

**Climate
Crisis and
the Global
Green New
Deal**

**Noam Chomsky
Robert Pollin**

with C. J. Polychroniou

First published by Verso 2020
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1 3 5 7 9 10 8 6 4 2

Verso

UK: 6 Meard Street, London W1F 0EG
US: 20 Jay Street, Suite 1010, Brooklyn, NY 11201
versobooks.com

Verso is the imprint of New Left Books

ISBN-13: 978-1-78873-985-6
ISBN-13: 978-1-78873-987-0 (UK EBK)
ISBN-13: 978-1-78873-986-3 (US EBK)

British Library Cataloguing in Publication Data

A catalogue record for this book is available from the British Library

Library of Congress Cataloging-in-Publication Data

Names: Chomsky, Noam, author. | Pollin, Robert, author.

Title: The climate crisis and the global green new deal : the political economy of saving the planet / Noam Chomsky and Robert Pollin with Chronis Polychroniou.

Description: First edition paperback. | London ; New York : Verso Books, 2020. | Includes bibliographical references and index. | Summary: "An inquiry into how to build the political force to make a global Green New Deal a reality"— Provided by publisher.

Identifiers: LCCN 2020021851 (print) | LCCN 2020021852 (ebook) | ISBN 9781788739856 (paperback) | ISBN 9781788739863 (ebk)

Subjects: LCSH: Green movement—Political aspects. | Green movement—Economic aspects. | Climate change mitigation—Political aspects. | Climate change mitigation—Economic aspects. | Capitalism—Environmental aspects.

Classification: LCC JA75.8 .C46 2020 (print) | LCC JA75.8 (ebook) | DDC 363.738/7461—dc2 3

LC record available at <https://lcn.loc.gov/2020021851>

LC ebook record available at <https://lcn.loc.gov/2020021852>

Typeset in Adobe Garamond Pro by Hewan Text UK Ltd, Edinburgh
Printed and bound by CPI Group (UK) Ltd, Croydon CR0 4YY

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Introduction

Since the origins of civilized social order, the human race has faced a full gamut of severe challenges and deadly threats, ranging from famines and natural disasters (floods, earthquakes, volcanic eruptions, and so on) to enslavement and wars. In the first half of the twentieth century, humanity experienced two world wars and the emergence of the greatest genocidal regime ever. Over the second half of the twentieth century, we have lived with the threat of nuclear annihilation hanging over our heads like Damocles' sword. As I write in April 2020, we face the global COVID-19 pandemic and accompanying economic collapse. Nobody knows at this point how many people will die as a result of the pandemic. We also cannot yet know how severe will be the subsequent recession. The signs point to a crisis of at least the severity of the 2007–09 Great Recession and perhaps comparable to the 1930s Depression.

Nonetheless, a strong case can be made that humanity faces its greatest existential crisis ever with climate change. That is, trapped carbon dioxide and other greenhouse gases resulting, first and foremost, from burning oil, coal, and natural gas to generate energy, are raising average temperatures in all regions of the globe. The consequences of a hotter planet include increasing incidences of heat extremes, heavy precipitation, droughts, sea level increases, biodiversity losses, and corresponding impacts on health, livelihoods, food security, water supply, and human security. Meanwhile, climate denialism maintains a strong grip over much of the human race, especially in the United States. This is due in part to the fossil fuel industry's relentless propaganda and obfuscation campaigns over decades. It is also linked to the unlikely outcome of Donald Trump, the Climate-Denier-in-Chief, somehow making it into the White House with his November 2016 election victory over Hillary Clinton. President Trump has gone so far as to declare global warming a "hoax" and to pull the United States out of the 2015 Paris Climate Agreement, which was endorsed by 195 countries, including the United States under Barack Obama.

Still, one cannot deny the impact that fear of the unknown and the potential loss of jobs may be exerting on people when they resist the reality of global warming. This is exactly why it is so important that any plan to effectively combat the climate crisis must include provisions that ensure workers are able to make a fair transition to a carbon-free economy. More specifically, any version of the widely discussed Green New Deal project must include these priorities:

1. Greenhouse gas emissions reductions will at least achieve the targets set in 2018 by the Intergovernmental Panel on Climate Change, namely a 45 percent reduction in global emissions by 2030 and the attainment of net zero emissions by 2050.

2. Investments to dramatically raise energy efficiency standards and equally dramatically expand the supply of solar, wind, and other clean renewable energy sources will form the leading edge of the transition to a green economy in all regions of the world.

3. The green economy transition will not expose workers in the fossil fuel industry and other vulnerable groups to the plague of joblessness and the anxieties of economic insecurity.

4. Economic growth must proceed along a sustainable and egalitarian path, such that climate stabilization is unified with the equally important goals of expanding job opportunities and raising mass living standards for working people and the poor throughout the world.

A global Green New Deal that includes these four priorities is, in fact, the only viable solution available to us if we hope to avoid the catastrophic repercussions of persistently rising average global temperatures. Given the absence of such a coherent Green New Deal program, all international climate summits that have occurred thus far, including the twenty-fifth UN-sponsored Conference of the Parties (COP25) held in Madrid in December 2019, have failed to

put the world onto a viable climate stabilization path. Even the much-celebrated COP21 conference in Paris in 2015 mainly produced another round of ritual inaction. Because of these failures, the world is already hotter by over 1 degree Celsius (1.8 degrees Fahrenheit) above preindustrial levels, and on its way to 1.5°C (2.7°F) warmer within another decade or two.

The catastrophic consequences that will result from unchecked climate change are described in detail in the analyses found in this book by its two authors, Noam Chomsky and Robert Pollin. Noam Chomsky, of course, has been the world's leading public intellectual for more than half a century now. He is also the father of modern linguistics. His work in that field has exerted tremendous influence in a wide variety of other fields, including mathematics, philosophy, psychology, and computer science. Robert Pollin is a world-renowned progressive economist who has been a leader fighting on behalf of an egalitarian green economy for more than a decade. He has produced a large number of important publications as well as commissioned studies on implementing Green New Deal programs in countries around the world as well as multiple US states. He also served as a consultant to the US Energy Department on implementing the green investment components of the 2009 American Recovery and Reinvestment Act, the Obama economic stimulus program that included \$90 billion in funding for investments in renewable energy and energy efficiency.

The global Green New Deal program that Pollin outlines in this book is strongly endorsed by Chomsky. Pollin shows how all four criteria listed above for such a program are readily achievable, when considered strictly in terms of the

technical and economic obstacles to be overcome. Beyond all such technical and economic challenges, the most daunting obstacle to success is mounting the necessary political will to defeat the gigantic vested interests and resources of the global fossil fuel industry.

This book includes four chapters. Chapter 1, titled “The Nature of Climate Change,” begins by situating the challenge of global warming alongside other crises that the human race has faced in the past. The chapter then offers detailed critiques on an array of major questions, such as why market-driven proposals to tackle the climate crisis are doomed to failure and why alternatives to industrial agriculture are of immense importance to reaching a viable climate stabilization path.

Chapter 2, titled “Capitalism and the Climate Crisis,” presents clear theoretical and empirical discussions of the connections between capitalism, environmental destruction, and the climate crisis. It also offers valuable insights on whether capitalists’ werewolf hunger for profits can be, in any way, reconciled with the imperative of stabilizing the climate. This chapter also examines the reasons why political action has thus far failed to make significant advances in tackling the crisis.

Chapter 3, titled “A Global Green New Deal,” describes the program that is needed to achieve a successful transition to a green economy. Pollin sketches out what a global Green New Deal entails and how it can be financed. He also describes the ways through which such a program can become a bulwark against the long-term rise of inequality that has prevailed under forty years of global neoliberalism. Pollin also provides a critical assessment of the European

Union's own plan for what it has termed its "European Green Deal." Chomsky then closes the chapter by considering the nightmarish scenario of millions of people from the global South trying to migrate to the high-income countries of the global North as the catastrophic effects of global warming intensify with time.

The fourth and last chapter of the book is titled "Political Mobilization to Save the Planet." It addresses questions such as how the climate crisis might affect the global balance of power, whether eco-socialism has the potential as a politico-ideological vision to mobilize people in the struggle to create a green future, and what the connections are between climate change and the 2020 COVID-19 pandemic. The overarching question that animates this chapter is the most basic one: what needs to be done to advance a successful political mobilization on behalf of a global Green New Deal.

In my view, this little book that the reader holds in their hands is critically important. There should be food for thought in it for everyone—scholars, activists, and lay people alike. Of course, it is only one modest contribution toward a public dialogue that must continue to expand until it reaches all levels of society in all regions of the globe. Pushing that global dialogue forward, even by a small amount, is the least we all owe to the next generations. With that in mind, I wish to extend my most heartfelt thanks and deepest gratitude to Noam Chomsky and Robert Pollin for allowing me to travel with them on this journey to help inform the public about how we can all save the planet.

C. J. Polychroniou
April 2020

The Nature of Climate Change

Over the last couple of decades, the challenge of climate change has emerged as perhaps the most serious existential crisis facing humanity but, at the same time, as the most difficult public issue for governments worldwide. Noam, given what we know so far about the science of climate change, how would you summarize the climate change crisis vis-à-vis other crises that humanity has faced in the past?¹

Noam Chomsky: We cannot overlook the fact that humans today are facing awesome problems that are radically unlike any that have arisen before in human history. They have to answer the question whether organized human society can survive in any recognizable form. And the answers cannot be long delayed.

The tasks ahead are indeed new, and dire. History is all too rich in records of horrendous wars, indescribable torture,

massacres, and every imaginable abuse of fundamental rights. But the threat of destruction of organized human life in any recognizable or tolerable form—that is entirely new. It can only be overcome by common efforts of the entire world, though of course responsibility is proportional to capacity, and elementary moral principles demand that a special responsibility falls on those who have been primarily responsible for creating the crises over centuries, enriching themselves while creating a grim fate for humanity.

These issues arose dramatically on August 6, 1945. Though the Hiroshima bomb itself, despite its horrendous effects, did not threaten human survival, it was apparent that the genie was out of the bottle and that technological developments would soon reach that stage—as they did, in 1953, with the explosion of thermonuclear weapons. That led to the setting of the Doomsday Clock by the *Bulletin of Atomic Scientists* at two minutes to midnight—meaning global termination—a dread setting to which it returned after Trump's first year in office, describing the next year as “the new abnormal.”² Prematurely. In January 2020, thanks largely to Trump's leadership, the clock was moved closer to midnight than ever before: 100 seconds, dropping minutes for seconds. I won't run through the grim record, but anyone who does will recognize that it is a near miracle that we have survived thus far, and the race to self-destruction is now accelerating.

There have been efforts to avert the worst, with some success, notably four major arms control treaties: ABM, INF, Open Skies, and New START. The Bush II administration withdrew from the ABM Treaty in 2002. The Trump administration withdrew from the INF Treaty in August 2019,

timing its withdrawal almost exactly with Hiroshima Day. It has also indicated that it will not maintain the Open Skies or New START Treaties.³ That will mean that all bars are down and we can race toward terminal war.

The general “reasoning”—if one can use that word for total madness—is illustrated by the US withdrawal from the INF Treaty, followed predictably by Russia’s own withdrawal. This major treaty was negotiated by Reagan and Gorbachev in 1987, greatly reducing the threat of war in Europe, which would quickly become global, hence terminal. The US claims that Russia is violating the treaty, as the media regularly report—failing, however, to add that Russia claims that the US is violating the treaty, a claim taken seriously enough by US scientists that the authoritative *Bulletin of Atomic Scientists* devoted a major article to expounding it.⁴

In a sane world, the two sides would move to diplomacy, bringing in outside experts to evaluate the claims, and then reaching a settlement, as Reagan and Gorbachev did in 1987. In an insane world the treaty would be abrogated and both sides would merrily proceed to develop new and even more dangerous and destabilizing weapons, such as hypersonic missiles, against which there is no currently imaginable defense (if there are defenses against any major weapons systems, a dubious prospect).

Our world.

Like the INF Treaty, the Open Skies Treaty was a Republican initiative. The idea was proposed by President Eisenhower, and implemented by President George H. W. Bush (Bush I). That was the pre-Gingrich Republican Party, still a sane political organization. Two respected political analysts of the American Enterprise Institute, Thomas Mann

and Norman Ornstein, describe the Republican Party since Newt Gingrich's takeover in the '90s as not a normal political party but a "radical insurgency" that has largely abandoned parliamentary politics.⁵ Under Mitch McConnell's leadership, that has only become more evident—but he has ample company in Party circles.

The abrogation of the INF Treaty elicited little reaction apart from in arms control circles. But not everyone is looking the other way. The military industry can scarcely conceal its delight over the huge new contracts to develop means to destroy everything, and the more far-sighted are also developing longer-term plans to gain fat contracts to develop possible (if unlikely) means of defense against the monstrosities they are now free to develop.

The Trump administration wasted no time in flaunting its abrogation of the treaty. Within a few weeks, the Pentagon tersely announced the successful launching of an intermediate range missile violating the INF Treaty—virtually inviting others to join in, with all of the obvious consequences.⁶

Former Defense Secretary William Perry, who has spent much of his career on nuclear issues and is not given to exaggerated rhetoric, declared some time ago that he was "terrified," in fact doubly terrified—both by the increasing threat of war and the slight attention it receives. We should in fact be triply terrified, adding that the race to terminal destruction is being carried out by people who are fully aware of the horrendous consequences of what they are doing. Much the same is true of their dedicated efforts to destroy the environment that can sustain life.

The net spreads wide. It is not just the policy makers, the Trump administration being particularly egregious and

dangerous. It reaches to the big banks that are pouring money into fossil fuel extraction, and the editors of the best journals running article after article about the wondrous new technology that has propelled the US to the lead in producing the substances which will destroy us unless radically curbed, all without mention of the terrible word “climate.”

Scientists seeking extraterrestrial intelligence have been struck by the Fermi paradox: Where are they? Astrophysics suggests that there should be intelligent life elsewhere. Maybe they are right; there really is intelligent life, and when it discovers the strange inhabitants of Planet Earth, it has the sense to stay far away.

Let’s keep however to the second major threat to survival, environmental catastrophe.

It was not understood at the time, but the early post-World War II period marked a turning point in a second threat to survival. Geologists generally take the early post-World War II period to be the onset of the Anthropocene, a new geological epoch in which human activity is having a profound, and devastating, impact on the environment, a judgment on timing confirmed most recently in May 2019 by the working group on the Anthropocene.⁷ By now evidence of the severity and imminence of the threat is overwhelming—and is quietly recognized even by the most extreme deniers, as we see below.

How are the two existential crises related? A simple answer is given by Australian climate scientist Andrew Glikson: “Climate scientists are no longer alone in having to cope with the global emergency, whose implications have reached the defence establishment, yet the world continues

to spend near to \$1.8 trillion each year on the military, a resource that needs to be diverted to the protection of life on Earth. As the portents for major conflicts—in the China Sea, Ukraine, and the Middle East are rising—who will defend the Earth?”⁸

Who indeed.

Climate scientists are certainly paying close attention and issuing frank and explicit warnings. Oxford professor of physics Raymond Pierrehumbert, a lead author of the frightening 2018 Intergovernmental Panel on Climate Change (IPCC) report (since superseded by more urgent warnings), opens his review of existing circumstances and options by writing: “Let’s get this on the table right away, without mincing words. With regard to the climate crisis, yes, it’s time to panic . . . We are in deep trouble.” He then lays out the details carefully and scrupulously, reviewing the possible technical fixes and their very serious problems, concluding that “there’s no plan B.”⁹ We must move to zero net carbon emissions, and fast.

The deep concerns of climate scientists are readily available to those who don’t prefer to hide their heads in the sand. CNN celebrated Thanksgiving 2019 with a detailed (and accurate) report of an important study that had just appeared in *Nature* on tipping points—moments at which the dire effects of global warming will become irreversible. The authors conclude that consideration of tipping points and their interactions reveals that “we are in a climate emergency and strengthens this year’s chorus of calls for urgent climate action . . . The risk and urgency of the situation are acute . . . The stability and resilience of our planet is in peril. International action—not just words—must reflect this.”¹⁰

The authors warn further that “atmospheric CO₂ is already at levels last seen around four million years ago, in the Pliocene epoch. It is rapidly heading towards levels last seen some 50 million years ago—in the Eocene—when temperatures were up to 14°C higher than they were in pre-industrial times.” And what happened over very long periods then is now compressed by human action to a few years. They explain further that existing forecasts, while grim enough, have failed to take into account the effects of tipping points.

They conclude that “the intervention time left to prevent tipping could already have shrunk towards zero, whereas the reaction time to achieve net zero emissions is 30 years at best. Hence we might already have lost control of whether tipping happens. A saving grace is that the rate at which damage accumulates from tipping—and hence the risk posed—could still be under our control to some extent.”

To some extent, and there is no time to lose.

Meanwhile the world watches as we proceed toward a catastrophe of unimaginable proportions. We are approaching perilously close to the global temperatures of 120,000 years ago, when sea levels were six to nine meters higher than today.¹¹ Truly unimaginable prospects, even discounting the effect of more frequent and violent storms, which will put paid to whatever wreckage is left.

One of many ominous developments that might fill the gap between 120,000 years ago and today is the melting of the vast West Antarctic ice sheet. Glaciers are sliding into the sea five times faster than in the 1990s, with more than 100 meters of ice thickness lost in some areas due to ocean warming, and those losses doubling every decade. Complete loss of the West Antarctic ice sheet would raise sea levels by about five meters,

drowning coastal cities, and with utterly devastating effects elsewhere—the low-lying plains of Bangladesh, for example.¹²

Only one of the many concerns of those who are paying attention to what is happening before our eyes.

Dire warnings from climate scientists abound. Israeli climatologist Baruch Rinkevich captures the general mood succinctly: “After us, the deluge, as the saying goes. People don’t fully understand what we’re talking about here . . . They don’t understand that everything is expected to change: the air we breathe, the food we eat, the water we drink, the landscapes we see, the oceans, the seasons, the daily routine, the quality of life. Our children will have to adapt or become extinct . . . That’s not for me. I’m happy I won’t be here.”¹³

Rinkevich and his Israeli colleagues discuss various likely “horror scenarios” for Israel, but a few are optimistic. One observes that “Israel is definitely not the Maldives and it is not expected to be submerged anytime soon.” Good news. They generally agree, however, that the region may become mostly unlivable: “Cities are liable to be abandoned in Iran, Iraq and in developing countries, but in our country it will be possible to live.” And although the temperature of the Mediterranean may approach 40°C (i.e., 104°F), “the maximum permitted temperature in a Jacuzzi,” nevertheless, “humans will not be boiled alive like sea urchins and red-mouthed rock shells, but there could be mortal danger during the height of the bathing season.”

So there is hope for Israel under the most optimistic forecasts, if not for the region.

The essential observation is made by Professor Alon Tal: “We are aggravating the condition of the planet. The Jewish state has looked humanity’s ultimate challenge in the eyes

and said: 'Forget it.' What will we tell our children? That we wanted a higher quality of living? That we had to remove all the natural gas from the sea because it was so economically profitable? Those are pathetic explanations. We're talking about the most fateful issue there is, especially in the Mediterranean Basin, and the government of Israel isn't capable of appointing a minister who cares that we are simply going to be cooked."¹⁴

Tal's comment is correct, and deeply troubling. What is it about humans that makes them able to accept "pathetic explanations" or just say "forget it" while looking "humanity's ultimate challenge in the eyes"? That's the response whether it is gradual impending environmental catastrophe or the opportunity to construct new means to destroy us all at once. What is it about humans that enables them to spend \$1.8 trillion on the military—the US far in the lead—while not asking, "Who will defend the earth?"

While Tal's observation generalizes, it is somewhat too strong. There are countries, and localities, where serious efforts are being undertaken to act before it is too late. And it is not too late. The answer to the mad race to produce more means of self-destruction is obvious enough, at least in words; implementation is another matter. And there is still time to mitigate the impending climate catastrophe if a firm commitment is undertaken. That is surely not impossible if the facts can be faced. In 1941, the US faced a serious though incomparably lesser threat, and responded with a voluntary mass mobilization so overwhelming that it greatly impressed Nazi Germany's economic czar Albert Speer, who lamented that totalitarian Germany could not match the voluntary subordination to the national task in the more free societies.

Some estimate that the challenge, while immense, does not impose burdens comparable to those of 1941. Economist Jeffrey Sachs, in a careful study, concludes that “contrary to some commentaries, decarbonization will not require a grand mobilization of the U.S. economy on par with World War II. The incremental costs of decarbonization above our normal energy costs will amount to 1 to 2 percent of U.S. GDP per year during the period to 2050. By contrast, during World War II, federal outlays soared to 43 percent of GDP from the prewar level of 10 percent of GDP in 1940.”¹⁵

It can be done, but now we face a cruel irony of history. Just at the time when all must act together, with dedication, to confront humanity’s “ultimate challenge,” the leaders of the most powerful state in human history, in full awareness of what they are doing, are dedicating themselves with passion to radical escalation of the twin threats to survival. The government is in the hands of the only major “conservative party in the world that rejects the need to tackle climate change” and is also opening the door to the development of new and more threatening weapons of mass destruction.¹⁶

The members of the astonishing troika who have the fate of the world in their hands are the Secretary of State, the National Security Adviser, and the Chief—from the perspective of the world, the Godfather; international relations resemble the Mafia to an extent rarely recognized. The Secretary of State, Mike Pompeo, is an Evangelical Christian whose acuity as a political analyst is revealed by his belief that God may have sent Trump to the world to save Israel from Iran.¹⁷

The National Security Adviser until his September 2019 resignation (or firing, depended on whom you choose to

believe), was John Bolton, who has left his minions in place. Bolton had a simple doctrine: the US must accept no external limits on its freedom of action—no treaties, no international agreements or conventions—and therefore must ensure that every country will have maximal opportunity to develop the means to destroy us all—the US in the lead, for what that’s worth. He also flaunts a corollary: bomb Iran because it will never agree to negotiate on anything.¹⁸ This prescription for action, and predication, was confidently issued while Iran was negotiating with the US and Europe on the Joint Comprehensive Plan of Action (JCPOA), the detailed agreement finalized shortly after freezing Iranian nuclear activities—an agreement observed meticulously by Iran, as US intelligence and others confirm, and torn up by the Chief.

The Chief is an infantile megalomaniac, and very effective con man, who couldn’t care less if the world burns or explodes, as long as he can pretend to be the winner as he two-steps over the cliff waving his little red hat triumphantly.

Trump’s reasoning on the environment was well expressed after he was prevented from building a golf course with luxurious homes because it would have endangered the drinking water supply for nearby communities. As he explained to an appreciative crowd of realtors, “I was building a development. I was going to build some really luxury, beautiful houses. [But] I found out that I can’t build on the land. Does that make sense to you?” What then could be more reasonable than to roll back dozens of environmental regulations, significantly increasing greenhouse emissions, including “the nation’s benchmark [Nixon-era] environmental law,” which

would mean that federal agencies “no longer have to take climate change into account when they assess the environmental impacts of highways, pipelines and other major infrastructure projects”? And, by extension, what could be more reasonable than to maximize the use of fossil fuels with the understanding that it will soon undermine the prospects for organized human life on Earth?¹⁹

And they are not alone in the world scene. In what may be a symbolic inauguration, the new year 2020 opened with the continent of Australia on fire and people desperately fleeing temperatures of a blast furnace during record-breaking heat, while the prime minister—a dedicated denialist—returned grudgingly from a vacation to assure his constituents that he felt their pain. Meanwhile the opposition labor leader toured the coal plants, calling for expansion of Australia’s role as world champion coal exporter and assuring the country that this was quite consistent with Australia’s serious commitment to combating global warming—a commitment that, according to international monitors, places it last among fifty-seven countries on climate change policy.²⁰

We may contemplate how history could have conjured up such a nightmare, but here we are.

Trump has good reason to revel in his success—whatever the cost to the irrelevant population of the world. His primary constituency—great wealth and corporate power—may not like him, but they are quite happy with the gifts that he lavishes on them. And his voting base is mesmerized. Over half of Republicans regard Trump as the greatest of US presidents, surpassing Lincoln, the former champion.²¹ The impeachment proceedings seem to have improved his standing among the faithful, supporting the thesis that dark forces

are seeking to undermine their leader—who many of them believe has come (or maybe has been sent) to rescue them from the neoliberal assault that he in reality champions vigorously. An impressive conjuring trick.

These are people who are going to have to be convinced of the urgency of the threats we face if there is to be any hope of escaping disaster.

It may seem rather oxymoronic to try to conjure up a geopolitical strategy emanating from this cast of characters—I'll skip the “advise and consent” Senate, where the Republican majority, having largely abandoned any lingering integrity, is firmly in Trump's pocket, terrified of angering his fervent base. But a strategy does emerge from the clouds: the construction of a reactionary international, run from the White House, bringing together the vicious military and family dictatorships of Egypt and the Gulf; Israel consummating its Greater Israel project now with the open rather than tacit support of the US; Modi's India, crushing Kashmir and dismantling what remains of India's secular democracy in favor of an extremist Hindu nationalist ethnocracy; Bolsonaro's Brazil, with a stream of ugly crimes but none approaching his commitment to destroy the Amazon, “the lungs of the earth,” by handing it over to his friends in agribusiness and mining; and a slew of other attractive members, like Orbán's Hungary, celebrating its nomadic Magyar roots back to Attila the Hun if not Genghis Khan, and Salvini's Italy, righteously murdering thousands of miserable people fleeing from Libya, famous as the site of Italy's genocidal exploits under Mussolini.²² And who knows what might be in the wings—conceivably Farage taking over the US vassal state that was once Britain

if Boris Johnson's hard Brexit proceeds on what seems a likely course.

While this might be the shape of the emerging world, like the environmental crisis it is not at all inevitable. There are choices, and they can make a huge difference.

One choice was announced by Bernie Sanders and Yanis Varoufakis, the former finance minister of Greece under the leftist Syriza government, who together issued a call for a progressive international to confront the reactionary international being forged under the Trumpian aegis. It should not be allowed to fall on deaf ears.

Returning to the original question, the brief answer is that the environmental crisis, along with its twin nuclear crisis, is unique in human history, and is a true existential crisis. Those alive today will decide the fate of humanity—and the fate of the other species that we are now destroying at a rate not seen for 65 million years, when a huge asteroid hit the earth, ending the age of the dinosaurs and opening the way for some small mammals to evolve to become finally the asteroid's clone, differing from its predecessor in that it can make a choice.

Bob, IPCC produced a special report in 2018 on the impact of global warming of 1.5°C above preindustrial levels. In your view, do mainstream studies on the challenges of climate change, as those undertaken over the years by the IPCC, capture adequately the nature and the risks of climate crisis?

Robert Pollin: Of course, I am not a climate scientist, and therefore I am not qualified to assess the mainstream work

that is regularly summarized in IPCC studies, as opposed to studies that believe that the IPCC is not adequately representing where the science is at any given moment. But let's understand what role the IPCC plays in the world of advancing and disseminating climate science research. The IPCC is a UN agency created in 1998 to fulfill its stated mission "to provide policymakers with regular scientific assessments on the current state of knowledge about climate change."²³ The IPCC does not carry out original research but rather serves as a clearinghouse for assessing and synthesizing the relevant literature. Thousands of scientists contribute to writing and reviewing the IPCC's reports, which are then reviewed by governments. I myself know well the climate scientists at my own university, University of Massachusetts Amherst, who are involved in various IPCC projects. These are very committed, capable, and credible people. So it is fair to say that the IPCC does bring together current, high-quality assessments of mainstream climate science on any given set of questions.

There remains a small band of climate deniers, whose positions are given credence and then amplified in the mainstream media far beyond what is warranted given the scientific findings they have produced.²⁴ Nevertheless, while it is implausible, we cannot totally rule out the possibility that some of their positions may have merit. But, exactly to this point, it is also the case that the IPCC is scrupulous in recognizing a high degree of uncertainty in all of its estimates. For example, its targets for the needed level of emissions reductions are never presented as a single figure, as in, say, "we must reduce emissions by 80 percent within twenty years or face these certain terrible consequences." Rather, the IPCC

always presents its conclusions in terms of ranges and probabilities. It is also true that the IPCC has regularly changed its assessments to a significant degree, as illustrated in recent years by some of its most important publications.

Thus, in its 2007 Fourth Assessment Report, the IPCC concluded that in order to stabilize the global average (mean) temperature at 2.0°C above the preindustrial average, annual CO₂ emissions needed to fall to, roughly, between 4 and 13 billion metric tons by 2050—that is a decline of 60–88 percent relative to the 2018 level of 33 billion metric tons. However, in its Fifth Assessment Report, released in 2014, the IPCC set the range of the necessary emissions reduction at 36–76 percent to achieve the same 2.0°C stabilization point. In other words, between the IPCC's 2007 and 2014 Assessment Reports, its emissions reduction requirement had declined. However, in 2018, four years after the 2014 Assessment Report, the IPCC dramatically shifted its position again, taking a much more alarmist stance than in its previous publications. That is, in the October 2018 report to which you refer, titled *Global Warming of 1.5°C*, the IPCC emphasized the imperative of limiting the increase in the global mean temperature to 1.5 rather than 2.0 degrees. It did so after having reached the conclusion that hitting the 1.5 degree target will dramatically lower the likely negative consequences of climate change. These include the risks of heat extremes, heavy precipitation, droughts, sea level rise, biodiversity losses, and the corresponding impacts on health, livelihoods, food security, water supply, and human security.

It is clear that there is a high degree of uncertainty as to the full set of consequences we face by allowing average global temperatures to rise above 1.5 degrees or even 2.0

degrees above preindustrial levels. The consequences could be more severe or less severe than those predicted by the IPCC's 2018 assessment. If it were to change its assessment yet again in future reports, that would be true to form. So the IPCC could conceivably offer more sanguine appraisals, as in 2014, but it is more likely that it will become still more dire in its appraisals, reflecting the warning of the eminent climate scientist and IPCC author Raymond Pierrehumbert, cited above by Noam, that "yes, it's time to panic. We are in deep trouble." In short, we have more than enough information to take decisive action now on the basis of what we know, in full recognition of the range of uncertainties we face.

To pursue that question a bit further, wouldn't it make sense if we applied the insurance option to the problem of tackling climate change?

RP: The short answer is yes, absolutely. Dealing with the reality of uncertainty on these matters does raise the question: What if the overwhelming consensus of scientific opinion turns out to be wrong, or, more precisely, that the relatively low-probability outcome that there will be no serious consequences resulting from climate change turns out to be the actual outcome? Will the global community then have effectively wasted trillions of dollars over a thirty-year period to solve a problem that never existed in the first place?

In fact, we need to take decisive action now on climate change, not based on 100 percent certainty as to its

consequences, but rather through estimating reasonable probabilities. Indeed, we should think of a global Green New Deal as exactly the equivalent of an insurance policy to protect ourselves and the planet against the serious prospect—though not the certainty—that we are facing an ecological catastrophe.

The late Harvard economist Martin Weitzman, who died in 2019, contributed important research on how we should handle the uncertainties surrounding climate change. As he put it in *Climate Shock*, his 2015 book with coauthor Gernot Wagner, “climate change is beset with deep-seated uncertainties on top of deep-seated uncertainties on top of still more deep-seated uncertainties.” Weitzman and Wagner offer this analogy on how to handle such uncertainties:

If a civilization-as-we-know-it altering asteroid were hurtling toward Earth, scheduled to hit a decade hence, and it had, say, a 5 percent chance of striking the planet, we would surely pull out all the stops to try to deflect its path. If we knew that same asteroid were hurtling toward Earth a century hence, we may spend a few more years arguing about the precise course of action, but here’s what we wouldn’t do: We wouldn’t say that we should be able to solve the problem in at most a decade, so we can just sit back and relax for another 90 years. Nor would we try to bank on the fact that technologies will be that much better in 90 years, so that we can probably do nothing for 91 or 92 years and we’ll still be fine. We’d act, and soon. Never mind that technologies will be getting better in the next 90 years, and never mind that we may find out more about the asteroid’s precise path over the next 90 years

that may be able to tell us that the chance of hitting Earth is “only” 4 percent rather than the 5 percent we had assumed all along.²⁵

Weitzman and Wagner also bring the issue down to the everyday situations people now face in dealing with uncertainty and insurance, writing that “devastating home fires, car crashes, and other personal catastrophes are almost always much less likely than 10 percent. And still, people take out insurance to cover against these remote possibilities, or are even required to do so by laws that hope to avoid pushing these costs onto society.”²⁶

From this perspective, the only major issue in dispute with respect to purchasing climate insurance is how much we should be willing to pay to carry sufficient coverage. This is the equivalent of deciding not *whether* to purchase automobile insurance but, rather, how much to spend and how much coverage we need. This is the question I will take up later in the context of describing a viable Green New Deal project.

The underlying premise of orthodox economics is that the operations of free markets, left to their own devices, will produce social outcomes that are superior to government interventions. To what extent is this pro-market bias in orthodox economics holding back progress in climate change mitigation?

RP: In 2007, Nicholas Stern, the prominent mainstream British economist and former chief economist at the World Bank, wrote that “climate change is a result of the greatest

market failure the world has seen.” Stern’s assessment was extreme, but not hyperbolic.

Neoliberalism is a driving force causing the climate crisis. This is because neoliberalism is a variant of classical liberalism, and classical liberalism builds from the idea that everyone should be granted maximum freedom to pursue their self-interest within capitalist market settings. But neoliberalism also diverges substantially from classical liberalism, and therefore also from the basic premises of orthodox economics that free markets, left to their own devices, will produce outcomes that are superior to government interventions. Here is the problem with neoliberalism, when counterposed against a purely free market model celebrated by economic orthodoxy. That is, what really occurs in practice under neoliberalism is that governments allow giant corporations to freely pursue profit opportunities to the maximum extent. But then government fixers arrive on the scene to bail out the corporations whenever their profits might be threatened. This amounts to socialism for capitalists, and harsh, free market capitalism for everyone else.

The oil companies’ record in dealing with climate change represents a dramatic case study of neoliberalism in practice. In 1982, researchers working at the then Exxon Corporation (now ExxonMobil) estimated that by about 2060, burning oil, coal, and natural gas to produce energy would elevate the planet’s average temperatures by about 2°C. This, in turn, would generate exactly the types of massive climate disruptions that we have increasingly experienced since the 1980s. In 1988, researchers at Shell Corporation reached similar conclusions. We now know what Exxon and Shell did with this information—they buried it. They did so for the obvious reason that, if the

information were then known, it might have threatened their prospects for receiving massive profits from producing and selling oil.

There is no minimizing the fact that what Exxon and Shell did was immoral. But it is equally clear that both companies behaved exactly according to the precepts of neoliberalism—that is, they acted to protect their profits. They also continued from the 1980s onward to behave according to the precepts of neoliberalism in extracting the largest possible subsidies that they could get from any and all governments throughout the world. Amid all this, neither company has faced any government sanctions for its behavior. Quite the contrary, they have continued to earn huge profits and receive huge government subsidies.

Now we can't blame this all on orthodox economics. As Stern emphasized, it is also possible, within orthodox economics, to recognize that market processes under capitalism can fail. But it is critical to point out here that orthodox economists insist we address market failures through minimizing the extent of government interventions since, in their view, on balance government interventions are more likely to make things worse, through incompetence or corruption or, still more fundamentally, a fuzzy goal of trying to improve social welfare. By contrast, with markets, nobody is kidding anybody—we are all just out to get the most for ourselves.

This is why virtually all mainstream economists support a carbon tax as the most effective, and for many of them, the *only* effective, policy intervention for fighting climate change. Thus, a January 2019 statement signed by twenty-seven Nobel Prize-winning economists, along with four

former chairs of the Federal Reserve and fifteen former chairs of the president's Council of Economic Advisers, asserted:

A sufficiently robust and gradually rising carbon tax will replace the need for various carbon regulations that are less efficient. Substituting a price signal for cumbersome regulations will promote economic growth and provide the regulatory certainty companies need for long-term investment in clean-energy alternatives.²⁷

These economists do agree to redistribute the revenue from the carbon tax back to the population in equal shares, thereby preventing the tax from raising the cost of living for lower-income people, who spend a significant share of their overall income on purchasing energy. However, these economists offer no support for increases in public investments in renewable energy and energy efficiency, thereby surrendering the power of the public sector, amounting to 35 percent of GDP in the US and higher shares elsewhere, to push the clean energy transformation forward at the most aggressive possible rate. They also oppose regulations that require electrical utilities to stop burning coal and natural gas and expand their renewable energy capacities. These positions amount to massive policy errors, committed by many of the most prestigious economists in the United States.

Speaking of massive policy errors committed by prestigious economists, we need to give special prominence to William Nordhaus of Yale, who received the Nobel Prize in Economics in 2018 for his decades of highly influential research, on precisely the economics of climate change. In his Nobel Prize lecture, delivered in December of that year,

Nordhaus presented alternative policy scenarios for addressing climate change. On what he terms in the lecture the “optimal” policy path, the global average temperature will rise by 2°C as of 2050, but then continue to rise for the next one hundred years, reaching the “optimal” stabilization point of a 4°C average global temperature increase by 2150. In other words, to begin with, Nordhaus gives no credence to the conclusion published by the IPCC in October 2018—just two months before his Nobel lecture—that we need to set the average temperature stabilization target at 1.5°C, not 2°, by 2050 to avoid facing intensifying risks with respect to heat extremes, heavy precipitation, droughts, sea level rise, and biodiversity losses. But still more alarming—or let’s say, breathtakingly shocking—is that Nordhaus is utterly sanguine about accepting the risks we would face by allowing the global mean temperature to rise by 4°C by 2150.

Surveying the body of research on what the world could plausibly look like with 4°C of warming, the science journalist Mark Lynas writes:

At four degrees another tipping point is almost certain to be crossed . . . This moment comes as the hundreds of billions of tons of carbon locked up in Arctic permafrost—particularly in Siberia—enter the melt zone, releasing globally warming methane and carbon dioxide in immense quantities . . . The whole Arctic Ocean cap will also disappear, leaving the North Pole as open water for the first time in at least three million years. Extinction for polar bears and other ice-dependent species will now be a certainty. The south polar cap may also be badly affected . . . This would eventually add another five meters

to global sea levels . . . As the sea level rise accelerates, coastlines will be in a constant state of flux. Whole areas, indeed whole island nations, will be submerged. In Europe, new deserts will be spreading in Italy, Spain, Greece, and Turkey: the Sahara will have effectively leapt the Straits of Gibraltar.²⁸

It is true, as Martin Weitzman's work on climate uncertainty emphasizes, we have no way of knowing for sure how likely it is that these outcomes would result through allowing the global average temperature to rise by 4°C. But, still following Weitzman, or better still, just applying basic common sense, we should know enough to realize that we must take every action to prevent 4°C of warming to occur, even as a low-probability event. The fact that the single most prominent orthodox economist in the world working on climate change considers the risks from 4°C of warming to be "optimal" tells us everything about the bankrupt state of orthodox economics.

There is growing concern regarding the impact of industrial agriculture on the environment. In fact, the system of industrialized food seems to be bad for human health and the economy overall. Bob, what are the impacts associated with industrial agriculture, and what's the alternative?

RP: Corporate industrial agriculture is a major driver of climate change, responsible for roughly 25 percent of total greenhouse gas emissions, including CO₂, methane, and nitrous oxide, the three main greenhouse gases.²⁹

But before getting into some details on climate change issues per se, I need to at least mention some additional major impacts of industrial corporate agriculture. As described in an excellent recent study by the International Labour Organization, industrial agricultural has become a major contributor to

soil degradation (the loss of organic matter as a result of overexploitation and mismanagement), desertification and freshwater scarcity (through inadequate land and crop management), biodiversity loss, pest resistance and water pollution (resulting from change in land use, eutrophication [i.e., over-enrichment of water with minerals and nutrients, which induces excessive growth of algae], run-off and improper nutrient management).³⁰

These sources of soil degradation and water pollution in turn contribute to a range of human health problems. Most critically, hundreds of millions of agricultural workers worldwide are now exposed on a daily basis, and at close quarters, to toxic pesticides and herbicides. From there, toxic substances flow into the food and water supply consumed by the general population.

Returning to the climate impacts of industrial agriculture, there are four major interrelated channels to emphasize: (1) deforestation; (2) the use of land for cattle farming, which consumes far more of the available earth's surface than any other purpose, including growing crops for food; (3) the heavy reliance on natural-gas-based nitrogen fertilizers along with synthetic pesticides and herbicides to increase land productivity; and (4) the huge amount of food that is grown

but wasted. Massive food wastage occurs in both low- and high-income countries, though for mainly distinct reasons.

Deforestation

RP: Other than the burning of fossil fuels to produce energy, deforestation is the most significant force driving climate change, owing to the fact that living trees absorb and store CO₂. When trees are felled through deforestation, the CO₂ that is stored in them is released into the atmosphere. In addition, of course, trees that have been chopped down are no longer available to absorb CO₂. As of the most recent 2019 data reported by the IPCC, these combined effects of deforestation—the releasing of CO₂ into the atmosphere from felled trees and the loss of those trees as CO₂ absorbers—are themselves responsible for about 12 percent of all greenhouse gas emissions.

Given that deforestation is fully understood as a major cause of climate change, we need to ask why the practice continues. The answer is straightforward; indeed, it's no more complicated than understanding why we keep burning fossil fuels even though we know it pushes us toward ecological catastrophe. That is, there are profits to be made from destroying forests, because it creates major open land areas that can be exploited for agriculture and mining.

The single biggest profit opportunity created by deforestation is to clear the land for corporate farming. A recent detailed study by Noriko Hosonuma and coauthors estimates that about 40 percent of all deforestation in developing countries is driven by corporate agricultural imperatives, with the most important of these to open land for cattle grazing. Growing cash crops like palm oil for the global

market offers another big profit opportunity. Hosonuma estimates that another 33 percent of deforested land is used for subsistence farming. Another 10 percent of the deforested land is used to build roads and other infrastructure, which are, of course, mainly needed to support the new business activities in the deforested areas. Thus, about 85 percent of deforestation is tied to agriculture, mostly cattle farming and other forms of corporate agriculture.³¹

We need to recognize that deforestation can raise incomes for low-income people and communities, in addition to delivering profits for corporations. But these benefits for working people and the poor are almost entirely short-run effects that evaporate quickly. The gains and losses to low-income people from deforestation follow a familiar boom-and-bust cycle. At first, the newly cleared lands attract investments in farm and mining projects as well as the infrastructure needed to support these new businesses. These investments generate jobs, but only so long as the initial phases of getting the projects up and running continue. But even during these initial phases of project development and construction on the newly cleared land, what also happens is that more people migrate to these areas looking for work. This creates increased competition for the newly available jobs and downward pressure on wages.

Any possible benefits to low-income people from expanding subsistence farming and employment in corporate farms are also counteracted by the loss of income-generating activities provided by the forest itself. These include tapping trees for rubber, nut farming, and gathering lumber on a sustainable basis from dead trees. A 2018 study by the World Resources Institute thus concludes that “land acquisition for

commodity production often displaces local livelihoods without respect for indigenous and traditional land rights.”³²

The major policy initiative to stop deforestation is a family of globally scoped policies collectively known as REDD—Reducing Emissions from Deforestation and Forest Degradation. This combination of policies is mostly administered and coordinated by the United Nations (UN-REDD) and the World Bank. The basic idea behind REDD is simple: to reward governments, companies, forest owners, and forest dwellers in the global South for keeping their forests intact instead of cutting them down.

In principle, REDD programs should be beneficial. But major problems have emerged in practice. I will just mention three of the most significant ones. First, REDD projects are substantially funded by corporations looking for carbon offsets. For example, REDD can allow an electric utility to purchase carbon credits, which then enables it to continue to burn coal to generate electricity, as opposed to directly transitioning out of coal to investments in high-efficiency and clean, renewable energy sources. Related to this is the second problem, that of “leakages.” This refers to REDD initiatives that establish a given set of forests as out of bounds for land clearance, which then prompts businesses to move their operations to other locations that are unprotected. Estimates of leakage rates linked to specific protected sites vary widely—from a negligible amount to over 100 percent of avoided emissions. At the least, it is clear that safeguards to prevent leakages remain weak.³³

A third major problem with REDD programs is that the financial rewards for participating in them flow disproportionately to corporate farmers and land speculators who

understand the legal hoops they must jump through to obtain the available benefits. The actual forest dwellers do not typically have access to the legal and financial advisors who could help them work the system to their benefit. Fair and effective policies for stopping and reversing deforestation are, of course, an imperative. But it is also critical that REDD programs not be rigged to serve the same class of corporate interests who have been benefiting from clearing forests and burning fossil fuels in the first place.

Cattle Farming

RP: Cattle farming contributes to climate change via two channels. The first results from the fact that cattle farming requires far more land than any other form of agriculture. That is, producing food from all other animal sources such as chicken, pork, and fish, as well as growing crops intended directly for human consumption rather than cattle feed, all require far much less land than raising cattle. Cattle farming can be a net positive contributor to the world's overall food supply when the cattle graze only on pastures in which crops cannot grow. But massive amounts of the earth's total land resources are wasted when areas suitable for cultivating food crops for people are instead devoted to either cattle grazing or growing animal feed. Creating this pressure to devote more land to cattle grazing in turn incentivizes corporations and land speculators to clear the forests.

In addition to creating these pressures on land use, raising cattle itself contributes to climate change because cows emit methane gas through their normal digestive processes. This is true for all ruminant animals, that is, animals that

regurgitate food and re-chew it, including sheep, goats, buffalo, deer, elk, giraffes, and camels. But the global population of cows and bulls is about 1.5 billion, far greater than the other ruminants. The cows are responsible for about 2 billion tons of greenhouse gas per year through their methane emissions. This alone amounts to about 4 percent of total greenhouse gas emissions as of 2018.

Industrial vs. Organic Farming

RP: Conventional industrial agriculture methods depend on the heavy use of synthetic fertilizer, irrigation, pesticides, and herbicides. The use of nitrogen fertilizer alone increased by 800 percent between 1961 and 2019. Over this same sixty-year period, this practice has been a major contributing factor to the 30 percent increase in the per capita global food supply.

But it is also the case that the manufacturing of nitrogen fertilizer, mainly in the form of ammonia, relies on mixing the hydrogen in natural gas with the nitrogen in the air. As such, manufacturing nitrogen fertilizer produces CO₂, methane, and nitrous oxide, the three main greenhouse gases. In addition, nitrogen fertilizer converts to nitrous oxide when it is combined with soil bacteria.

As an alternative to these industrial agricultural practices, organic farming relies on crop rotation, animal manures and composting for fertilizer, and biological pest control. More specifically, legumes are planted to fix nitrogen in the soil, as opposed to relying on ammonia for nitrogen enhancement, natural insect predators are encouraged as opposed to synthetic pesticides, crops are rotated to confuse pests and

renew soil, and natural materials are used to control diseases and weeds. The carbon footprint of organic farming is minimal because it does not rely on using ammonia for fertilizer or other fossil-fuel-derived products.

The benefits of organic farming with respect to emissions reduction and climate change are therefore straightforward. But organic farming as an alternative to conventional practices does also present problems that we cannot gloss over. The most critical of these is that food productivity for a given area of land is generally lower than conventional agriculture. How much lower is a matter of dispute. Several large-scale studies have been conducted to answer this question. The range of estimates does vary. Among other factors, the relative productivity differences will depend on regions of the world and the circumstances specific to any given farm. Nevertheless, as a general conclusion, a reasonable midpoint of these various estimates would be that conventional methods produce between about 10 and 15 percent more food for a given area of agricultural land. Yet it is also the case that some researchers find that organic farming is more productive than conventional farming in developing countries, because the materials needed for organic farming are more accessible than synthetic materials in many poor countries.

Wasting Land and Food

RP: As a general point, it is reasonable to assume that producing the world's food supply through organic methods is likely to require more land. This then also reinforces the need to transition away from cattle farming as the single most prevalent use of agricultural land worldwide.

If the world is going to transition into organic farming over industrial agriculture, another important way to counteract any consequent pressures on land use is to significantly reduce the amount of food that is grown but wasted. According to estimates, between about 35 and 50 percent of total global food produced is discarded, degraded, or consumed by pests instead of being eaten. Developing countries typically lose more than 40 percent of food post-harvest or during processing because of inadequate storage and transport infrastructure. High-income countries don't experience this extent of food wasted at the level of production. But it is still estimated that more than 40 percent of food supplied in high-income countries is wasted at the level of retail distribution and consumption. As cases in point, lots of food goes uneaten in restaurants and shoved down the garbage disposal in people's homes.

For developing countries, a first obvious solution to this problem is to improve storage and transportation infrastructure. Even reducing wastage in developing countries by, say, 10 percent will itself reduce the demand for all global land supply by around 5 percent. This alone would compensate significantly for any requirements for additional land use in moving from industrial to organic farming as the primary source of the world's food supply. Within high-income countries, to simply stop wasting so much food that has already been prepared in restaurants and private kitchens would have a comparable major impact in reducing global pressures on land use.

I need to raise one final issue. That is: Should people change their diets as one component of a global Green New Deal, and, in particular, significantly reduce their beef consumption? Inescapably, the answer is "yes." Shifting away