of the seriousness of the problem. The average person does not get their scientific information from journals or conference proceedings. Rather it is the mainstream media that distils the message. In this period, a misplaced media preoccupation with ‘balance’ also incorporated denialists and contrarians to the extent that the public were left wondering what conclusion they should draw, given the uncertainties and contrary opinions on display. The author rightly identifies the reluctance of the scientific community to pin their colours to the mast on crucial questions as factors contributing to “defang the startling and alarming scientific discoveries” emerging (p. 75). Given his own efforts in writing in mainstream popular media outlets, his frustration at the failure of the scientific community to get their message across, lest they be labelled ‘alarmists’, is palpable.

In this emphasis on conservative messaging that highlights scientific uncertainty, Linden claims the Intergovernmental Panel on Climate Change (IPCC) was indirectly and inadvertently complicit. Indeed throughout the text, the author is scathing about the IPCC which he sees as an unwelcome filter between climate science and the public. In particular, the ability of governments to ‘tweak’ the final version of the Summary for Policymakers (the only part most decision-makers read) to reflect political priorities and defuse the sense of urgency expressed in the individual scientific chapters of the lengthy assessment reports, represented for corporate lobbyists, he argued, “a gift from God”. Even more recent reports were, he argued: “written in the maddening, plodding prose of a document subject to a thousand editors.” (p. 213)

A useful framework for the text is provided by the author’s perception that climate change concerns evolve based on four different ‘clocks’. The first is the real time clock of climate change, speeding forward with accelerating global warming, accelerating sea level rise, and throwing up almost daily records around the world as extreme events herald the adverse consequences of the experiment humankind is conducting with the atmosphere. Second, is the scientific clock which the author argues lags behind reality. For long, scientists believed climate change was a slow onset event, only in recent decades acknowledging that abrupt change can occur and is indeed an intrinsic quality of the climate system. Despite this, however, the cycle of publications and research continues to

keep this clock a few years behind the reality version. Clock three is indicative of public perception of the risks involved with climate change and shifts not gradually, but in steps as science and risk awareness evolves. At present, Linden argues, a spike is evident as society’s perceptions of risk are being heightened by extreme weather events across the world. This is especially true of the developed world where such recent extreme events have catalysed a shift in the public consensus. No longer is climate change something for the developing world alone to be concerned with. It is now hitting rich nations in their pocket, as the author emphasises. But over a longer time period, Linden claims this clock lags both the reality and science clocks by a decade or more. This seems a valid conclusion for the USA, but perhaps not for Europe and other developed countries where society is better served by objective science communication. Finally, the author identifies clock four which marks the understanding of business and finance interests. Until quite recently, the author argues, this lagged even the public clock, since its main driver was how actions to mitigate climate change might impair profits. In some ways during the 1990s and 2000s, the author hints, this clock sought to run backwards.

Interestingly, the clocks do not include a political clock. Again this is because the author believes politicians are reactive and follow the lobbying from economic interests predominantly. This is a damning indictment of the lack of political leadership on this issue which recurs frequently throughout the text, though it is perhaps not an adequate recognition of circumstances outside the USA. It was after all mainly the EU that kept the flame of international action burning after the disastrous Copenhagen COP and through the dispiriting years of Reagan, Bush, Clinton, and Trump when the USA effectively disengaged from the problem. To be fair to politicians who passed climate legislation in several countries, sometimes against the powerful lobby groups of vested interests, their clock was operating, albeit at a rate far too slow to make a big difference.

The turn of the century brought growing concerns regarding sea level rise and the contribution being made to it by the West Antarctic ice sheets. With this, and oceanic storms such as Katrina, came a realisation that protections for property that had existed for many decades were going to be insufficient for the new climate regime. In addressing this changed risk, Linden points to the failure of classical economics to effectively quantify costs and incorporate risk into the insurance system. For example, mainstream economists were unable to handle the costs of second-order impacts such as fires, and estimates by leading economists pitched the cost of a three degree centigrade warming on the US economy of around 1% of national income. This is in stark contrast to a very recent estimate by a reinsurance group and development agency that the cost to the global economy of a 2.6 degree warming would amount to 13.9% of GDP each year relative to a world without warming. And yet in

the early days of the new millennium, it was the classical economists who held sway with decision-makers and provided grist to the mill of the thriving denialist movement.

One of the mysteries of the financial and economic response to climate risks that were manifestly increasing was the lack of response from the insurance industry. One would imagine that, for example, estimates of a direct major hurricane hit on Miami that would cost somewhere between \$50 and \$100 billion would revolutionise the insurance industry sufficiently for them to exert major influence on politicians to tackle emissions reductions. Linden provides good insight on why this didn't happen, based on his own experience of interactions with the insurance industry. Certainly the big reinsurance companies were alert to the danger and sought to sensitise ordinary insurance companies to the need to incorporate potentially catastrophic risks in their premia. But this just didn't happen. Insurance premia are typically only for a single year. The risk of a named event happening in a particular year is small and could be offloaded to private investors willing to gamble on it not occurring in a particular year. The incentive to sell policies at a local level, even in areas of known risk, thus continued. Risk of e.g. coastal flooding was effectively outsourced. Ultimately, realisation of the consequences of underpricing risk would only come via the housing/mortgage crash of 2008 where similar gambling approaches came unstuck in a big way. Even today offloading of risk continues, aided in some cases by safety nets provided at governmental level. Linden rightly exposes the way in which this convoluted financial arrangement facilitated business as usual and gave comfort to individuals that climate change would not bring for them the disastrous consequences that the science was suggesting. For the majority of the world however insurance was never an option and losses just had to be borne. In the decade from 2010 to 2019, weather-related disasters cost \$3 trillion. Most of the disasters occurred in countries that had not significantly contributed to the climate change problem, a festering sore that emerges increasingly at the annual COP meetings.

It is partly understandable, therefore, that rapidly developing giants like China and India looked to what was happening, or rather not happening, in the big industrialised countries, especially the USA, and took a decision to lock in fossil fuelled development strategies. Chinese greenhouse gas emissions quadrupled between 2000 and 2019, as did their coal consumption. To make matters worse, the developed world continued to provide generous taxpayer subsidies to facilitate fossil fuel consumption. Linden quotes the International Monetary Fund who put the figure for explicit and implicit subsidies at a horrendous 6.3% of global GDP in 2015.

As the reality of climate extremes began to bite in the 2010s, the author argues the private sector began a major shift designed to mitigate its impacts on the environment. Spurred

on by consumer sentiment and the threat of legal action from, especially, young people, the pendulum swung away from worrying about profits being reduced by sustainability actions, to weighing the costs of inaction. In this sense, the author believes the business 'clock' has begun to race ahead of even the public clock and has largely caught up with the science clock. This, though, seems prematurely optimistic given the polarisation of views and the political partisanship which increasingly characterises the US approach to climate change action. Indeed the author acknowledges that the fatal flaw of the capitalist system is that it can't accommodate collective action and inhibits progress based on consensus. This leaves the field open to politicisation of climate issues and a growth of partisanship which Linden admits has "shaken me to the core".

Although the text is highly critical of multilateralism as expressed through the IPCC, Kyoto Protocol, and Paris Agreement, the author does a somersault in the final chapters. In his consideration of what future strategy should be considered, he acknowledges that only a global approach based on climate tariffs offers a way ahead. This reviewer agrees that only when the true cost of pollution is priced into export products will an incentive exist for some countries to take the problem seriously. But if the young person quoted at the beginning of this review thought the IPCC and UNFCCC were slow processes, how much slower would the reform of the World Trade Organization take to achieve universal agreement on a global system of tariffs?

Ultimately, Linden concludes that the economic system is unsustainable. While he rightly suggests that the collapse of an unsustainable system does not guarantee its replacement with a better one, there is a guarantee that an unsustainable system will ultimately collapse. This is the ultimate nature of the climate change 'wicked problem'.

In this beautifully written and insightful text, the author takes us on a journey through time that demonstrates ultimately that nation states and commercial interests act like individuals in their own self-interest. Garrett Hardin's seminal 'Tragedy of the Commons' (1968) is well corroborated and, like in this analogy, time is ultimately the decisive factor. Time is something however that is not available. In the climate change problem, the clocks are all rapidly approaching midnight.

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**Reviewer:** John Sweeney, an emeritus professor at Maynooth University, Ireland, contributed to the reports of the Intergovernmental Panel on Climate Change, which was jointly awarded the Nobel Peace Prize in 2007. He has published over 100 scientific papers and authored/edited/co-authored four books on various aspects of climatology and climate change in Ireland.