

## Ecology

# ***The Moment of Truth—An Introduction***

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It is impossible to exaggerate the environmental problem facing humanity in the twenty-first century. Nearly fifteen years ago one of us observed: “We have only four decades left in which to gain control over our major environmental problems if we are to avoid irreversible ecological decline.”<sup>1</sup> Today, with a quarter-century still remaining in this projected time line, it appears to have been too optimistic. Available evidence now strongly suggests that under a regime of business as usual we could be facing an irrevocable “tipping point” with respect to climate change within a mere decade.<sup>2</sup> Other crises such as species extinction (percentages of bird, mammal, and fish species “vulnerable or in immediate danger of extinction” are “now measured in double digits”);<sup>3</sup> the rapid depletion of the oceans’ bounty; desertification; deforestation; air pollution; water shortages/pollution; soil degradation; the imminent peaking of world oil production (creating new geopolitical tensions); and a chronic world food crisis—all point to the fact that the planet as we know it and its ecosystems are stretched to the breaking point. The moment of truth for the earth and human civilisation has arrived.

To be sure, it is unlikely that the effects of ecological degradation in our time, though enormous, will prove “apocalyptic” for human civilisation within a single generation, even under conditions of capitalist business as usual. Measured by normal human life spans, there is doubtless considerable time still left before the full effect of the current human degradation of the planet comes into play. Yet, the period remaining in which we can *avert* future environmental catastrophe, before it is essentially out of our hands, is much shorter. Indeed, the growing sense of urgency of environmentalists has to do with the prospect of various tipping points being reached as critical ecological thresholds are crossed, leading to the possibility of a drastic contraction of life on earth.

Such a tipping point, for example, would be an ice free Arctic, which could happen within two decades or less (some scientists believe as early as 2013). Already in summer 2007 the Arctic lost *in a single week* an area of ice almost twice the size of Britain. The vanishing Arctic ice cap means an enormous reduction in the earth’s reflectivity (albedo), thereby sharply increasing global warming (a positive feedback known as the “albedo flip”). At the same time, the rapid disintegration of the ice sheets in West Antarctica and Greenland points to rising world sea levels, threatening coastal regions and islands.<sup>4</sup>

The state of the existing “planetary emergency” with respect to climate change was captured this year by James Hansen, director of NASA’s Goddard Institute for Space Studies and the leading U.S. climatologist:

Our home planet is dangerously near a tipping point at which human-made greenhouse gases reach a level where major climate changes can proceed mostly under their own momentum. Warming will shift climatic zones by intensifying the hydrologic cycle, affecting freshwater availability and human health. We will see repeated coastal tragedies associated with storms and continuously rising sea levels. The implications are profound, and the only resolution is for humans to move to a fundamentally different energy pathway within a decade. Otherwise, it will be too late for one-third of the world’s animal and plant species and millions of the most vulnerable members of our own species.<sup>5</sup>

According to environmentalist Lester Brown in his *Plan B 3.0*, “We are crossing natural thresholds that we cannot see and violating deadlines that we do not recognise. Nature is the time keeper, but we cannot see the clock....We are in a race between tipping points in the earth’s natural systems and those in the world’s political systems. Which will tip first?”<sup>6</sup> As the clock continues to tick and little is accomplished it is obvious that the changes to be made have to be all the more sudden and massive to stave off ultimate disaster. This raises the question of more revolutionary social change as an ecological as well as social necessity.

Yet, if revolutionary solutions are increasingly required to address the ecological problem, this is precisely what the existing social system is guaranteed *not* to deliver. Today’s environmentalism is aimed principally at those measures necessary to lessen the impact of the economy on the planet’s ecology *without* challenging the economic system that in its very workings produces the immense environmental problems we now face. What we call “*the environmental problem*” is in the end primarily a problem of political economy. Even the boldest establishment economic attempts to address climate change fall far short of what is required to protect the earth—since the “bottom line” that constrains all such plans under capitalism is the necessity of continued, rapid growth in production and profits.

### **The dominant economics of climate change**

The economic constraint on environmental action can easily be seen by looking at what is widely regarded as the most far-reaching establishment attempt to date to deal with *The Economics of Climate Change* in the form of a massive study issued in 2007 under that title, commissioned by the UK Treasury Office.<sup>7</sup> Subtitled the *Stern Review* after the report’s principal author Nicholas Stern, a former chief economist of

the World Bank, it is widely viewed as the most important, and most progressive mainstream treatment of the economics of global warming.<sup>8</sup> The *Stern Review* focuses on the target level of carbon dioxide equivalent (CO<sub>2e</sub>) concentration in the atmosphere necessary to stabilise global average temperature at no more than 3°C (5.4°F) over pre-industrial levels. (CO<sub>2e</sub> refers to the six Kyoto greenhouse gases—carbon dioxide [CO<sub>2</sub>], methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride—all expressed in terms of the equivalent amount of CO<sub>2</sub>. While CO<sub>2</sub> concentration in the atmosphere today is 387 parts per million [ppm], CO<sub>2e</sub> is around 430 ppm.)

The goal proposed by most climatologists has been to try to prevent increases in global temperature of more than 2°C (3.6°F) above pre-industrial levels, requiring stabilisation of atmospheric CO<sub>2e</sub> at 450 ppm, since beyond that all sorts of positive feedbacks and tipping points are likely to come into play, leading to an uncontrollable acceleration of climate change. Indeed, James Hansen and other climatologists at NASA's Goddard Institute for Space Studies have recently argued: "If humanity wishes to preserve a planet similar to that on which civilization developed and to which life on Earth is adapted, paleoclimate evidence and ongoing climate change suggest that CO<sub>2</sub> will need to be reduced from its current 385 ppm to at most 350 ppm."<sup>9</sup> The *Stern Review*, however, settles instead for a global average temperature increase of no more than 3°C (a threshold beyond which the environmental effects would undoubtedly be absolutely calamitous), which it estimates can likely be achieved if CO<sub>2e</sub> in the atmosphere were stabilised at 550 ppm, roughly double pre-industrial levels.

Yet, the *Stern Review* acknowledges that current environmental sensitivities "imply that there is up to a one-in-five chance that the world would experience a warming in excess of 3°C above pre-industrial [levels] even if greenhouse gas concentrations were stabilised at today's level of 430 ppm CO<sub>2e</sub>." Moreover, it goes on to admit that "for stabilisation at 550 ppm CO<sub>2e</sub>, the chance of exceeding 3°C rises to 30–70%." Or as it states further on, a 550 ppm CO<sub>2e</sub> suggests "a 50:50 chance of a temperature increase above or below 3°C, and the Hadley Centre model predicts a 10% chance of exceeding 5°C [9°F] even at this level." A 3°C increase would bring the earth's average global temperature to a height last seen in the "middle Pliocene around 3 million years ago."

Furthermore, such an increase might be enough, the *Stern Review* explains, to trigger a shutdown of the ocean's thermohaline circulation warming Western Europe, creating abrupt climate change, thereby plunging Western Europe into Siberian-like conditions. Other research suggests that water flow in the Indus may drop by 90 per

cent by 2100 if global average temperatures rise by 3°C, potentially affecting hundreds of millions of people. Studies by climatologists indicate that at 550 ppm CO<sub>2e</sub> there is more than a 5 per cent chance that global average temperature could rise in excess of 8°C (14.4°F). All of this suggests that a stabilisation target of 550 ppm CO<sub>2e</sub> could be disastrous for the earth as we know it as well as its people.

Why then, if the risks to the planet and civilisation are so enormous, does the *Stern Review* emphasise attempting to keep global warming at 3°C by stabilising CO<sub>2e</sub> at 550 ppm (what it describes at one point as “the upper limit to the stabilisation range”)? To answer this it is necessary to turn to some additional facts of a more economic nature.

Here it is useful to note that an atmospheric concentration level close to 550 ppm CO<sub>2e</sub> would result by 2050 if greenhouse gas emissions simply continued at present levels without any increases in the intervening years. However, as the *Stern Review* itself notes, this is unrealistic under business as usual since global greenhouse gas emissions can be expected to continue to increase on a “rapidly rising trajectory.” Hence, an atmospheric CO<sub>2e</sub> level of 550 ppm under more realistic assumptions would be plausibly reached by 2035. This would increase the threat of 750 ppm CO<sub>2e</sub> (or more) and a rise in global average temperature in excess of 4.3°C (7.7°F) within the next few decades after that. (Indeed, IPCC scenarios include the possibility that atmospheric carbon could rise to 1,200 ppm and global average temperature by as much as 6.3°C [11.3°F] by 2100.)

To counter this business-as-usual scenario, the *Stern Review* proposes a climate stabilisation regime in which greenhouse gas emissions would peak by 2015 and then drop 1 per cent per year after that, so as to stabilise at a 550 ppm CO<sub>2e</sub> (with a significant chance that the global average temperature increase would thereby be kept down to 3°C).

But, given the enormous dangers, why not aim at deeper cuts in greenhouse gas emissions, a lower level of atmospheric CO<sub>2e</sub>, and a smaller increase in global average temperature? After all most climatologists have been calling for the stabilisation of atmospheric CO<sub>2e</sub> 450 ppm or less, keeping the global temperature increase at about 2°C above pre-industrial levels. While Hansen and his colleagues at NASA’s Goddard Institute have now gone even further arguing that the target should be 350 ppm CO<sub>2</sub>.

The *Stern Review* is very explicit, however, that such a radical mitigation of the problem *should not be attempted*. The costs to the world economy of ensuring that atmospheric CO<sub>2e</sub> stabilised at present levels or below would be prohibitive, destabilising capitalism itself. “Paths requiring very rapid emissions cuts,” we are

told, “are unlikely to be economically viable.” If global greenhouse gas emissions peaked in 2010 the annual emissions reduction rate necessary to stabilise atmospheric carbon at 450 ppm, the *Stern Review* suggests, would be 7 per cent, with emissions dropping by about 70 per cent below 2005 levels by 2050. This is viewed as economically insupportable.

Hence, the *Stern Review's* own preferred scenario, as indicated, is a 550 ppm target that would see global greenhouse gas emissions peak in 2015, with the emission cuts that followed at a rate of 1 per cent per year. By 2050 the reduction in the overall level of emissions (from 2005 levels) in this scenario would only be 25 per cent. (The report also considers, with less enthusiasm, an in-between 500 ppm target, peaking in 2010 and requiring a 3 per cent annual drop in global emissions.) Only the 550 ppm target, the *Stern Review* suggests, is truly economically viable because “it is difficult to secure emission cuts faster than about 1% per year except in instances of recession” or as the result of a major social upheaval such as the collapse of the Soviet Union.

Indeed, the only actual example that the *Stern Review* is able to find of a sustained annual cut in greenhouse gas emissions of 1 per cent or more, coupled with economic growth, among leading capitalist states was the United Kingdom in 1990–2000. Due to the discovery of North Sea oil and natural gas, the United Kingdom was able to switch massively from coal to gas in power generation, resulting in a 1 per cent average annual drop in its greenhouse gas emissions during that decade. France came close to such a 1 per cent annual drop in 1977–2003, reducing its greenhouse gas emissions by .6 per cent per year due to a massive switch to nuclear power. By far the biggest drop for a major state was the 5.2 per cent per year reduction in greenhouse gas emissions in the Former Soviet Union in 1989–98. This however went hand in hand with a social-system breakdown and a drastic shrinking of the economy. All of this signals that any reduction in CO<sub>2e</sub> emissions beyond around 1 per cent per year would make it virtually impossible to maintain strong economic growth—the bottom line of the capitalist economy. Consequently, in order to keep the treadmill of profit and production going the world needs to risk environmental Armageddon.<sup>10</sup>

### **Accumulation and the planet**

None of this should surprise us. Capitalism since its birth, as Paul Sweezy wrote in “Capitalism and the Environment,” has been “a juggernaut driven by the concentrated energy of individuals and small groups single-mindedly pursuing their own interests, checked only by their mutual competition, and controlled in the short

run by the impersonal forces of the market and in the longer run, when the market fails, by devastating crises.” The inner logic of such a system manifests itself in the form of an incessant drive for economic expansion for the sake of class-based profits and accumulation. Nature and human labor are exploited to the fullest to fuel this juggernaut, while the destruction wrought on each is externalised so as to not fall on the system’s own accounts.

“Implicit in the very concept of this system,” Sweezy continued, “are interlocked and enormously powerful drives to both creation and destruction. On the plus side, the creative drive relates to what humankind can get out of nature for its own uses; on the negative side, the destructive drive bears most heavily on nature’s capacity to respond to the demands placed on it. Sooner or later, of course, these two drives are contradictory and incompatible.” Capitalism’s overexploitation of nature’s resource taps and waste sinks eventually produces the negative result of undermining both, first on a merely regional, but later on a world and even planetary basis (affecting the climate itself). Seriously addressing environmental crises requires “a reversal, not merely a slowing down, of the underlying trends of the last few centuries.” This, however, cannot be accomplished without economic regime change.<sup>11</sup>

With climate change now more and more an establishment concern, and attempts to avert it now increasingly institutionalised in the established order, some have pointed to the “death of environmentalism” as an oppositional movement in society.<sup>12</sup> However, if some environmentalists have moved toward capitalist-based strategies in the vain hope of saving the planet by these means, others have moved in the opposite direction: toward a critique of capitalism as inherently ecologically destructive. A case in point is James Gustave Speth. Speth has been called the “ultimate insider” within the environmental movement. He served as chairman of the Council on Environmental Quality under President Jimmy Carter, founded the World Resources Institute, co-founded the Natural Resources Defense Council, was a senior adviser in Bill Clinton’s transition team, and administered the United Nations Development Programme from 1993 to 1999. At present he is dean of the prestigious Yale School of Forestry and Environmental Studies. Speth is a winner of Japan’s Blue Planet Prize.

Recently, however, in his *Bridge at the Edge of the World: Capitalism, the Environment, and Crossing from Crisis to Sustainability* (2008), Speth has emerged as a devastating critic of capitalism’s destruction of the environment. In this radical rethinking, he has chosen to confront the full perils brought on by the present economic system, with its pursuit of growth and accumulation at any cost. “Capitalism as we know it today,” he writes, “is incapable of sustaining the

environment.” The crucial problem from an environmental perspective, he believes, is exponential economic growth, which is the driving element of capitalism. Little hope can be provided in this respect by so-called “dematerialisation” (the notion that growth can involve a decreasing impact on the environment), since it can be shown that the expansion of output overwhelms all increases in efficiency in throughput of materials and energy. Hence, one can only conclude that “right now...growth is the enemy of [the] environment. Economy and environment remain in collision.” Here the issue of capitalism becomes unavoidable. “Economic growth is modern capitalism’s principal and most prized product.” Speth favorably quotes Samuel Bowles and Richard Edwards’s *Understanding Capitalism*, which bluntly stated: “Capitalism is differentiated from other economic systems by its drive to accumulate, its predisposition toward change, and its built-in tendency to expand.”

The principal environmental problem for Speth then is capitalism as the “operating system” of the modern economy. “Today’s corporations have been called ‘externalizing machines.’” Indeed, “there are fundamental biases in capitalism that favor the present over the future and the private over the public.” Quoting the system’s own defenders, Robert Samuleson and William Nordhaus, in the seventeenth (2001) edition of their textbook on *Macroeconomics*, Speth points out that capitalism is the quintessential “Ruthless Economy,” engaged “in the relentless pursuit of profits.”

Building on this critique, Speth goes on to conclude in his book that: (1) “today’s system of political economy, referred to here as modern capitalism, is destructive of the environment, and not in a minor way but in a way that profoundly threatens the planet”; (2) “the affluent societies have reached or soon will reach the point where, as Keynes put it, the economic problem has been solved...there is enough to go around”; (3) “in the more affluent societies, modern capitalism is no longer enhancing human well-being”; (4) “the international social movement for change—which refers to itself as ‘the irresistible rise of global anti-capitalism’—is stronger than many imagine and will grow stronger; there is a coalescing of forces: peace, social justice, community, ecology, feminism—a movement of movements”; (5) “people and groups are busily planting the seeds of change through a host of alternative arrangements, and still other attractive directions for upgrading to a new operating system have been identified”; (6) “the end of the Cold War...opens the door...for the questioning of today’s capitalism.”

Speth does not actually embrace socialism, which he associates, in the Cold War manner, with Soviet-type societies in their most regressive form. Thus he argues explicitly for a “nonsocialist” alternative to capitalism. Such a system would make

use of markets (but not the self-regulating market society of traditional capitalism) and would promote a “New Sustainability World” or a “Social Greens World” (also called “Eco-Communalism”) as depicted by the Global Scenario Group. The latter scenario has been identified with radical thinkers like William Morris (who was inspired by both Marx and Ruskin). In this sense, Speth’s arguments are not far from that of the socialist movement of the twenty-first century, which is aimed at the core values of social justice and ecological sustainability. The object is to create a future in which generations still to come will be able to utilise their creative abilities to the fullest, while having their basic needs met: a result made possible only through the rational reorganisation by the associated producers of the human metabolism with nature.<sup>13</sup>

Such rational reorganisation of the metabolism between nature and society needs to be directed not simply at climate change but also at a whole host of other environmental problems. Some of these are addressed in the present issue: the geopolitics of peak oil (John Bellamy Foster), the production of biofuels as a liquid fuel alternative and its consequences (Fred Magdoff), the economics of climate change (Minqi Li), the science of climate change (John W. Farley), the ocean crisis (Brett Clark and Rebecca Clausen), the problem of large dams (Rohan D’Souza), and the world water crisis (Maude Barlow). Other ecological crises of great importance are not, however, dealt with here: species extinction (and loss of biological diversity in general), deforestation, desertification, soil degradation, acid rain, the proliferation of toxic wastes (including in living tissues), market-regulated biotechnology, urban congestion, population growth, and animal rights.

No single issue captures the depth and breadth of what we call “the environmental problem,” which encompasses all of these ecological contradictions of our society and more. If we are facing a “moment of truth” with respect to ecology today, it has to do with the entire gamut of capitalism’s effects on natural (and human) reproduction. Any attempt to solve one of these problems (such as climate change) without addressing the others is likely to fail, since these ecological crises, although distinct in various ways, typically share common causes.

In our view, only a unified vision that sees human production as not only social, but also rooted in a metabolic relation to nature, will provide the necessary basis to confront an ecological rift that is now as wide as the planet. Such a unified vision is implicit in the articles included in this issue. A more explicit treatment of the political aspects of this struggle will appear in a second special issue of *Monthly Review* on ecology (meant to complement this one) to be published this coming fall.

## Why not?

In 1884, William Morris, one of the great creative artists, revolutionary socialist intellectuals, and environmental thinkers of the late nineteenth century, wrote an article entitled “Why Not?” for the socialist journal *Commonweal*. He was especially concerned with the fact that most people, including many socialists in his time, in rebelling against the evils of capitalism, tended to picture the future in terms that were not that far removed from many of the worst, most environmentally and humanly destructive, aspects of capitalism itself.

“Now under the present Capitalist system,” Morris observed,

it is difficult to see anything which might stop the growth of these horrible brick encampments; its tendency is undoubtedly to depopulate the country and small towns for the advantage of the great commercial and manufacturing centres; but this evil, and it is a monstrous one, will be no longer a necessary evil when we have got rid of land monopoly, manufacturing for the profit of individuals, and the stupid waste of competitive distribution.

Looking beyond the “terror and the grinding toil” in which most people were oppressed, Morris argued, there was a need to recognise other ends of social existence: most notably “the pleasure of life to be looked forward to by Socialists.” “Why,” he asked,

should one third of England be so stifled and poisoned with smoke that over the greater part of Yorkshire (for instance) the general idea must be that sheep are naturally black? And why must Yorkshire and Lancashire rivers run mere filth and dye?

Profits will have it so: no one any longer pretends that it would not be easy to prevent such crimes against decent life: but the ‘organisers of labour,’ who might better be called ‘organisers of filth,’ know that it wouldn’t pay; and as they are for the most part of the year safe in their country seats, or shooting—crofters’ lives—in the Highlands, or yachting in the Mediterranean, they rather like the look of the smoke country for a change as something, it is to be supposed, stimulating to their imaginations concerning—well, we must not get theological.

In rejecting all of this, Morris asked, was it not possible to create a more decent, more beautiful, more fulfilling, more healthy, less hell-like way of living, in which all had a part in the “share of earth the Common Mother” and the sordid world of “profit-grinding” was at last brought to an end? Why Not?<sup>14</sup>

## Notes

1. John Bellamy Foster, *The Vulnerable Planet* (New York: Monthly Review Press, 1994), 12. The four decades projection was based on work by the Worldwatch Institute: Lester R. Brown, et. al., "World Without End," *Natural History* (May 1990): 89, and *State of the World 1992* (London: Earthscan, 1992), 3–8.

2. James Hansen, "Tipping Point," in E. Fearn and K. H. Redford eds, *The State of the Wild 2008* (Washington: Island Press, 2008), [http://pubs.giss.nasa.gov/docs/2008/2008\\_Hansen\\_1.pdf](http://pubs.giss.nasa.gov/docs/2008/2008_Hansen_1.pdf), 7–15. See also James Hansen, "The Threat to the Planet," *New York Times Review of Books*, July 13, 2006. The argument on tipping points with respect to climate change is best understood in the context of a series of biospheric rifts generated by the system of economic accumulation. On this see Brett Clark and Richard York, "Carbon Metabolism and Global Capitalism: Climate Change and the Biospheric Rift," *Theory and Society* 34, no. 4 (2005): 391–428.

3. Lester R. Brown, *Plan B 3.0* (New York: W.W. Norton, 2008), 102. The share of threatened species in 2007 was 12 per cent of the world's bird species; 20 per cent of the world's mammal species; and 39 per cent of the world's fish species evaluated. See International Union for the Conservation of Nature (IUCN), *IUCN Red List of Threatened Species*, Table 1, "Numbers of Threatened Species by Major Groups of Organisms," <http://www.iucnredlist.org/info/stats>. Additionally, climate change is having significant effects on plant diversity. "Recent studies predict that climate change could result in the extinction of up to half the world's plant species by the end of the century." See Belinda Hawkins, Suzanne Sharrock, and Kay Havens, *Plants and Climate Change* (Richmond, UK: Botanic Gardens Conservation International, 2008), 9.

4. David Spratt and Philip Sutton, *Climate Code Red* (Fitzroy, Australia: Friends of the Earth, 2008), <http://www.climatecoded.net>, 4; Brown, *Plan B 3.0*, 3; James Hansen, et al., "Climate Change and Trace Gases," *Philosophical Transactions of the Royal Society* 365 (2007), 1925–54; James Lovelock, *The Revenge of Gaia* (New York: Basic Books, 2006), 34; Minqi Li, "Climate Change, Limits to Growth, and the Imperative for Socialism," this issue; "Arctic Summers Ice-Free 'by 2013,'" *BBC News*, December 12, 2007.

5. Hansen, "Tipping Point," 7–8.

6. Brown, *Plan B 3.0*, 4–5. Although Brown, correctly depicts the seriousness of the ecological problem, as a mainstream environmentalist he insists that all can easily be made well without materially altering society by a clever combination of technological fixes and the magic of the market. See the article by Minqi Li below.

7. Nicholas Stern, *The Economics of Climate Change: The Stern Review* (Cambridge: Cambridge University Press, 2007).

8. The *Stern Review* has been criticised by more conservative mainstream economists, including William Nordhaus, for its ethical choices, which, it is claimed, place too much emphasis on the future as opposed to present-day values by adopting a much lower discount rate on future costs and benefits as compared to other, more standard economic treatments such as that of Nordhaus. This then gives greater urgency to today's environmental problem. Nordhaus discounts the future at 6 per cent a year; Stern by less than a quarter of that at 1.4 per cent. This means that for Stern having a trillion dollars a century from now is worth \$247 billion today, while for Nordhaus it is only worth \$2.5 billion. Nordhaus calls the *Stern Review* a "radical revision of the economics of climate change" and criticises it for imposing "excessively large emissions reductions in the short run." John Browne, "The Ethics of Climate Change," *Scientific American* 298, no. 6 (June 2008): 97-100; William Nordhaus, *A Question of Balance* (New Haven: Yale University Press, 2008), 18, 190.

9. James Hansen, et. al., "[Target Atmospheric CO<sub>2</sub>: Where Should Humanity Aim?](#)," abstract of article submitted to *Science*, (accessed in May 2008). Even before this Hansen and his colleagues at NASA's Goddard Institute argued that due to positive feedbacks and climatic tipping points global average temperature increases had to be kept to less than 1°C below 2000 levels. This meant that atmospheric CO<sub>2</sub> needed to be kept to 450 ppm or below. See Pushker A. Kharecha and James E. Hansen, "[Implications of 'Peak Oil' for Atmospheric CO<sub>2</sub> and Climate](#)," *Global Biogeochemistry* (2008, in press).

10. Stern, *The Economics of Climate Change*, 4-5, 11-16, 95, 193, 220-34, 637, 649-51; "Evidence of Human-Caused Global Warming is Now 'Unequivocal,'" *Science Daily*, <http://www.sciencedaily.com>; Browne, "The Ethics of Climate Change," 100; Spratt and Sutton, *Climate Code Red*, 30; Editors, "Climate Fatigue," *Scientific American* 298, no. 6 (June 2008): 39; Ted Trainer, "A Short Critique of the Stern Review," *Real-World Economics Review*, 45 (2008), <http://www.paecon.net/PAEReview/issue45/Trainer45.pdf>, 54-58. Despite the *Stern Review's* presentation of France's nuclear switch as a greenhouse gas success story there are strong environmental reasons for not proceeding along this path. See Robert Furber, James C. Warf, and Sheldon C. Plotkin, "The Future of Nuclear Power," *Monthly Review* 59, no. 9 (February 2008): 38-48.

11. Paul M. Sweezy, "Capitalism and the Environment," *Monthly Review* 41, no. 2 (June 1989): 1-10.

12. Michael Shellenberger and Ted Nordhaus, "The Death of Environmentalism,"

Environmental Grantmakers Association, October 2004,  
[http://thebreakthrough.org/PDF/Death\\_of\\_Environmentalism.pdf](http://thebreakthrough.org/PDF/Death_of_Environmentalism.pdf).

13. James Gustave Speth, *The Bridge at the End of the World: Capitalism, the Environment, and Crossing from Crisis to Sustainability* (New Haven: Yale University Press, 2008), xi, 48–63, 107, 194–98; Samuel Bowles and Richard Edwards, *Understanding Capitalism* (New York: Oxford University Press, 1985), 119, 148–52. On the Global Scenario Group see John Bellamy Foster, “Organizing Ecological Revolution,” *Monthly Review* 57, no. 5 (October 2005): 1–10. On ecological sustainability, classical socialism, and Marx’s critique of capitalism’s metabolic rift with nature see John Bellamy Foster, *Marx’s Ecology* (New York: Monthly Review Press, 2000).

14. William Morris, “Why Not,” in Morris, *Political Writings* (Bristol: Thoemmes Press, 1994), 24–27.