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*James Herod*

## Capitalists, Global Warming, and the Climate Justice Movement: Reflections on COP15

James Herod

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This essay was published in the *Anarcho-Syndicalist Review*, #54, Summer 2010, pages 23–28. For this internet edition I've made a few more (17) changes and additions. I also restored some page numbers in the bibliography, and a few full urls, which had been dropped in the magazine edition to save space. The essay is posted on my web site <http://www.jamesherod.info> under Selected Papers 1998 to Present. Retrieved on 7 December 2010 from <http://jamesherod.info/?sec=paper&id=62>

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## A Short Bibliography

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[Prefatory Note: The first part of this essay was originally written in December 2009 for the monthly *Newsletter of the Boston Anti-Authoritarian Movement*, #29, January 2010. A substantial postscript, from May 2010, continues the discussion.

For the purposes of this essay I will assume that the science which establishes that the earth is warming up is correct. This is what all participants to the COP15 conference believed, both inside the conference hall and outside in the streets. For a brief note on dissenting views, see Footnote No. 4.]

\* \* \*

The fifteenth meeting of the Conference of Participants (COP15) in the Kyoto Protocol took place this month in Copenhagen, Denmark from December 7 to 18, 2009. The purpose of the conference was to wrap up more than two years of negotiations by representatives of all the world's governments to get a legally binding treaty for a new round of reductions in carbon emissions under the U.N.'s Kyoto Protocol to replace the first round which was expiring.

So what happened? The United States sabotaged the negotiations by refusing to agree to any legally binding treaty, by refusing to commit itself to any significant reduction of its own carbon pollution, and by refusing to work through the U.N.'s open and democratic negotiating process, instead maneuvering behind the scenes in secret to strike a deal with a few select countries which was then sprung on the conference at the last minute. Naturally, the negotiations collapsed and the conference ended in failure, except for the United States, which outcome is obviously what it had intended all along. To understand the significance and probable consequences of this event some background will be necessary.

Amidst growing reports from the world's climatologists of alarming increases in temperatures worldwide due to increased levels of carbon dioxide in the atmosphere, a treaty was fashioned at the Earth Summit in Rio de Janeiro, Brazil, in 1992, called the United Nations Framework Convention on Climate Change. To date, 192 nations have signed the treaty. The United States tried to obstruct this summit from its outset. The original draft of the treaty had to be greatly weakened and watered down before the United States would agree to sign on.

The same thing happened five years later in Kyoto, Japan, in 1997, where an addition to the Rio treaty was being negotiated to put some teeth into it through legally binding cuts in carbon emissions. Once again the United States was obstructive, refusing to cooperate, unless reductions in carbon emissions were handled through the market (the so-called “Cap and Trade, with Offsets”). Al Gore flew to Kyoto to negotiate this demand. The world finally agreed, just in order to get some treaty, but then the U.S. never ratified the Kyoto Protocol anyway.

Gore’s presence at this crucial conference is significant. He had been for some time closely involved with Wall Street’s efforts to create a market for carbon trading. In a brilliantly researched essay<sup>1</sup> David Noble persuasively argues that there had been a split in the capitalist ruling class with regard to global warming. Its original response (and its propaganda) was to deny it. But then the financial elite realized that a lot of money could be made if carbon emissions could be commoditized and traded on the market. They launched a massive propaganda campaign to convince the world that global warming was real, that it was being caused by humans (by burning fossil fuels), and that capitalists could solve the problem through their normal market mechanisms. Global warming moved into the mainstream.

The purpose of the Kyoto Protocol was to reduce carbon emissions and thus cool the earth. The purpose of Wall Street is to make money. So far, Wall Street has prevailed, as was demonstrated again this December in Copenhagen. Twelve years after the Kyoto Protocol was signed in 1997 it is clear that the market approach, insisted on by the United States, has not worked. Carbon emissions have not declined in most countries. They have increased. Most climate justice activists totally reject Wall Street’s

<sup>1</sup> David F. Noble, “The Corporate Climate Coup,” posted on Global Research website on May 4, 2007. <http://www.globalresearch.ca/PrintArticle.php?articleId=5568>. I have since learned that David Noble doesn’t believe in global warming, mainly because he doesn’t trust peer reviewed science. It is a weird, and I believe mistaken, position, at least for the case of global warming. See “Peer Review as Censorship: An Interview with David Noble,” by Suzan Mazur. Posted on *Counterpunch* on the weekend edition for February 26–28, 2010, at: <http://www.counterpunch.org/mazur02262010.html>.

anti-statist) movement. There are tentative signs that such a movement is emerging and gathering steam, as was perhaps indicated a bit by the climate conference in Bolivia last April. We all must do everything in our power to strengthen and build this movement. It is our only hope.

## Recommended Essays

- Anonymous, *Introduction to the Apocalypse*. 2009, 68 pages. On the web in the *Zine Library*, at: <http://zinelibrary.info/introduction-apocalypse-0>. Also in the *Anarchist Library* at: [http://theanarchistlibrary.org/HTML/Anonymous\\_Introduction\\_to\\_the\\_Apocalypse.html](http://theanarchistlibrary.org/HTML/Anonymous_Introduction_to_the_Apocalypse.html).
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- Gelderloos, Peter, “Before the Big Change,” 2009, posted on *Anarchist Library*, at: [http://theanarchistlibrary.org/HTML/Peter\\_Gelderloos\\_Before\\_the\\_Big\\_Change.html](http://theanarchistlibrary.org/HTML/Peter_Gelderloos_Before_the_Big_Change.html).
- Simons, Tim, and Ali Tonak, “The Dead End of Climate Justice: How NGO Bureaucrats and Greenwashed Corporations are Turning Nature into Investment Capital,” posted on *Counterpunch*, Weekend Edition, January 8–10, 2010, at: <http://www.counterpunch.org/simons01082010.html>.

without externalizing the environmental costs. It is foolish therefore to think that global warming can be stopped within a capitalist framework.

Once the true root cause of the climate crisis has been identified — the entire global social order known as capitalism — it is not difficult to map out the long-term solution. An entirely new civilization must be built. This will be a decentralized world without borders, without states, with production for use not profit, based on cooperation and mutual aid, without wage-slavery, money, markets, or hierarchy, a self-governing global social order based on direct democracy. There is a very rich tradition of social philosophy — namely, anarchism (especially anarcho-communism) — which has been explicitly agitating for such a social arrangement for nearly two hundred years (but of course actual anarchist practices stretch back for millennia, and are world wide). There is no space here to describe in detail what such a civilization might look like or how it might be achieved. I must be content to refer the reader to the extensive anarchist literature. If anyone needs a leg up, they could consult my work, *A Bibliographical Guide to Anarchism in English* (2000), which is available on my web site at: <http://www.jamesherod.info/index.php?sec=paper&id=28>. I need to update it with the considerable outpouring of new anarchist works during the past decade (most of which are probably listed in the AK Press catalogue, authors like Cindy Milstein, David Graeber, Peter Gelderloos, Brian Morris, and many more).

So this is the extraordinary task we face (“we,” meaning we the world’s ordinary people, all people, not just indigenous people). We must take decision making away from the ruling class and restore it to our households, workplaces, and communities. We must decommodify everything and reassemble ourselves socially. An entire social order, a global civilization, organized on the basis of profit-mongering, must be defeated in the next twenty to thirty years or else we all die, not just human beings, but every living creature on earth. We no longer have the option of going back to barbarism and starting over (“socialism or barbarism”). That option has been eliminated by global warming. Our only option now is Anarchy or Death. This is a powerful incentive. This will be our last (and perhaps best) chance to break the stranglehold capitalists have had on us for five hundred years, to create a new society, and to save ourselves and life on earth.

Can this be done? Quite frankly, I don’t see how. But we must try. It will require an unprecedented, massive, global anti-capitalist (including an

scheme. They have produced detailed, empirical studies to prove that it hasn’t worked.<sup>2</sup>

Yet we are in an extremely harsh time frame on this problem. If the science is correct, very substantial reductions in carbon emissions worldwide must be achieved in the next ten years, with the nearly total elimination of fossil fuels within the next twenty to thirty years. If the 2020 goals are not met, there is the danger that a tipping point will be reached, setting in motion irreversible warming trends, with the release of billions of tons of methane gas presently trapped in the frozen tundra stretching across northern Canada and Siberia, and billions more tons trapped in nodules deep in the oceans, the loss of the oceans as a carbon sink as they become acidified, and the loss of reflected heat with the melting of the polar ice caps, glaciers, and Greenland’s ice. The earth will become unrecognizable, and all life on it will be threatened.

What are the chances that the United States will change its policy anytime soon, in time to help stave off the tipping point? Virtually zero. Corporate control, especially by Wall Street and Big Oil, over the United States government is now nearly total, and is irreversible within existing institutional structures. The 40-year-old counter-revolution by neoconservative free market ideologues to make sure that corporate control was never threatened again, as it had been in the sixties, has been completely successful. It would take a revolution to reverse this, and there is no sign anywhere of that happening, certainly not in time.

<sup>2</sup> See for example Tamra Gilbertson and Oscar Reyes, *Carbon Trading: How It Works and Why It Fails* (Critical Currents, No. 7, November 2009). There is a rare (on the left) dissenting view about “Cap and Trade” by the well-known radical scholar Robin Hahnel. He believes that Cap and Trade could work if a few changes were made in the system, and he believes the left should support this because whether we like it or not the world is presently organized through the market and is likely to remain so for some time. So this is our best chance to get carbon emissions reduced, he argues. See his three part-essay on “The Left and Climate Change” posted on Znet on December 24–26, 2009 at: <http://www.zcommunications.org/zspace/viewCommentaryPrint/4806> <br /><br /> By the way, there is a competing mainstream proposal to Cap and Trade, namely, Fee and Dividend. This proposal is supported by James Hansen, one of the first scientists to raise the alarm about global warming. He is the director of NASA’s Goddard Institute of Space Studies. For a description of the proposal see James Hansen, “Cap and Fade,” at: <http://www.commondreams.org/prnt/50274>.

Perhaps the other 191 nations in the treaty could just go ahead without the United States? Perhaps. But they could have (and should have) done that in Rio in 1992. Why didn't they? Why was the treaty watered down to accommodate the United States? They certainly should have gone ahead without the U.S. in Kyoto. Why did they cave in to U.S. demands for "Cap and Trade"? They most certainly should have done so this month in Copenhagen. But they didn't. They allowed one country, the United States, to sabotage the treaty, both procedurally and substantively. Whether the United Nations Framework Convention on Climate Change will survive at all is doubtful.

Well, aside from the fact that the United States is the biggest polluter in the world, and even though its empire is rapidly fading, it is still an enormously powerful nation. If a country is not its ally, it is most likely its enemy, and it can be utterly smashed, as has been demonstrated repeatedly in recent years in Yugoslavia, Iraq, Afghanistan, Somali, and (coming soon) Yemen.

In other words, what we are seeing in operation here (in the ability of the U.S. to dictate the terms of the treaty, and even scuttle it) is the world's structure of power, obviously. The conceptual framework being used to understand and discuss this power structure, however, both inside the convention halls and outside in the streets, is badly flawed. The world is not made up of "developed" and "developing" nations. Each of the 192 nations is not separately and autonomously passing through stages to development, with some just being farther along than others. The world is made up of imperial exploiting nations and exploited or neocolonial nations. In fact, most countries of the world are not on the road to development at all. They have been and are still being systematically and deliberately underdeveloped by the core capitalist countries.

Yet these ideas were missing in Copenhagen. Capitalists were there in full force (incognito of course), but capitalism, the concept, wasn't. The negotiations were taking place, as well as the protests against them, as if capitalism didn't exist (except for a few anti-capitalist banners in the streets, and speeches by the presidents of Bolivia and Venezuela, Evo Morales and Hugo Chavez). It is not useful at all to divide the world into rich and poor countries (as the Rio treaty does). Every nation, however poor, has a rich elite, which is more or less integrated into the global capitalist system. Representatives of these elites were meeting in Copenhagen, not independent

with the aid of governments — Joel Kovel, John Bellamy Foster, Charles Derber. That is, they are anti-capitalist, but not anti-state. This is just to say that an anarchist perspective on the crisis is hardly in the discussion at all (but see Recommended Essays below).

At least one head of state, Evo Morales, president of Bolivia, has clearly identified capitalism as the enemy, when he said "Either capitalism dies or Mother Earth dies." But as the head of a government he naturally doesn't think of attacking the state too, or representative government *per se*. According to one participant in April's climate justice conference in Tiquipaya, Bolivia, many of those attending (roughly 30,000 from 140 countries, with 40 governmental delegations) were anti-capitalists, but few were anti-state. Besides, Evo Morales is merely president of one of the poorest nations on earth. How much power does he have? Where are the voices of the great European labor unions, the big UN agencies like the World Health Organization or the Food and Agriculture Organization, the global NGOs, the leaders of the world's Social Democratic parties?

At this point a conceptual clarification is necessary in order to grasp the scope of the problem and to begin to perceive the necessary solution. Capitalism is the name for an entire social order. It is not just an "economy." Thus, the international nation-state system is an integral part of capitalism, and has been from the very beginning. Capitalists took over the pre-existing state forms and turned them to their own ends, integrating them into their project of accumulating capital. The ability to make profit from privately owned productive properties would be impossible without the legal framework provided by governments, backed by police and military violence. Businesses and governments are in bed together, and have been for the past five hundred years (profit takers + politicians = capitalism). Yet even when a few climate justice activists do admit that capitalism has to be destroyed in order to stop global warming, they fail to note that states do too. Except for anarchists.

Global warming, after all, is merely the end result of centuries of environmental ravaging by capitalists. They have been destroying the environment from their earliest days as the world's most powerful ruling class. Earlier civilizations did too, but not on such a scale, nor with such relentlessness, nor with a logic internal to their social system, nor with powerful industrial technology, nor were they global civilizations. Capitalists can't make profit



The task of getting off all fossil fuels is even more daunting. It would require, in addition to clean electricity, massive energy conservation programs, abandonment of industrial agriculture in favor of sustainable organic farming, retro-fitting the world's cars and trucks for hydrogen or electricity and a drastic reduction in their number, massive investment in high speed electric trains and other public transportation, severe curtailment of flying, resettlement of the countryside, stopping the destruction of forests, drastic reduction of energy use almost across the board, putting an end to waste and shoddy products, abandonment of unnecessary or frivolous industry, dismantling the world's military machines (which are among the greatest consumers of oil, especially the Pentagon), abolition of stock markets, defeat of the mammoth oil companies, and so forth.

Just to list these minimum required changes exposes how utterly incompatible they are with capitalism, for those who are even aware of capitalism, that is, and understand how it works. Capitalists have caused these human-made material realities we are living with — the 438 nuclear power plants with 61 more under construction (as of 2010), the roughly 800 million passenger cars and light trucks on the road (in 2007), the megacities (20 of them with a population of over 10 million each, another 26 with a population of over 5 million each), the fleets of jet planes, oil tankers, agribusiness, skyscrapers, industry, tourism, the huge government bureaucracies, massive dams, and so forth. Are capitalists likely to do an about face now and start to dismantle all this. No they're not. They couldn't, actually (and remain capitalists, that is), because there is no profit to be made from dismantling all this infrastructure.

It's true that a small minority of capitalists are trying to make profit off global warming. They are building vast wind and solar installations, inventing hydrogen powered cars, converting millions of acres of farm land to the production of biomass, trying to create a market for carbon trading, and starting to build vast new power grids. When corporations and governments do get involved in trying to stop global warming, this is the direction they go in. They try to solve the crisis within the framework of capitalism. Even many of the most outspoken climate activists do this; that is, they are not anti-capitalist — James Hansen, George Monbiot, Bill McKibben, Al Gore, or Ross Gelbspan. Those few climate theorists who are anti-capitalist, mostly from a Marxist perspective, nevertheless think that the crisis can be solved

governments. Their demand that the North pay its climate debt to the South is not really about stopping global warming. It's about getting the money and technology to develop. These junior partners of empire desire to become major players. Even their insistence on democracy and transparency is colored by this desire. The first hurdle they must clear is simply to be admitted to the chambers where decisions are made.

This explains why the delegates to these conferences cannot devise effective solutions to the climate crisis. They are themselves part of the problem. Any government, after all, could, if it only wanted to, outlaw fossil fuels and enforce this law with its police and armies. There is no need to try to reduce carbon emissions through the market. They could simply be banned. This would be suicide for the capitalist class, however, of which national elites are a part, so it is never done.

Can global warming be stopped on the local level? No it can not. Tens of thousands of towns and cities could do everything in their power to reduce their carbon footprints and it would not make much difference as long as the great engines of capitalist industry, agriculture, transportation, government, and military are still running.

Capitalists have caused global warming.<sup>3</sup> It is true that initially, and for a long time thereafter, capitalists didn't know that they were doing this, but they could damn well see that they were destroying the environment, and they didn't care, and still don't, any more than they cared about the millions of people they were killing, and still are. Capitalists are not going to stop global warming. They are still, and always will be, bickering and jockeying and fighting amongst themselves for position, power, markets, resources, and profits. That's what they mostly do at these conferences. (Plus, thousands of corporate lobbyists descended on Copenhagen, flushed with cash, to add to the chaotic drama.)

We might have survived peak oil and the gradual disappearance of cheap fossil fuel energy. (Too bad peak oil didn't happen a couple of decades earlier.) That crisis would have been spread over several decades at least. We might have had as much as 50 years to make the transition to a less energy-

<sup>3</sup> One of the most uncompromising statements of the link between capitalism and the environmental crisis is the book by Joel Kovel, *Enemy of Nature: The End of Capitalism or the End of the World?* (Zed Books, 2007, second edition, 354 pages).

intensive way of life (seeing that no combination of known alternative energy sources can even begin to replace the energy we have been getting from fossil fuels). We would at least have had a bit more time to try once again to get capitalists out of the picture, so that humanity could work together to build a new civilization, something that is impossible to do as long as capitalists control the world. There would even have been an outside chance that it could have been a sustainable, decentralized, democratic, and just social order that we created.

But this new crisis, this imminent “tipping point” for global warming, is another beast altogether. It is happening too fast. How can we possibly dismantle in just a decade or two the vast infrastructures capitalists have built — the billions of people living in crowded metropolises, having been driven off their lands and separated from their peasant farming and now totally dependent on agribusiness for their food and on oil and gas for heat and transportation?

In retrospect, it appears that our fate was sealed when our massive communist, socialist, and anarchist movements, which mobilized tens of millions of people, failed throughout the twentieth century to defeat capitalists. Now it seems that we may not get another chance.

Can the climate justice movement stop global warming? No it can not. To do that it would have to be able to destroy capitalism. This objective, however, is hardly even on the agenda for most climate activists, and if it were they wouldn’t have an inkling about a strategy for doing so. Hardly anyone does nowadays. If a movement can’t even identify the root cause of a problem, how can it possibly solve it?

It was sweet, it’s true, that climate justice activists made such an impressive showing in Copenhagen. They put 100,000 people in the streets. They came from all over the world. They organized an alternative conference, the KlimaForum. They tried to make their voices heard. But they were viciously repressed, and, in the end, actually locked out of the conference hall.

There were dozens of groups and organizations involved, among which were: Climate Justice Action, Greenpeace International, Rising Tide International, Carbon Trade Watch, Camp for Climate Action, Friends of the Earth International, Mobilization for Climate Justice, 350.org, Rainforest Action Network, and Climate Crisis Coalition. There are hundreds of NGOs worldwide working on this issue.

the world at 39.3% (India 3.5%, Japan 4.1%). Historically (1751–2008), Europe is seen to be an even worse polluter with 37.9% of cumulative emissions to the U.S.’s 27.2%, and China’s 9.1%.<sup>11</sup>

These facts suggest a point of attack, and James Hansen has been focusing on it for some time: coal.<sup>12</sup> If the world would stop burning coal to generate electricity this alone would significantly reduce carbon emissions, perhaps enough so to slow global warming a bit to give us more time to get off fossil fuels altogether. We can narrow it down even further. If only the United States (with 614 coal-fired power plants, out of 2300 world wide) and China (with 620 coal-fired power plants, with about 500 more due to come on-line in the near future) would stop burning coal this would be a big step toward reducing CO2 emissions. But how likely is it that these two nations, each with a rapacious and savage capitalist ruling class, can be pressured to do so? Not very damn likely, I’d say.

No, global warming is a global problem and requires a global solution. Even if the USA, Europe, and China, which together produce 60% of the world’s total, all reduced their CO2 emissions to zero, that would still leave the 40% being produced by the rest of the world. That 40% might be enough to push us over the tipping points.

It seems unlikely also that coal could be separated out like this from the rest of the problem. If a global campaign could be organized and implemented to phase out coal why not also work to get off fossil fuels in general at the same time. That would make more sense. But just to replace all coal-fired power plants in the world would in itself take a stupendous amount of capital, involvement of all major governments, and agreement by a sizable chunk of the corporate and financial elite. There would have to be a worldwide coordinated effort to rapidly exploit, on a massive scale, all alternative sources of energy for the generation of electricity — wind, solar, geothermal, tides, heat pumps — and do this without building more dams or nuclear power plants. Such an international crash program does not seem in the cards at all. In fact, the opposite is happening. At least three dozen countries are in the process of building more coal-fired power plants.

<sup>11</sup> From two diagrams on page 189, James Hansen, *Storms of My Grandchildren*.

<sup>12</sup> See, for example, James Hansen, “Coal-fired power stations are death factories. Close them.” *The Observer*, Sunday, February 15, 2009.

has already started to thaw, releasing gas, and methane has already been observed bubbling up in the Arctic Ocean and elsewhere. Stopping this is our most urgent task.

Before returning to the question of whether or how global warming can be stopped, let me set the scene a little more clearly with some pertinent facts. As most everyone now knows, carbon dioxide is the most important greenhouse gas, comprising 76.7% of the total. Of this, 56.6% comes from burning fossil fuels; another 17.3% comes from deforestation and rotting vegetation; and 2.8% from other sources. Other major greenhouse gases are methane at 14.3%, and nitrous oxide at 7.9%.<sup>8</sup>

So this is why the focus has been on reducing CO<sub>2</sub>. Most of the CO<sub>2</sub> from burning fossil fuels comes from burning coal to generate electricity. Forty-one percent of electricity world wide is generated from burning coal (gas 20%, hydro 16%, nuclear 15%, oil 6%, renewables 2%).<sup>9</sup> Being new to the issue I found this surprising. I had assumed that most emissions came from burning oil (gasoline, diesel, kerosene) in cars, trucks, and planes. Actually, transportation accounts for about half as many emissions as coal-fired power plants.

The breakdown of carbon dioxide emissions by sector of the economy is as follows, in descending order of size: energy supply 25.9%, industry 19.4%, forestry 17.4%, agriculture 13.5%, transportation 13.1%, residential and commercial buildings 7.9%, and waste and wastewater 2.8%.<sup>10</sup> So all the stress being put on greening residential and commercial buildings while ignoring electricity generation, industry, and agriculture is seriously misguided.

Where, geographically, do CO<sub>2</sub> emissions come from? Again, there is a surprise, since everyone says that the United States is the worst polluter. This is not true if Europe is taken as a whole (and after all they've been toting their European Union for some time now), and if we include Russia as part of Europe as it rightfully should be. Thus in 2008 China produced 22.1% of CO<sub>2</sub> emissions, with Europe at 20.7%, the United States at 17.9%, and the rest of

Nevertheless, this movement is very short on money and power, and it is not massive (although it likes to pretend that it is). Its protests have no punch, as was noted by Naomi Klein when she said in Copenhagen: "They're laughing at us." There is not much muscle here to be coming up against a rich, deeply entrenched, historically seasoned, and powerful world ruling class. The slogans are nice: "Our Climate is Not Your Business," "Change Trade, Not the Climate," "There is No Planet B," "Bla Bla Bla, Act Now," "Nature Doesn't Compromise," and so forth. But can they ever be more than just chants? I think not.

So what are our prospects? Realistically speaking, we are fucked. Ten, fifteen, or twenty years will go by in a flash. Business as usual will prevail. The oil, gas, and coal companies will not be reigned in. The lumber companies that are cutting down the rainforests for profit will not be stopped. Corporate-controlled governments will not take action. The sheer inertia of a worldwide capitalist civilization built on cheap fossil fuel energy will keep the vast machine grinding inexorably on until the tipping point is reached, after which the irreversible warming of the earth will begin in earnest from natural causes. That will be the end of the line for us.

## Further Reflections on Stopping Global Warming

In my continuing study and deliberation about global warming during the five months since the above was written, I've mostly been trying to find a little wiggle room, a way out of the dire prognosis laid out in that report on COP 15. Is our situation really as bad as I claimed?

The first thing I re-examined was the timelines on tipping points. How firm are they? Well, there are several tipping points each with an independent timeline, but which nevertheless more or less converge. Here are the major ones. (1) Death or destruction of rainforests; (2) Ocean acidification; (3) Melting of snow and ice (glaciers, ice caps on Greenland and the Antarctic, sea ice on the Arctic Ocean); (4) Ocean warming; (5) Thawing of frozen tundra across Siberia and northern Canada.

Let's take a look at these. Some scientists are now claiming that the rainforests are already at the upper limit of their tolerance for temperature

<sup>8</sup> From a diagram on page 8, Anna Lappe, *Diet for a Hot Planet*. Source: International Panel on Climate Change, 4<sup>th</sup> Assessment, "Synthesis Report."

<sup>9</sup> Source: World Coal Institute. "Total World Electricity Generation by Fuel (2006)." On the web at: <http://www.worldcoal.org/coal/uses-of-coal/coal-electricity/>

<sup>10</sup> From a diagram on page 10, Anna Lappe, *Diet for a Hot Planet*. Source: International Panel on Climate Change, 4<sup>th</sup> Assessment Report, "Synthesis Report."

increases. With further warming they might simply die, scientists say.<sup>4</sup> In terms of loss of biodiversity this would be a colossal tragedy, but a tragedy also for global warming, because rainforests are a major carbon sink. They take CO<sub>2</sub> out of the air. If they die, they will start adding CO<sub>2</sub> to the atmosphere with the burning or rotting of dead trees and vegetation. Even if rainforests don't die, transnational lumber companies are cutting them down at a rapid clip, with the consent of national governments. We can't put a precise date on when they will be gone. It is not unreasonable, however, to say that if the present rate of deforestation continues, they will be gone in 20 to 30 years.<sup>5</sup>

The oceans are also a carbon sink, but they are becoming less so as they acidify by absorbing some of the excess CO<sub>2</sub> in the atmosphere. Ocean acidification is already quite alarming. It's hard to say though exactly when the oceans will stop absorbing CO<sub>2</sub>, but 20–30 years is not an unreasonable estimate.

The most imminent and very visible tipping point is the melting of the earth's snow and ice. This will significantly decrease the amount of sunlight

<sup>4</sup> As I understand it, originally there were only a dozen or two scientists challenging the global warming thesis, and they were obviously beholden to the fossil fuel industry. But now it seems that there are more numerous independent climatologists who challenge the prevailing view. Some of them agree that warming has been taking place but deny that this is being caused by increased levels of carbon dioxide in the atmosphere. They say it is because of normal cycles in the number of sun spots, and that the warming period we have been in will quite soon give way to cooling, probably just a normal cooling cycle, but possibly another "little ice age." Other climatologists say that the earth is not warming at all, but cooling, and they have data bases and charts to prove it. These claims are a little harder to swallow, seeing that all the glaciers are melting before our very eyes. A useful archive of papers on both sides of this debate, but with an emphasis on dissenting views, has been compiled and posted on the Global Research web site in Canada, at: <http://globalresearch.ca/index.php?context=news&newsId=24>. Let's hope that these global warming deniers are correct, and that we will get a reprieve from the imminent climate catastrophe that we are otherwise facing. However, for my part, I no longer put much stock in the arguments of the climate skeptics. It seems to me that their theories have been thoroughly refuted by the leading climate warming scientists.

<sup>5</sup> The top ten countries with the largest net loss of forests, 2000–2005, measured in acres of forest lost per year, are Brazil 7,667,689; Indonesia 4,623,322; Myanmar 1,151,506; Sudan 1,455,445; Zambia 1,099,614; Tanzania 1,018,070; Nigeria 1,013,127; Congo 788,263; Zimbabwe 773,436. See page 174 in Al Gore, *Our Choice*. Source: UN, FAO, *State of the World's Forests*, 2007.

being reflected back into space. Instead, the energy will stay on the earth heating up the oceans, soil, and atmosphere. Glaciers the world over are rapidly melting. The sea ice covering the Arctic Ocean is melting. The ice caps on the Antarctic and Greenland are melting. It is now believed that Greenland's ice sheet could disintegrate rapidly, in just a few decades, rather than in the century or more indicated by previous estimates.

Global warming will bring and is bringing with it drastic changes and hardships, like more severe weather, desertification, and rising sea levels. For the latter, for example, if all the snow and ice on earth melts, the sea level will rise by 250 feet. This will cause almost unimaginable suffering, destruction, and death, but is not in itself earth killing. What I want to hone in on here are the tipping points that will kill all life on earth.

It's clear what they are: warming of the oceans, and thawing of the frozen tundra stretching across Siberia and northern Canada. Why? Because this warming will release billions of tons of methane gas trapped in the northern permafrost and in frozen nodules in the oceans (methane hydrates). (And methane is a more powerful greenhouse gas than carbon dioxide.) Once this process is fully underway it becomes self-perpetuating and is irreversible. There are no natural processes that could remove the gas from the atmosphere fast enough. The atmosphere will become poisonous. The earth will get very hot. All life will die. The earth will become like Venus.<sup>6</sup>

This is what we must fear. If carbon dioxide emissions are not stopped, the earth will continue to heat up. Carbon dioxide in the atmosphere is continuing to increase by 2 ppm (parts per million) per year. Thus in 20 years another 40 ppm will be added to the existing 385 ppm, which is already 35 ppm over the 350 ppm which is considered the maximum permissible for a stable climate. (The pre-industrial level was 280 ppm in 1750.) 425 ppm CO<sub>2</sub> might be enough to raise the earth's temperature another two degrees. So these last two tipping points could well be passed in twenty years, thirty at the most.<sup>7</sup> These dates are not absolutely firm, but seeing that all life on earth is at stake, we dare not gamble that we have more time. The permafrost

<sup>6</sup> See Chapter 10, "The Venus Syndrome," in James Hansen, *Storms of My Grandchildren*.

<sup>7</sup> For the December essay I had picked up the year 2020 from various reports and target dates circulating at Copenhagen. Upon further study, however, I think that ten years is too early to expect tipping points to be passed. We have a little more time than that, but not much, 20–30 years.