
HOT, CROWDED, AND NOT-SO-FLAT: THE CHANGING CLIMATE FOR CORPORATIONS

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George Will reminds us that there is an art to crisis making. He cites Gregg Easterbrook's *Law of Doomsaying*: "Predict catastrophe no sooner than five years hence but no later than 10 years away, soon enough to terrify but distant enough that people will forget if you are wrong."¹ Providing statistics that cast doubt on what is known about climate change, he declares climate change a *hypothetical* calamity in contrast to our present economic *real* calamity.² He sees a perverse tendency in those who seek to ameliorate climate change: "An unstated premise of eco-pessimism is that environmental conditions are, or recently were, optimal. The proclaimed faith of eco-pessimists is weirdly optimistic: These optimal conditions must and can be preserved or restored if government will make us minimize our carbon footprints and if government will 'remake' the economy."³

For some this perverse tendency rises to the level of one of the dominant threats to the future of humanity. Václav Klaus, President of the Czech Republic, speaks eloquently for this group:

The threat I have in mind is the irrationality with which the world has accepted the climate change (or global warming) as a real danger to the future of mankind and the irrationality of suggested and partly already implemented measures because they will fatally endanger our freedom and prosperity

. . . The climate change debate is basically not about science; it is about ideology. It is not about global temperature; it is about the concept of human society. It is not about nature or scientific ecology; it is about environmentalism, about one—recently born—dirigistic⁴ and

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1. George Will, *Dark Green Doomsayers*, WASH. POST, Feb. 15, 2009, at B7.

2. *Id.*

3. *Id.*

4. Dirigisme is defined as "economic planning and control by the state." WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY (1986).

collectivistic ideology, which goes against freedom and free markets.

I spent most of my life in a communist society which makes me particularly sensitive to the dangers, traps and pitfalls connected with it. Several points have to be clarified to make the discussion easier:

1. Contrary to the currently prevailing views promoted by global warming alarmists, . . . the increase in global temperatures in the last years, decades and centuries has been very small

2. [T]he empirical evidence is not alarming. The arguments of global warming alarmists rely exclusively upon forecasts, not upon past experience. . . .

3. It is, of course, not only about ideology. The problem has its important scientific aspect but . . . [t]he attempt to proclaim a scientific consensus on this issue is a tragic mistake, because there is none.

4. We are rational and responsible people and have to act when necessary. . . . [B]ased on our current knowledge—the risk is too small and the costs of eliminating it too high. The application of the so-called “precautionary principle,” advocated by the environmentalists, is—conceptually—a wrong strategy.

5. The deindustrialization and similar restrictive policies will be of no help. Instead of blocking economic growth, the increase of wealth all over the world and fast technical progress . . . we should leave them to proceed unhampered. They represent the solution to any eventual climate changes, not their cause. . . .

6. . . . Imposing overambitious and . . . economically disastrous environmental standards on [the less developed countries] is unfair.

No radical measures are necessary. We need something “quite normal.” . . .

I really do see environmentalism as a threat to our freedom and prosperity. I see it as “the world[‘s] key current challenge.”⁵

5. Václav Klaus, *Global Warming Hysteria or Freedom and Prosperity?*, EUPORTAL, Sept. 23, 2007 (emphasis omitted), <http://www.euportal.cz/Articles/1852-global-warming-hysteria-or-freedom-and-prosperity.aspx>. See generally

While such comments are jarring to those who take the need to “do something” about global warming for granted, they are insightful. Some of the proposals for addressing global warming would dramatically change industry and make requirements that no one currently has the capacity to meet. The emerging consensus on what it will take to keep climate change within two degrees Celsius (3.6 degrees Fahrenheit) of preindustrial levels is that greenhouse gases need to be stabilized at no more than 450 parts per million (ppm) carbon dioxide (CO₂) equivalent (“450 Max”), which would require (1) greenhouse-gas (“GHG”) emissions in industrialized countries to peak in 2010 (“Peak in 10”) and be reduced by four percent per year until there is an eighty percent reduction by 2050 over year 2000 levels (“80 by 50”),⁶ and (2) GHG emissions in developing countries to increase at a slowing rate, peak between 2020 and 2025, and then fall by about four percent per year to twenty-five percent below 2000 levels by 2050.⁷ If 450 Max and Peak in 10 are the goals, immediate and dramatic action will be required. An assessment by the European Environment Agency released in April 2008 stated that a level of 433 ppm CO₂ equivalent had been reached and that 450 ppm CO₂ equivalent “may be exceeded between 2015 and 2030.”⁸

JONAH GOLDBERG, *LIBERAL FASCISM: THE SECRET HISTORY OF THE AMERICAN LEFT FROM MUSSOLINI TO THE POLITICS OF MEANING* (2007); *Environmentalism Is Fascism*, <http://www.ecofascism.com> (last visited Sept. 1, 2009).

6. See AMY L. LUERS ET AL., *HOW TO AVOID DANGEROUS CLIMATE CHANGE: A TARGET FOR U.S. EMISSIONS REDUCTIONS 1–2* (2007), http://www.ucsusa.org/assets/documents/global_warming/emissions-target-report.pdf.

7. *Id.* at 1–2, 10.

8. Eur. Env’t Agency, *CSI 013—Atmospheric Greenhouse Gas Concentrations—Assessment* (Apr. 2008), <http://themes.eea.europa.eu/IMS/IMS/ISpecs/ISpecification20041007131717/IAssessment1201517963441/> [hereinafter *EEA Assessment*] (“The concentration in 2006 of the six greenhouse gases (GHG) included in the Kyoto Protocol has reached 433 ppm CO₂ equivalent, which is an increase of 155 ppm compared to the pre-industrial level. Considering all GHGs (incl. ozone and various cooling aerosols), the concentration is 393 ppm CO₂ equivalents, which is 115 ppm higher than in pre-industrial times. The concentration of CO₂—the most important greenhouse gas—has reached in 2006 a level of 381 ppm, showing an increase of 103 ppm compared to the pre-industrial level. Under the [Intergovernmental Panel on Climate Change (“IPCC”)] scenarios the overall concentration of the six Kyoto gasses is projected to increase up to 638–1360 ppm CO₂-equivalent by 2100, whereas the concentration of all GHGs may increase up to 608–1535 ppm CO₂-equivalent. The global atmospheric GHG concentration of 450 ppm CO₂-equivalent may be exceeded between 2015 and 2030.”). According to the IPCC, concentrations of CO₂ by itself were 379 ppm in 2005. INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *CLIMATE CHANGE 2007: SYNTHESIS REPORT—SUMMARY FOR POLICY MAKERS 5* (2007), http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf [hereinafter *IPCC ASSESSMENT*]. Sometimes when GHG concentrations are reported, they are based on the concentrations of just CO₂ and at other times on the six greenhouse gases that are covered in the

Other measures of what it would take to achieve a sustainable economy, while not directly tied to climate-change reduction, are the concepts of Factor Four and Factor Ten,⁹ which are embodied, for example, in climate policies in Europe. Factor Four came from a book by that title and concerns a program of dematerialization that would permit the doubling of the world's wealth while halving the world's resource use.¹⁰ Factor Ten went beyond this by calling for a tenfold reduction in resource use by industrial countries in order to provide opportunities for growth in the developing world.¹¹

I. WHAT IS ACTUALLY HAPPENING

Meeting targets for emissions reductions and dematerialization would be difficult even in a world without population increase, but this is not expected to be the case. The latest UN world forecast for population in 2050 is up from 6.8 billion today to at least 9 billion people, which now serves as a floor rather than what is expected.¹² Of this growth, almost all will occur in developing countries, up from

United Nations Framework Convention on Climate Change, namely, CO₂, methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphurhexafluoride (SF₆). *Id.* To confuse things further, some measures of GHG concentrations report the impact of all greenhouse gases, including ozone and cooling aerosols, in which case the number given for GHG concentrations is lower. Thus, for example, above in the *EEA Assessment*, taking into account the six key GHGs, the concentration is reported as 433 ppm, whereas taking into account those GHGs plus ozone and cooling aerosols, the concentration is 393 ppm. *EEA Assessment, supra.* Comparing apples to apples, according to the *IPCC Assessment*, taking into account all greenhouse gases, plus ozone and cooling aerosols, the concentration was 375 ppm in 2005 as compared with the *EEA Assessment* of 393 ppm in 2008. IPCC ASSESSMENT, *supra*.

9. See Gil Friend, *Factor 10 and Sustainable Business*, WORLDCHANGING, Mar. 6, 2005, <http://www.worldchanging.com/archives/002280.html>.

10. ERNST U. VON WEIZSACKER, AMORY B. LOVINS & L. HUNTER LOVINS, *FACTOR FOUR: DOUBLING WEALTH, HALVING RESOURCE USE, A REPORT TO THE CLUB OF ROME* (1998).

11. F. Schmidt-Bleek, *Sy[s]temic Fiscal Reforms for a Future with Future*, FACTOR 10 INSTITUTE, May 31, 2004, http://www.factor10-institute.org/files/Systemic_Fiscal_reforms.pdf ("In order to approach ecological sustainability, the resource productivity in western countries has to be increased by at least a Factor 10, compared to today. A dematerialization of this magnitude will also dampen the energy demand by [approximately] 80% opening completely new vistas for decarbonization and for supplying sufficient energy to the 2 billion poor of this world."); see also 1994 Declaration of the Factor 10 Club, <http://www.techfak.uni-bielefeld.de/~walter/f10/declaration94.html> (last visited Sept. 1, 2009). The term "Factor 10" itself apparently gained prominence in the 1994 Declaration of the Factor 10 Club, commonly referred to as the Carnoules Declaration.

12. Press Release, Population Div., World Population to Exceed 9 Billion By 2050: Developing Countries to Add 2.3 Billion Inhabitants with 1.1 Billion Aged Over 60 and 1.2 Billion of Working Age (Mar. 11, 2009), available at <http://www.un.org/esa/population/publications/wpp2008/pressrelease.pdf>.

5.6 billion today to 7.9 billion, *assuming a drop in fertility rates*.¹³ Without this drop in fertility rates, the population in developing countries would increase by an additional two billion people with a concomitant increase in world population in 2050 from 9 billion to 11 billion. While the population in most of the more developed regions is projected to grow by a scant 4 million people, this is not the case for the United States, which is expected to increase in population from 300 million today to 400 million by 2050, in large part due to expected immigration of 1.1 million persons per year.¹⁴ The growth in population in the United States is especially significant because it is a world leader in GHG emissions on an aggregate basis and is sixth on a per capita basis.¹⁵

The effect of population increase on energy usage, and therefore GHG emissions, was illustrated by Thomas Friedman, in *Hot, Flat, and Crowded*, this way: with current projections, over the next twelve or so years world population will increase by one billion people.¹⁶ If each of those one billion people continuously burned a sixty-watt light bulb (not even taking into account the energy inputs for manufacturing and shipping the light bulbs or the many other inputs required to clothe, feed, and shelter this additional one billion people), it would take 60,000 megawatts of power for these light bulbs, so there would be a need for an additional 120 additional 500-megawatt, likely coal-fired power plants just to light these bulbs!¹⁷

Consistent with this illustration, global demand for marketed energy is expected to grow fifty percent by 2030.¹⁸ This increase in demand is expected to come primarily from growth in population and growth in the economies of developing countries, especially in China and India. Electricity generation is expected to double to 33.3 trillion kilowatt-hours in 2030.¹⁹ Coal as a source of energy, which produces more GHG emissions than other industrial sources of fuel, is expected to increase from twenty-four percent of the total to twenty-nine percent of the total.²⁰ Thus, in a period where carbon

13. *Id.*

14. *Id.*

15. KEVIN A. BAUMERT ET AL., WORLD RES. INST., NAVIGATING THE NUMBERS: GREENHOUSE GAS DATA AND INTERNATIONAL CLIMATE POLICY 6, 22 (2005) (listing aggregate and per capita emissions in 2000), *available at* http://pdf.wri.org/navigating_numbers.pdf.

16. THOMAS L. FRIEDMAN, HOT, FLAT, AND CROWDED 31 (2008).

17. *Id.* (“Luckily, [they] will only use their bulbs four hours per day, so we’re down to 10,000 megawatts at any moment,” which would only require an additional twenty 500-megawatt coal burning power plants, “just so the next billion people can turn a light on!” (quoting David Douglas, Vice President for eco-responsibility for Sun Microsystems)).

18. ENERGY INFO. ADMIN., U.S. DEP’T OF ENERGY, INTERNATIONAL ENERGY OUTLOOK 2008, AT 1 (2008), *available at* [http://www.eia.doe.gov/oiiaf/ieo/pdf/0484\(2008\).pdf](http://www.eia.doe.gov/oiiaf/ieo/pdf/0484(2008).pdf).

19. *Id.* at 3.

20. *Id.* at 9.

needs to be constrained, coal consumption is expected to increase by more than fifty percent between 2006 and 2030, with the largest increases of coal consumption in India, China, and the United States.²¹ While renewables are one of the fastest growing energy segments, they will provide only a small percentage of total output, and nuclear-energy production, which will grow very slowly, will likewise provide only a small percentage of total output (together with renewables, less than ten percent in 2030).²²

These projections were made prior to the onset of the current economic malaise, so they could be too high, but only if the current slowdown continues over a long period of time. According to the International Monetary Fund's ("IMF") January 28, 2009, forecast, "World growth is projected to fall to ½ percent in 2009, its lowest rate since World War II."²³ It continues, however, by saying, "Helped by continued efforts to ease credit strains as well as expansionary fiscal and monetary policies, the global economy is projected to experience a gradual recovery in 2010, with growth picking up to 3 percent."²⁴ This rate of growth would be consistent with the 2006 World Bank forecast that the size of the global economy will more than double from \$35 trillion in 2005 to \$72 trillion in 2030.²⁵

Given this growth in population, the global economy, marketed energy, electricity production, and percentage of coal as a source of energy, the IMF April 2008 proposal that emissions can be reduced by sixty percent from 2002 levels by 2040 with only a 2.6 percent reduction in the size of the global economy seems incredible.²⁶ It is made more believable by the fact that the IMF target is 550 ppm by 2100,²⁷ which, according to the Intergovernmental Panel on Climate Change ("IPCC") *Fourth Assessment Report*, would mean a 3.2- to

21. *Id.*

22. *Id.* at 4, 10. The merits and problems of nuclear power are very important but will not be discussed here.

23. INT'L MONETARY FUND, WORLD ECONOMIC OUTLOOK UPDATE: GLOBAL ECONOMIC SLUMP CHALLENGES POLICIES 1 (2009), available at <http://www.imf.org/external/pubs/ft/weo/2009/update/01/pdf/0109.pdf>.

24. *Id.* The World Bank has cut its forecast for the growth rate in China to 6.5 percent per year, down from eight percent. J.R. Wu, *China: World Bank Cuts Forecast to 6.5% Growth in 2009*, WALL ST. J., Mar. 18, 2009, at A10. Even so, at such a rate of growth, the Chinese economy will double in a little over eleven years ($100 * (1.065)^{11} = 199.91$).

25. Press Release, The World Bank, Growth Prospects are Strong, but Social, Environmental Pressures from Globalization Need More Attention, No. 2007/159/DEC (Dec. 13, 2006), available at <http://go.worldbank.org/KAWTZMHWI0>.

26. Bob Davis, *IMF Weighs In on Costs of Greenhouse-Gas Cutback*, WALL ST. J., Apr. 4, 2008, at A8 (reporting on INT'L MONETARY FUND, *Climate Change in the Global Economy*, in WORLD ECONOMIC OUTLOOK 2008, 133, 167, 174 (2008), available at <http://www.imf.org/external/pubs/ft/weo/2008/01/pdf/text.pdf>).

27. INT'L MONETARY FUND, *supra* note 26, at 133, 167, 174.

4.0-degree Celsius (5.8- to 7.2-degree Fahrenheit) change in temperature over preindustrial levels.²⁸ Environmentalists believe this is an unacceptable level, and a goal of stabilizing CO₂ at 450 ppm is a near consensus in the environmental community.²⁹ James Hansen, a noted climate scientist at NASA, however, has taken the position that CO₂ must be stabilized at 350 ppm if we are “to preserve a planet similar to that on which civilization developed and to which life on Earth is adapted.”³⁰ As a nonscientist, I yield on this debate and for the purposes of this Article will utilize the goals of 80 by 50 and Factor 10 for the industrial world and 450 Max for

28. IPCC ASSESSMENT, *supra* note 8, at 20. This reports the projected effect on temperatures assuming stabilization at 550 ppm CO₂ equivalent in 2050, whereas the IMF was projecting that level of stabilization in 2100. *Id.*; INT’L MONETARY FUND, *supra* note 26, at 133. The *IPCC Assessment*, like the IMF report, projects a fairly modest impact on the global economy from climate-mitigation efforts. *Id.*; IPCC ASSESSMENT, *supra* note 8, at 20. The *IPCC Assessment’s* projection of effects on the global economy in 2040 are generally in line with the IMF report (the report projects impacts on the global economy in 2030 and 2050). *Id.*; INT’L MONETARY FUND, *supra* note 26, at 133.

29. *See, e.g.*, SIERRA CLUB, ENERGY RESOURCES POLICY 3 (2009), <http://www.sierraclub.org/policy/conservation/energy.pdf> (“At present, the world’s climate scientists believe that carbon dioxide (CO₂) levels above 450 ppm would result in severe climate impacts.”); Jenny Hogan, *Only Huge Emissions Cuts Will Curb Climate Change*, NEW SCIENTIST, Feb. 3, 2005, <http://www.newscientist.com/article/dn6964>. Hogan reports, however, that, at the time the article was written, “the EU ha[d] recommended 550 ppm CO₂ as a suitable goal.” *Id.*

30. James Hansen et al., *Target Atmospheric CO₂: Where Should Humanity Aim?*, 2 OPEN ATMOSPHERIC SCI. J. 217, 217 (2008), available at http://pubs.giss.nasa.gov/docs/2008/2008_Hansen_etal.pdf (“Paleoclimate data show that climate sensitivity is ~3°C for doubled CO₂, including only fast feedback processes. Equilibrium sensitivity, including slower surface albedo feedbacks, is ~6°C for doubled CO₂ for the range of climate states between glacial conditions and ice free Antarctica. . . . 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 CO₂ will need to be reduced from its current 385 ppm to at most 350 ppm.”). James Hansen’s advocacy of the 350-ppm target (and the research on which his position is based) has spawned a “350” movement. *See, e.g.*, Buddhist Climate Project, *The Dalai Lama’s Endorsement of the 350ppm CO₂ Target*, http://www.ecobuddhism.org/index.php/350_target/350_target/350_target__background_and_dalai_lama_s_endorse/ (last visited Sept. 1, 2009); Interfaith Call for 350, http://action.350.org/t/9216/p/dia/action/public/?action_KEY=876 (last visited Sept. 1, 2009); Kate Shepard, *Al Gore Calls for 350 ppm Goal at Poznan Climate Summit*, GRIST.BETA, Dec. 12, 2008, <http://www.grist.org/article/gore-to-un-350-or-bust> (“Al Gore argued [at the UN climate summit in Poland in December 2008] that older targets for reducing global-warming pollution are out of date, and that world leaders should aim to reduce the amount of carbon dioxide in the atmosphere to 350 parts per million. ‘Even a goal of 450 parts per million, which seems so difficult today, is inadequate,’ said Gore.”); 350.org, <http://action.350.org/> (last visited Sept. 1, 2009) (homepage of the “350” organization led by Bill McKibben).

the world,³¹ which apparently means “Peak in Teens” for the industrial world (2010 seems wholly out of the question).

II. THE DISCONNECT

In view of the foregoing, we may observe that there is a huge disconnect between what scientists and policy makers say is needed to mitigate climate change and what is actually happening or is likely to happen given current steps being taken. Thomas Friedman quotes Nate Lewis, California Institute of Technology chemist and energy expert, who sarcastically comments:

From 1990 to 1999, global CO₂ emissions increased at a rate of 1.1 percent per year. Then everyone started talking about Kyoto, so we buckled up our belts, got serious, and we showed ‘em what we could do: In the years 2000 to 2006, we *tripled* the rate of global CO₂ emission increases, to an average [increase] for that period of over 3 percent a year! That’ll show ‘em that we mean business! Hey, look what we can do when we’re serious—we can emit even more carbon even faster.³²

While there is growing public awareness of the situation, we have not yet mobilized to a sufficient degree to tackle the problem. This is due, in part, to lack of understanding, though I wonder if Klaus didn’t have it right when he said that what is at stake are concepts of society and economy. Climate-change mitigation will require very substantial changes in society and economy. It is understandable that such change would be resisted. It is understandable that the public imagination of what is right and possible would be shaped by what has worked, by some measures marvelously, over the 200 years since the beginning of the Industrial Revolution.³³ It is understandable that because

31. By 450 Max, I mean 450 ppm CO₂ equivalent, which would mean a lower level of CO₂ by itself. *See supra* notes 6–8 and accompanying text. I am not sure that 350 ppm CO₂ is attainable under any circumstances, given that the concentration of CO₂ by itself already exceeds 375 ppm. *See supra* note 8. Further, I find persuasive the open letter by noted climate-policy analyst Joseph Romm to James Hansen, where Romm describes the costs of implementing such a proposal, the governmental mandates that would be required, the political impossibility of the costs or mandates, and the lack of any real program by the advocates of 350 for the achievement of that goal. Open letter from Joseph Romm to James Hansen (Nov. 23, 2008), *available at* <http://climateprogress.org/2008/11/23/an-open-letter-to-james-hansen-on-the-real-truth-about-stabilizing-at-350-ppm/>.

32. FRIEDMAN, *supra* note 16, at 214.

33. The Industrial Revolution, which began at the end of the eighteenth century in Europe, was one of the great turning points in history. The tremendous increase in productive capacity, consumption, and economy that gave rise to climate change began with this revolution. Will Durant aptly called the Industrial Revolution “the only real revolution in modern history.” WILL DURANT, 1 THE STORY OF CIVILIZATION: OUR ORIENTAL HERITAGE 916 (1935)

mitigation of climate change requires that we deal with limits and with self-limitation that some would see this effort as coercive. These views are also unacceptable.

Though some will resist mitigation efforts outright, the greater resistance will come from those who believe half measures will suffice. Global warming has entered the board rooms of corporations, the curricula of business schools, and associations of business leaders—even law schools! Where “greening” was once a public-relations concern, it is now considered by many businesses as a mission-critical concern, a requirement for doing business, and a source of future products and growth. What is conceived of as a response to global warming is, however, in terms of the scale of response required, woefully inadequate and sometimes fantasy. For example, carbon sequestration is held out as the way to have “clean coal,” and yet there is not one single example of such carbon sequestration in the United States. Further, China has doubled its use of coal just since the year 2000 and has done so without sequestration and with the commissioning of hundreds of coal plants, largely without state-of-the-art pollution controls, which will be in production for decades.³⁴ As stated earlier, India and the United States are also rapidly increasing coal-fired power production at a time when decarbonization should be the norm.³⁵

The contraindicated responses are born of perceived and real necessity. A business must be price-competitive. A utility must provide power for its customers. We of the United States chide China for its dirty coal, yet we contract for the production of goods in China and are heavily dependent on its low-cost exports. We praise China for its “economic miracle” and join with the Chinese in excusing its pollution due to its early stage of industrial development. And we ourselves must get our children to school and ourselves to work no matter what and as conveniently as possible.

The indicated responses are often too timid. For example, Thomas Friedman, who has described as well as anyone the

(16th prtg. 1954).

34. Alexis Madrigal, *China's 2030 CO₂ Emissions Could Equal the Entire World's Today*, WIRED SCIENCE, Feb. 8, 2008, <http://blog.wired.com/wiredscience/2008/02/chinas-2030-co2.html> (“If China’s carbon usage keeps pace with its economic growth, the country’s carbon dioxide emissions will reach 8 gigatons a year by 2030, which is equal to the entire world’s CO₂ production today. That’s just the most stunning in a series of datapoints about the Chinese economy reported in a policy brief in the latest issue of the journal *Science*. Coal power has been driving the stunning, seven plus percent a year growth in China’s economy. It’s long been said that China was adding one new coal power plant per week to its grid. But the real news is worse: China is completing *two new coal plants* per week.”). China has, however, begun to take global leadership in building cleaner, more efficient coal-fired power plants. See Keith Bradsher, *China Far Outpaces U.S. in Building Cleaner Coal-Fired Plants*, N.Y. TIMES, May 11, 2009, at A1.

35. See *supra* notes 18–21 and accompanying text.

magnitude of change needed to meet climate-mitigation targets,³⁶ lauds General Electric for its EVO locomotive,³⁷ which reduces emissions by forty percent—but apparently only with regard to nitrogen oxide and particulate matter—and increases fuel economy—but only by five percent.³⁸ While laudable, efforts such as these have no chance of meeting climate or sustainability challenges (which, of course, are highly related).

It would be good if by such timid efforts, we (the world) were holding our own, but we are not.³⁹ Even if we were holding our own, Gus Speth, Dean of the School of Forestry and Environmental Studies at Yale University, gives this assessment:

[A]ll we have to do to destroy the planet's climate and biota and leave a ruined world to our children and grandchildren is to keep doing exactly what we are doing today, with no growth in the human population or the world economy. Just continue to release greenhouse gases at current rates, just continue to impoverish ecosystems and release toxic chemicals at current rates, and the world in the latter part of this century won't be fit to live in. But, of course, human activities are not holding at current levels—they are accelerating, dramatically. . . . We are thus facing the possibility of an enormous increase in environmental deterioration, just when we need to move strongly in the opposite direction.⁴⁰

III. THE NEW CONTEXT FOR LAW—ECOLOGICAL CIVILIZATION

Is this a legal problem, a policy problem, an economic problem, an environmental problem—or, as life-support systems deteriorate, an ethical problem both biological and human? What is the role of the lawyers and the legal system, as such, in addressing such deteriorating climatic conditions and attendant ecological ills?

A. *Modernity*

From this author's standpoint, it is critical to understand that within the framework of corporate law, the current practice of law is legitimated by a system of understandings developed out of the Enlightenment, the Industrial Revolution, liberal democracy, and liberal economics. Within this system, the pursuit of self-interest is

36. See especially Friedman's chapter on "205 Easy Ways to Save the Earth." FRIEDMAN, *supra* note 16, at 203–16.

37. *Id.* at 269–72.

38. *Id.* at 270–71; GE Transportation, Evolution Series Locomotive, <http://www.getransportation.com/na/en/evolution.html> (last visited Sept. 1, 2009).

39. See, e.g., *supra* notes 32, 34 and accompanying text.

40. JAMES GUSTAVE SPETH, THE BRIDGE AT THE END OF THE WORLD: CAPITALISM, THE ENVIRONMENT, AND CROSSING FROM CRISIS TO SUSTAINABILITY, at x (2008).

paramount—economics are value free because the market legitimates what is produced and consumed, politics are value free because the vote legitimates what is decided, and morals are value free because nature itself is conceived as without values and humans as being subject to no inherent values but only, even if couched as values, personal preferences and ideology. It is a system that has led to the advance of humanity over the last 500 years, but it is a system now fundamentally being called into question because it is failing to serve the present and it is inadequate for the future.

B. Constructive Postmodernity

There are no doubt many theories of history, and I am not sure the one I am going to propose is in any sense new. What I will propose is that in moments where the fundamental environmental factors shaping circumstances cannot be changed, then inevitably there is movement to respond to those factors or there is failure.⁴¹ In such moments, to continue the course is not a viable option. I believe we are at such a moment and this time, for the first time, at a global and globally interconnected level. The moment we are in is one of the great moments in human history, one to be compared with the discovery of language and symbol 30,000 years ago or the beginning of civilization in Neolithic villages 10,000 years ago. Certainly we are at a moment at least as profound as the onset of modernity at the end of the fifteenth century or the beginning of the late modern period at the end of the eighteenth century. Some believe, as I do, that what makes our moment unique is that we are not only at a transition point in human history, but we are at a transition point in the geobiological history of the planet. This is something that humans have never faced. Humans have become not only a biological but also a geological phenomenon.⁴² Humans are changing the way the planet works in a way that, at present, is degrading Earth's life systems. With the possibility of the sixth mass extinction in the history of the planet,⁴³ we might understand

41. See JARED DIAMOND, *COLLAPSE: HOW SOCIETIES CHOOSE TO FAIL OR SUCCEED* 6 (2005).

42. "We are the first species to have become a geophysical force, single-handedly altering Earth's atmosphere and climate. We have initiated the sixth great extinction spasm of geobiological history by the massive destruction of ecosystems and the loss of plant and animal species." Edward O. Wilson, *Foreword* to *THE NEW ATLAS OF PLANET MANAGEMENT* 8, 8 (Norman Myers & Jennifer Kent eds., 2005).

43. *Id.*; see also Niles Eldridge, *The Sixth Extinction*, ACTIONBIOSCIENCE.ORG, June 2001, <http://www.actionbioscience.org/newfrontiers/eldredge2.html> ("There is little doubt left in the minds of professional biologists that Earth is currently faced with a mounting loss of species that threatens to rival the five great mass extinctions of the geological past. As long ago as 1993, Harvard biologist E.O. Wilson estimated that Earth is currently losing something on the order of 30,000 species per year—which

ourselves as being in the terminal Cenozoic Era, which began 65 million years ago, in transition, if there is to be a hopeful outcome, to an emerging Ecozoic Era, one of conscious human participation in the dynamics of Earth's life systems in celebration of Earth's diversity and its integral community.⁴⁴

I was invited to speak at a conference in China in June 2009 on Ecological Civilization sponsored by Peking University, the Harvard of China. The invitation states:

The world of the 21st century suffers from many increasingly serious global social problems: population explosion, resource shortage and depletion, environmental degradation, and polarization of rich and poor. All these problems, together with the recent financial and economic crises, pose unprecedented threats to the future of the human race. Many scientists and scholars have reached the conclusion that ecological civilization is the only correct choice to continue human survival and development. . . . Ecological civilization as a new stage of human civilization after the agricultural civilization and the industrial civilization.⁴⁵

This comes from Chinese scholars. This being so, just perhaps, this way of seeing what is needed must be evident to the whole world. This is where we are—if we are to succeed—at the beginning of ecological civilization, and it is in this context, in my view the only pertinent one, that we must address corporate governance and global warming.

C. *The Changing Climate for Corporations*

Corporations are important. Industrial development would not have been possible without the development of modern capitalism. Modern capitalism would not have been possible without the corporation. Ecological civilization will not be possible without corporate action, but what kind? What is the role of for-profit corporations, and how will they be governed both internally and

breaks down to the even more daunting statistic of some three species per hour. Some biologists have begun to feel that this biodiversity crisis—this 'Sixth Extinction'—is even more severe, and more imminent, than Wilson had supposed."). See generally RICHARD LEAKEY & ROGER LEWIN, *THE SIXTH EXTINCTION: PATTERNS OF LIFE AND THE FUTURE OF HUMANKIND* 245 (1995) (explaining that the impending biological disaster is bringing about the next mass extinction).

44. The term "Ecozoic Era" was coined by Thomas Berry. See BRIAN SWIMME & THOMAS BERRY, *The Ecozoic Era, in THE UNIVERSE STORY: FROM THE PRIMORDIAL FLARING FORTH TO THE ECOZOIC ERA—A CELEBRATION OF THE UNFOLDING OF THE COSMOS* 241, 242–43 (1992).

45. Invitation from Huang Nansen, Dean, Inst. of Hominology, Peking Univ., and Chen Zhishang, President, China Soc'y for Hominology, to author for the International Symposium on Ecological Civilization, Sanya, Hainan Province, People's Republic of China (Jan. 20, 2009).

externally in an ecological age?

Let us be clear: corporations will have to change. It is happening before our eyes. The rise of hyper-, corporations-rule-the-world-, flat- (without regard to boundaries or local interests), finance-over-real-economy-, trickle-up capitalism reached its peak sometime shortly before, and began its decline on, September 15, 2008, with the fall of Lehman Brothers.⁴⁶ The public's reaction to the March 15, 2009, payment of \$400 million in "retention" bonuses by AIG to its executives is indicative of the new pressures corporations face in continuing business as usual.⁴⁷ The decline and potential demise of the biggest names in business—Citibank, Bank of America, General Motors, General Electric—mark the end of an era.⁴⁸

There is a changing climate for corporations: Hot, Crowded, and Not-So-Flat.

IV. THE UNAVOIDABLE REQUIREMENTS OF CHANGE

Before looking at what corporations are doing to respond to this new situation, what more they should do, and what the role of the legal community is in this, it is important to look at the forces that are unavoidably driving change. They fall into three categories—biophysical, ethico-social, and security—the last being an outgrowth of the first two.

A. *Biophysical Limits*

Herman Daly describes the biophysical limits this way:

The biophysical limits to growth arise from three interrelated conditions: finitude, entropy, and ecological interdependence. The economy, in its physical dimensions, is an open subsystem of our finite and closed ecosystem, which is both the supplier of its low-entropy raw materials and the recipient of its high-entropy wastes. The growth of the economic system is limited by the fixed size of the host ecosystem, by its dependence on the ecosystem as a source of low-entropy inputs and as a sink for high-entropy wastes, and by the complex ecological connections that are more easily disrupted as the scale of the economic subsystem (the throughput) grows relative to the total ecosystem. Moreover, these three basic limits interact. Finitude would not be so limiting if everything could be recycled, but entropy prevents complete recycling. Entropy would not be so limiting if environmental sources and sinks were infinite, but both are

46. See, e.g., Andrew Ross Sorkin, *Bids to Halt Financial Crisis Reshape Landscape of Wall St.*, N.Y. TIMES, Sept. 15, 2008, at A1.

47. See generally Steven Pearlstein, *Wall Street's Dangerous Refusal to Learn*, WASH. POST, Mar. 18, 2009, at D1.

48. *Id.*

finite. . . . [I]f these entropic costs (depletion and pollution) are mainly inflicted on the terrestrial environment, as in a modern industrial economy, then they interfere with complex ecological life-support services rendered to the economy by nature. . . .

Standard growth economics ignores finitude, entropy, and ecological interdependence because the concept of throughput is absent from its preanalytic vision, which is that of an isolated circular flow of exchange value⁴⁹

Proposals for corporate governance that do not take into account finitude, entropy, and ecological interdependence are inconsistent with the transition to ecological civilization.

B. Ethico-Social

Daly gives these key points on ethico-social limits:

1. The desirability of growth financed by the drawdown of geological capital is limited by the cost imposed on future generations. . . .

2. The desirability of growth financed by takeover of habitat is limited by the extinction or reduction in number of sentient subhuman species whose habitat disappears. . . .

3. The desirability of aggregate growth is limited by its self-canceling effects on [human] welfare. . . .

4. The desirability of aggregate growth is limited by the corrosive effects on moral standards resulting from the very attitudes that foster growth, such as glorification of self-interest and a scientific-technocratic worldview.⁵⁰

There was a time when I did not feel that ethical limits imposed real restraints. My own thinking on this changed when the United States invaded Kosovo and after the genocide in Rwanda and later in Darfur. In each case policy decisions were driven significantly by human rights as distinct from security, economic, or other concerns. On reflection, that socio-ethical concerns impose limits follows from the fact that we are human, and as such, moral beings. To move in a direction that violates fundamental ethical concerns will meet real resistance.

Peter Hennis, President of the Wuppertal Institute, in the Institute's report *Fair Future*,⁵¹ takes a different tack on ethico-

49. HERMAN E. DALY, BEYOND GROWTH: THE ECONOMICS OF SUSTAINABLE DEVELOPMENT 33 (1996).

50. *Id.* at 35-37.

51. WUPPERTAL INST. FOR CLIMATE, ENV'T & ENERGY, FAIR FUTURE:

social limits. He focuses on justice:

This book deals with questions that have again and again succumbed to collective repression: global justice and the fate of the biosphere. . . . How, in future, will a much larger number of people [than are living now] be able to make a dignified living in a world of limited natural resources? This is the key issue of the twenty-first century.

. . . .

. . . [M]ore justice in the world cannot be achieved by globalizing the Western model of prosperity: that costs too much money and too many resources, and it would completely ruin the biosphere. So, development stands at a crossroads: either most of the world remains excluded from prosperity, or the prosperity model is constructed in such a way that everyone can participate in it without making the planet inhospitable. It is a choice between global apartheid and global democracy. This book takes a stand for democratic, cosmopolitan ecology. . . . It is high time that the models of production and consumption which established the wealthy societies are made resource-light and naturally sustainable. In the poorer countries, on the other hand, what counts is a start in the right direction. In this respect, China is an ambivalent example, since its much-admired economic successes have more the character of a disaster in ecological terms.⁵²

Fair Future also addresses issues of distributive justice. Lifting people out of abject poverty while promoting lifestyles of radical excess in the upper classes has the effect, as in the examples of India and China, of creating “a less impoverished but more hierarchical society.”⁵³ This moves the world toward a kind of apartheid and fails to address the limits of and depletion of the biosphere.

One living in the United States will find it hard to appreciate the pressure of the world’s population or the poverty in which many people live. India, for example, is a little more than a third the size of the United States but has a population of around 1.15 billion. Every second a child is born in India.⁵⁴ Every seven minutes, a woman dies in childbirth.⁵⁵ In Uttar Pradesh, one in forty-two

RESOURCE CONFLICTS, SECURITY AND GLOBAL JUSTICE (Wolfgang Sachs & Tilman Santarius eds., Patrick Camiller trans., Zed Books 2007) (2005) [hereinafter FAIR FUTURE].

52. Peter Henricke, *Preface* to FAIR FUTURE, *supra* note 51, at viii, viii–x.

53. *Justice for Realists*, in FAIR FUTURE, *supra* note 51, at 1, 18.

54. U.S. CIA, The World Factbook—India, <https://www.cia.gov/library/publications/the-world-factbook/geos/in.html> (last visited Sept. 1, 2009).

55. Kounteya Sinha, *Childbirth: One Mother Dies Every 7 Mins*, TIMES OF

women has a lifetime risk of maternal death (compared to only one in 500 in Kerala).⁵⁶ Bangladesh, the size of North Carolina, has a population in excess of 150 million.⁵⁷ Ninety percent of China's population of 1.3 billion people lives in a land area about the size of the United States east of the Mississippi.⁵⁸

Arguments can be made on both sides whether the current globalized mode of development is resulting in declining world poverty. Before considering these arguments, it is important to understand what the standard is for measuring poverty. The standard used by the World Bank is \$1.25 per day, adjusted for purchasing power.⁵⁹ So if a person who had lived on \$1.20 per day were to increase to \$1.30 per day, then news stories would say that the person had been "lifted out of poverty." The numbers regarding global poverty, of course, are heavily contested by "pro-globalization" and "anti-globalization" forces. Wolfgang Sachs reports that based on the World Bank standard for poverty, between 1980 and 2001, the number of people living in extreme poverty fell by 390 million—a success, especially considering the rising world population during that period.⁶⁰ Yet he adds that if China were taken out of the picture, the number living in extreme poverty increased by 50 million during that period.⁶¹ Moreover, in India, a country that is seen as an economic success story, in 2005, seventy-seven percent of the people lived on less than \$2.00 per day, purchasing power equivalent, or \$0.50 per day (twenty rupees) based on the actual exchange value of the Indian currency.⁶²

The existence of poverty and the rise out of poverty are

INDIA, Jan. 16, 2009, available at <http://timesofindia.indiatimes.com/articleshow/msid-3985176.cms>.

56. *Id.*

57. U.S. CIA, The World Factbook—Bangladesh, <https://www.cia.gov/library/publications/the-world-factbook/geos/BG.html> (last visited Sept. 1, 2009).

58. GERHARD K. HEILIG, *Cumulative Distribution of China's Land Area and Population Density*, in CHINAFOOD: CAN CHINA FEED ITSELF? (CD-ROM, ver. 1.1, 1999), available at http://www.iiasa.ac.at/Research/LUC/ChinaFood/data/pop/pop_11.htm; U.S. CIA, The World Factbook—China, <https://www.cia.gov/library/publications/the-world-factbook/geos/ch.html> (last visited Sept. 1, 2009).

59. Press Release, The World Bank, New Data Show 1.4 Billion Live on Less than US\$1.25 a Day, but Progress Against Poverty Remains Strong, No. 2009/065/DEC (Aug. 26, 2008), available at <http://go.worldbank.org/CUQLLRX1Q0>. In the press release, the World Bank announced it had raised the standard for extreme poverty from \$1.00 to \$1.25 per day adjusted for purchasing power. *Id.*

60. *Justice for Realists*, *supra* note 53, at 16.

61. *Id.*

62. NAT'L COMM'N FOR ENTERPRISES IN THE UNORGANIZED SECTOR, REPORT ON CONDITIONS OF WORK AND PROMOTION OF LIVELIHOODS IN THE UNORGANIZED SECTOR 1 (2007), available at http://nceus.gov.in/Condition_of_workers_sep_2007.pdf.

complicated by the disparity in the distribution of wealth between and within countries over the last twenty-five years⁶³ and the framework in which people come to understand their condition. If everyone in one's reference group is poor, then one would not see that one is underprivileged. But in an age of globalization, reference groups for both rich and poor stretch to distant groups. According to Wolfgang Sachs:

This widening of the comparative horizon to all levels of the social hierarchy works in two ways: as a fuel for hopes and demands, by encouraging people to place the crossbar higher; and as an explosive, if rising expectations diverge too much from the limited possibilities of realization and create a chronic sense of getting less than one's fair share.⁶⁴

There is another aspect to poverty reduction, which is after all highly desirable. It is the sixty-watt light bulb illustration mentioned earlier. If a billion people continuously utilize just one 60-watt light bulb, that requires 120 new 500-megawatt power plants. Plus as their food, clothing, and other consumption rises, we compete for resources in an already "full" world.⁶⁵

Proposals for corporate governance that do not take into account ethico-cultural and environmental-justice issues are inconsistent with the transition to ecological civilization.

C. *Security Limits*

This brings us to security as the third factor that is driving and will drive corporate change. The productive forces that give rise to global warming are the same as those that are pushing or exceeding Earth's biophysical capacities, and they are the same as those that are raising ethico-social and environmental-justice issues. Competition for resources is leading and will lead to friction between groups within nations and between nations. This competition will become more severe where survival is at stake. The friction will be

63. *Justice for Realists*, *supra* note 53, at 9–16.

64. *Id.* at 15.

65. The full-world concept has been developed by many authors. *See, e.g.*, Robert Costanza, *Stewardship for a "Full" World*, 107 CURRENT HIST. 30, 33 (2008), available at <http://www.currenthistory.com/Article.php?ID=515>. Expansion of the world economy has for centuries thrived on the ability to exploit new territories, such as in the colonialist expansion of Europe, or new resources, such as petroleum beginning in the nineteenth century. In a full world, claims are already made on resources and many are declining. Another "full world" concept is that given by the World Wildlife Fund, which estimates that the ecological footprint of humanity now exceeds 125 percent of capacity. In other words, we are drawing down natural capital and turning renewable resources into nonrenewable ones. *See* World Wildlife Fund Int'l, *Humanity's Ecological Footprint*, http://www.panda.org/about_our_earth/all_publications/living_planet_report/footprint/ (last visited Sept. 1, 2009).

exacerbated where there is a sense of moral transgression or injustice. Violence and terrorism may not be excused by unfair conditions, but to a certain extent they may be its expected result. While fairness does not eliminate the capacity for irrational and cruel responses, it would seem to diminish the likelihood of them.⁶⁶ The magnitude of the injustice that might result from global warming and related environmental degradation is of an order that could exceed anything other than nuclear war and cause more suffering to humans and other-than-humans alike than even the recent world wars.⁶⁷

Corporations may continue business as usual through a system of global apartheid. In some locations multinational corporations are already operating through such a system with gated campuses and gated communities for their executives. Corporate leaders will, however, need to ask whether development characterized by such division is viable in the long run. There are issues, however, that cannot be solved by global apartheid even if it could be successful in warding off threats of immediate physical harm. These security issues concern the environmental effects of pollution, depletion of resources, and global warming that transgress all human boundaries. One may live in a protected space in Beijing, but one breathes the same air as any other citizen of the city. Indeed if one lives in Japan or California, one breathes this air.⁶⁸

Proposals for corporate governance that do not take into account measures to increase social harmony and reduce the violence of environmental degradation are inconsistent with the transition to an ecological civilization.

V. STEPS TAKEN BY CORPORATIONS IN RESPONSE

Leaders of corporations⁶⁹ are, of course, aware of the issues developed above and have taken significant strides to address them.

66. Will and Ariel Durant, reflecting on what they had learned in the process of compiling their magisterial eleven-volume *Story of Civilization*, concluded "that the concentration of wealth is natural and inevitable, and is periodically alleviated by violent or peaceable partial redistribution." WILL DURANT & ARIEL DURANT, *THE LESSONS OF HISTORY* 57 (2nd prtg. 1968).

67. One example is the effect of climate change on health: "Climate change is the biggest global health threat of the 21st century." Anthony Costello et al., *Managing the Health Effects of Climate Change*, 373 *THE LANCET* 1693, 1693 (2009), available at <http://download.thelancet.com/pdfs/journals/lancet/PIIS0140673609609260.pdf> (login required).

68. See, e.g., Keith Bradsher & David Barboza, *Pollution from Chinese Coal Casts Shadow Around Globe*, *N.Y. TIMES*, June 11, 2006, at 1.

69. The word "corporation" is not too descriptive. It refers to IBM and to Joe's auto shop. While there are some things that will be covered in the following that apply to small corporations, for the most part the concern is transnational corporations, large national corporations, and corporations and other business entities that do business significantly with such corporations (which almost covers Joe's auto shop).

In the next Parts of this Article, I will cover steps that corporations are taking, steps their critics suggest they might take, and proposals for additional steps they should take in this author's opinion.

A. *Steps Being Taken by Corporations in Response*

The steps that have been taken by corporations and by governing bodies and NGOs in relation to corporations to deal with issues related to global warming⁷⁰ are impressive. The following list provides an overview of these steps:

1. *Adherence to National Environmental Laws and Global Treaties on Climate Change*

Since the 1960s, wide-ranging environmental laws have come into being in nations around the world. Corporations everywhere have to operate within the framework of these national laws (though certainly there are varying levels of compliance and enforcement as well as varying environmental standards). Prior to the 1990s, national environmental laws generally did not take into account regulation of nontoxic greenhouse gases and many still do not. The move to include such regulation began at the Earth Summit, held in Rio de Janeiro in June 1992, which produced the UN Framework Convention on Climate Change,⁷¹ but without GHG-emissions targets. In 1997, a protocol to the convention was adopted, known as the "Kyoto Protocol," which was subsequently ratified by more than 180 parties.⁷² This protocol, which entered into force in 2005, called for emissions reductions of, on average, 5% under 1990 levels for industrialized countries.⁷³ The results for some parties to the Protocol are impressive. For example, Germany in 2004 had decreased its GHG emissions by 17.2% under 1990 levels.⁷⁴ By contrast, nonsignatories the United States, China, and India increased GHG emissions by 20%, 150%, and 103% respectively (and the world as a whole by 38%) over the period from 1992–2007.⁷⁵

70. In general, all steps relating to sustainable development and environmental and social responsibility, if fully carried through, would serve to mitigate global warming.

71. UN Framework Convention on Climate Change, Climate Change Information Sheet 17, http://unfccc.int/essential_background/background_publications_htmlpdf/climate_change_information_kit/items/300.php (last visited Sept. 1, 2009).

72. UN Framework Convention on Climate Change, Kyoto Protocol, http://unfccc.int/kyoto_protocol/items/2830.php (last visited Sept. 1, 2009).

73. *Id.*

74. UN Framework Convention on Climate Change, Changes in GHG Emissions from 1990 to 2004 for Annex I Parties (2005), available at http://unfccc.int/files/essential_background/background_publications_htmlpdf/application/pdf/ghg_table_06.pdf.

75. Pep Canadell, Global Carbon Project, Carbon Budget 2007+, Presentation at Climate Change: Global Risks, Challenges & Decisions (Mar.

2. *Agreement on the Need to Address Climate Change and Ecosystem Decline*

Important reports have been issued that clearly define the conditions for business in the future. Noteworthy among these are the Intergovernmental Panel on Climate Change's *Fourth Assessment Report* issued in 2007,⁷⁶ the *Stern Review on the Economics of Climate Change* issued in 2006,⁷⁷ and *The Millennium Ecosystem Assessment* issued in 2005.⁷⁸ These reports, prepared by vast teams of scientists and policy experts, provide a consensus view on the declining state of the ecosystems of the world and the existence and threat of climate change, the conditions bringing about both, and the steps that may be taken to reverse the trends. These reports are not without their critics and certainly many disagree with the priorities they suggest.⁷⁹ Nonetheless, they stand as benchmarks against which future development will be measured. On the whole, though, as may be observed in this statement from the World Business Council for Sustainable Development ("WBCSD") (a CEO-led, global association of more than 200 companies including, in the U.S., IBM, Chevron, General Motors, General Electric, Procter & Gamble, and Caterpillar), these benchmarks have been accepted: "The WBCSD recognizes that energy and climate change are of high importance for today's societies and a key challenge in the 21st century."⁸⁰

3. *Redefinition of Corporate Stakeholders and Rise of Corporate Social Responsibility*

A simple picture of the legal structure of a corporation contains only shareholders, directors, officers, and employees. Today corporations recognize that shareholders are one among many external stakeholders. As one book on the subject puts it, "The modern corporation is the center of a network of interdependent

10, 2009), available at http://www.globalcarbonproject.org/carbonbudget/07/files/Canadell_C_Budget2007+_Copenhagen.March09.pdf.

76. INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2007: SYNTHESIS REPORT (2007), available at http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf.

77. NICHOLAS STERN, THE ECONOMICS OF CLIMATE CHANGE: THE STERN REVIEW (2007), available at http://www.hm-treasury.gov.uk/stern_review_report.htm.

78. MILLENIUM ECOSYSTEM ASSESSMENT, ECOSYSTEMS AND HUMAN WELL-BEING: OPPORTUNITIES AND CHALLENGES FOR BUSINESS AND INDUSTRY (2005), available at <http://www.millenniumassessment.org/documents/document.353.aspx.pdf>.

79. See, e.g., John-Paul Fenwick, *Climate Change Is Not Our #1 Problem*, INST. OF PUB. AFF. REV., Sept. 2008, at 42, available at http://www.ipa.org.au/library/publication/1222757484_document_60-4_fenwick.pdf.

80. World Business Council for Sustainable Development, Energy & Climate Overview, <http://www.wbcsd.org/templates/TemplateWBCSD5/layout.asp?MenuId=NjY> (last visited Sept. 1, 2009).

interests and constituents, each contributing (voluntarily or involuntarily) to its performance, and each anticipating benefits (or at least no uncompensated harms) as a result of the corporation's activities."⁸¹ Corporate managers must be responsive to these stakeholders, which include various advocacy groups as well as governmental agencies. The rise of corporate social responsibility is one response of corporations to the demands of stakeholders.⁸² All large corporations recognize responsibilities to the public that extend beyond profit considerations. Very important areas of public concern to which corporations have opened themselves are climate change and environmental degradation.

4. *Adoption of Principles and Standards for Corporate Conduct.*

Important principles and standards have been developed and adopted by corporations. These include the United Nations Global Compact's calls for corporations to "support a precautionary approach to environmental challenges," "promote greater environmental responsibility," and develop and use "environmentally friendly technologies."⁸³ The Global Compact has over 4700 business participants.⁸⁴ The Ceres Principles, created in 1989, call for businesses to protect the biosphere; make sustainable use of resources; reduce and dispose of wastes; conserve energy, reduce environmental, health, and safety risks; provide safe products and services; restore the environment; inform the public; and commit top-level management to these objectives.⁸⁵ Close to one hundred companies have adopted these principles, from Ben & Jerry's to McDonald's to British Petroleum.⁸⁶

81. JAMES E. POST, LEE E. PRESTON & SYBILLE SACHS, *REDEFINING THE CORPORATION: STAKEHOLDER MANAGEMENT AND ORGANIZATIONAL WEALTH* 8 (2002).

82. *See, e.g.*, WILLIAM B. WERTHER, JR. & DAVID CHANDLER, *STRATEGIC CORPORATE SOCIAL RESPONSIBILITY: STAKEHOLDERS IN A GLOBAL ENVIRONMENT* (2006).

83. UN Global Compact, The Ten Principles, <http://www.unglobalcompact.org/AbouttheGC/TheTENPrinciples/index.html> (last visited Sept. 1, 2009) ("The Global Compact asks companies to embrace, support and enact, within their sphere of influence, a set of core values in the areas of human rights, labour standards, the environment, and anti-corruption[.]").

84. UN Global Compact, Business Participation, http://www.unglobalcompact.org/HowToParticipate/Business_Participation/index.html (last visited Sept. 1, 2009).

85. Ceres Principles, <http://www.ceres.org/Page.aspx?pid=416> (last visited Sept. 1, 2009).

86. Ceres, Coalition & Companies, <http://www.ceres.org/Page.aspx?pid=426> (last visited Sept. 1, 2009).

5. *Accountability for Environmental Performance*

Numerous initiatives for bringing transparency to the sustainability performance of corporations have come into being. The best known is the Global Reporting Initiative (“GRI”),⁸⁷ a nonprofit organization operating out of Amsterdam, the Netherlands, that operates in collaboration with the United Nations Environmental Program and the United Nations Global Compact. The GRI’s Sustainability Guidelines are now in their third version.⁸⁸ Further there are securities-research reports and indices, such as the Dow Jones Sustainability Index, that measure the performance of companies with respect to sustainability.⁸⁹

6. *Engaging Socially Responsible Investors and Consumers*

According to the Social Investment Forum, socially responsible investing (“SRI”) “encompasses an estimated \$2.71 trillion out of \$25.1 trillion in the U.S. investment marketplace today.”⁹⁰ SRI takes into account social impacts of an investment as well as potential economic returns. Further, SRI investors often encourage their portfolio companies to improve their practices in societal, environmental, and governmental affairs. A related movement concerns ethical purchasing. As with SRI, ethical purchasers take into account the social and environmental policies of companies from which they buy products as well as the products themselves. Corporations have increasingly had to take these groups into account, and many corporations now consider attention to these groups largely beneficial to their operations, their worker

87. Global Reporting Initiative Homepage, <http://www.globalreporting.org/Home> (last visited Sept. 1, 2009).

88. Sino-Sweedish Corporate Social Responsibility (CSR) Cooperation, Global Reporting Initiative (GRI), <http://csr2.mofcom.gov.cn/aarticle/chtfa/200905/20090506246547.html> (last visited Sept. 1, 2009) (“The Global Reporting Initiative (GRI) refers to the 30,000 strong multi-stakeholder network that collaborates to advance sustainability reporting. To date, more than 1,500 companies, including many of the world’s leading brands, have declared their voluntary adoption of the Guidelines worldwide. Consequently the G3 Guidelines have become the *de facto* global standard for reporting.”) (emphasis added). Notwithstanding the foregoing, the spreadsheet GRI provides on the companies that file GRI reports shows under one thousand companies. Global Reporting Initiative, GRI Reports List, <http://www.globalreporting.org/GRIReports/GRIReportsList/> (last visited Sept. 1, 2009).

89. Dow Jones Sustainability Indexes, <http://www.sustainability-index.com/> (last visited Sept. 1, 2009) (“Launched in 1999, the Dow Jones Sustainability Indexes are the first global indexes tracking the financial performance of the leading sustainability-driven companies worldwide. Based on the cooperation of Dow Jones Indexes, STOXX Limited and SAM they provide asset managers with reliable and objective benchmarks to manage sustainability portfolios.”).

90. Social Investment Forum, Socially Responsible Investing Facts, <http://www.socialinvest.org/resources/sriguide/srifacts.cfm> (last visited Sept. 1, 2009).

satisfaction, and their marketing and stock performance.

7. Reform of Business Operations for Climate-Change Mitigation and Sustainability

As stated earlier, being green is no longer simply a regulatory or public-relations concern for corporations. It has become part of core business strategy deemed to be essential to product development, marketing, and corporate survival. General principles, such as The Natural Step for Business, embraced, for example, by Interface Carpets and Nike, Inc., guide companies in redesigning their products and business processes.⁹¹ Detailed programs for reform of businesses have been developed, such as the *IPCC Fourth Assessment Report, Working Group II Report: Impacts, Adaptation and Vulnerability*⁹² and ISO 14000 Global Green Standards.⁹³ These programs have entered into the business-strategy planning of corporations.

B. The “Unreasonable” Proposals of Corporate Critics

These steps taken by corporations are significant and are serious departures from past practices. They do not, however, put corporations in a position of moving beyond the principles of capitalism and corporate governance that have built up over the last century. Unless corporations do so, it may not be possible for corporations to make changes on the scale needed to address climate change and sustainable development.

Gus Speth, Dean of the Yale School of Forestry and

91. The Natural Step, Case Study of Interface Carpets, <http://www.thenaturalstep.org/en/usa/interface-atlanta-georgia-usa> (last visited Sept. 1, 2009); The Natural Step, Case Study of Nike, Inc., <http://www.naturalstep.org/en/usa/nike-inc-beaverton-oregon-usa> (last visited Sept. 1, 2009). The four “System Conditions” of a sustainable society, according to The Natural Step, are as follows:

[N]ature is not subject to systematically increasing:

1. concentrations of substances extracted from the Earth’s crust;
2. concentrations of substances produced by society;
3. degradation by physical means
4. and, in that society, people are not subject to conditions that systematically undermine their capacity to meet their needs.

The Natural Step: The Four System Conditions, <http://www.thenaturalstep.org/en/canada/the-system-conditions> (last visited Sept. 1, 2009).

92. INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, FOURTH ASSESSMENT REPORT, WORKING GROUP II REPORT: IMPACTS, ADAPTATION AND VULNERABILITY (2007), http://www.ipcc.ch/publications_and_data/publications_ipcc_fourth_assessment_report_wg2_report_impacts_adaptation_and_vulnerability.htm; see Tom Wilbanks et al., *Industry, Settlement and Society*, in INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *supra*.

93. INT’L INST. FOR SUSTAINABLE DEV., GLOBAL GREEN STANDARDS: ISO 14000 AND SUSTAINABLE DEVELOPMENT (1996), available at <http://www.iisd.org/pdf/globalgrn.pdf>.

Environmental Studies, mentioned previously, has for years played a prominent role in environmental affairs. His online biography states:

From 1993 to 1999, Dean Speth served as administrator of the United Nations Development Programme and chair of the UN Development Group. Prior to his service at the UN, he was founder and president of the World Resources Institute; professor of law at Georgetown University; chairman of the U.S. Council on Environmental Quality; and senior attorney and cofounder, Natural Resources Defense Council.⁹⁴

In his new book, *The Bridge at the Edge of the World: Capitalism, the Environment, and Crossing from Crisis to Sustainability*, Speth confesses that, until recently, for four decades he felt that gradually the environmental community would grow in strength and shift the direction of development sufficiently to bring about an environmentally healthy and sustainable world.⁹⁵ Then he came to the conclusion that this was not happening: the environmental movement has strengthened tremendously, but the situation is that the trends, in his view and no matter how much we would like to think otherwise, are in the opposite direction.⁹⁶ This led him to reassess his thinking and to come forward with a new program for the environmental movement. At the heart of his program are a critique of corporations and a set of proposals for changing corporations. He says he realizes that what he is offering is no longer “reasonable” by conventional standards. In making this shift he takes comfort in George Bernard Shaw’s statement that “all progress depends on not being reasonable.”⁹⁷ He also finds reinforcement in the words of John Maynard Keynes: “The ideas of economists and political philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood. Indeed, the world is ruled by little else. Practical men, who believe themselves to be quite exempt from any intellectual influence, are usually the slaves of some defunct economist.”⁹⁸

So it may be, and I believe it is, that corporations, those who govern corporations, and those who are their customers, employees, and stakeholders will need to move beyond the “reasonable” reform of corporations, to that which is unreasonable in terms of the prevailing principles of capitalism and corporate governance.

94. Yale School of Forestry & Environmental Studies, James Gustave “Gus” Speth Biography, <http://environment.yale.edu/profile/speth/bio> (last visited Sept. 1, 2009).

95. SPETH, *supra* note 40, at x.

96. *Id.*

97. *Id.* at xiii (quoting George Bernard Shaw).

98. *Id.* at xiv–xv (quoting JOHN MAYNARD KEYNES, *THE GENERAL THEORY OF EMPLOYMENT, INTEREST AND MONEY* 383 (1936)).

Speth draws attention to the following characteristics of corporations, which he believes account for the unaccountability of corporations for what they are doing to nature and society: (1) the separation of ownership from management, (2) limited liability, (3) personhood, (4) the “best interest of the corporation” principle, and (5) externalization of costs.⁹⁹ He then adds that not only these characteristics but also corporations’ political influence enable them to avoid accountability by significantly controlling the governments by which they are regulated.¹⁰⁰ To top all of this off, he observes, as globalized, multinational corporations, they place the world’s governments and people in a fawning competition for their goods, services, revenues, and jobs, all in service of their never-ending growth.¹⁰¹ And at the ideological heart of this is free trade accompanied by deregulation of corporate activity.¹⁰²

In view of these characteristics, Speth believes voluntary efforts, including corporate social responsibility and the greening of corporations, will not suffice. “A reliably green corporation is one that is required to be green by law.”¹⁰³ To rein in corporations, Speth calls for (1) making the threat of revocation of corporate charters under state law a real one, (2) excluding or expelling unwanted corporations by the state, (3) rolling back limited liability even to the shareholder level in certain cases (which would lead to more vigilant oversight of management by corporations), (4) eliminating corporate personhood so that in the United States corporations do not have the same or similar rights as natural citizens, (5) getting corporations out of politics, and (6) reforming lobbying by corporations.¹⁰⁴

Speth and those whose ideas he marshals in support of his position see capitalism, specifically corporate capitalism, at the beginning of the twenty-first century heading either toward catastrophic environmental outcomes or fundamental reforms. The situation borders on the chaotic as corporations, through their drives to overproduce and stimulate overconsumption in limited sectors of the global society, increase social tensions, undermine political authority, and destroy the healthy functioning of the planet.

As a corporate lawyer, I find the way that Speth has presented his proposals for reform unattractive. I cannot imagine how officers and directors, much less shareholders, can be personally liable for what takes place throughout the corporation. Commerce would grind to a halt. I present Speth’s proposals primarily to indicate the

99. *Id.* at 166–68.

100. *Id.* at 168–69.

101. *Id.* at 168.

102. *Id.* at 172.

103. *Id.* at 178.

104. *Id.* at 178–79.

depth of rethinking that is going on about corporations.

Of course, there have always been critics of corporations and “unreasonable” proposals of reform. What gives ideas for reform along the lines suggested by Speth currency are what I believe is a crisis of nature and the indisputable role of corporations in driving the mode of economic growth that has led to this crisis. Speth’s call for reform is not based on an ideological preference, but rather on his reluctant recognition that corporations have had the central role in the degradation of the global environment and his reluctant decision that the situation cannot be changed without fundamentally changing corporations.

C. The Author’s Unreasonable Proposals

I will leave Speth’s proposals for further consideration by others and by this author at a later time (but not without saying that, while his proposals for reform grate, elements of each of his proposals would need to be included in any significant agenda to change corporate behavior). And I will foray into my own “unreasonable” proposals for corporations.

At this point, I believe it is pertinent to disclose some of my own presuppositions and orientation. When asked, I tell people that I am a business lawyer and an ecologist. The relevance of this here is that for the last thirty years I have made my living advising for-profit business corporations, and for the last twenty years I have been consumed by issues of the environment and sustainable livelihood for humans and other-kind and for these in relationship to each other. As a business lawyer, I am sympathetic to corporations. “Faster-better-cheaper” is ruining the world, yet no business ever made money selling things that are slower, of lower quality, and more expensive. Business people have a great deal of latitude in how they run their businesses, but no business person sets the conditions in which business must be conducted. While it runs against the grain of my idealistic side, I often advise businesses that, if they are going to do things that do not make a profit, they should consider becoming nonprofit corporations and seek gifts and grants. If they are for-profit businesses, they will not survive unless they are profitable. If you are in business, you have to make a profit in financial terms, not just in the real terms of the good that you do.

Further, I believe that profits and financial incentives are drivers of creativity. I believe that the demands of the future require agility and responsiveness and that private enterprise offers these capacities in a way that public enterprise cannot. I see a value in large corporations. While they are, in part, rightly blamed for some of the world’s ills, they have at least these advantages: they are able to develop standards, rules, and policies for their employees; they are able to devote management time to noneconomic concerns; they are able to provide research and

development on improvement of products and future products; they are able to support the development efforts of emerging companies; they can provide a portion of their resources for community improvement and charity; they can invest in their own transformation; they have the capacity to affect, not control, public policy; they can bring resources to communities through investment in their own operations; and, through their shares, they become a source of collective wealth and savings for the future. It is not necessary for me to review here the problems with large corporations because they are well known (and covered in part in the preceding Part of this Article).

So here is what I believe large corporations need to do:

1. *Eco-Imagination*

I am borrowing a term used by General Electric, but it is a good one. Corporations must take a macro look at the world: (i) What will it be like if current trends continue? (ii) What are the limiting factors of human development? (iii) What are the rights of nature? (iv) What is a viable future for humans? This look is needed without regard to the conduct of particular corporations.

A second part of this exercise would be to imagine what commerce would be like in a decarbonized, dematerialized, detoxified, relocalized world. Brian Milani in *Designing the Green Economy* offers these comments:

There are two underlying assumptions to this book. One is that fundamental change is necessary; the other is that it's possible. . . . [W]e have *underestimated the degree of qualitative change necessary* for us just to survive as a species. One powerful example is the calculation of Germany's prestigious Wuppertal Institute that basic sustainability in the developed countries requires a 90-percent (or "factor ten") reduction in resource use. Such efficiency is well beyond the capacity of existing industrial production and regulation. Something fundamental must change.¹⁰⁵

Imagine what commerce would be like after such fundamental change.

A third part of this exercise would be to consider: What are basic human needs? What is sustainable sufficiency? What would it mean to harmonize human activity with the activities of nature? What are the rights of indigenous people, native populations, and local communities? What are the rights of women?

A fourth part of the exercise would be to evaluate the structure of human society—to what extent it has been shaped by the Industrial Revolution and modern technologies and how it would

105. BRIAN MILANI, *DESIGNING THE GREEN ECONOMY: THE POSTINDUSTRIAL ALTERNATIVE TO CORPORATE GLOBALIZATION*, at xvi (2000).

change in a decarbonized, dematerialized, detoxified, relocalized world.

A fifth part of the exercise would be to evaluate which parts of modernity and globalization should be preserved.

In light of this, one must inventory the conduct of one's particular corporation, how it is contributing to or hindering a viable future, and what path the corporation might follow in contributing to a viable future.

2. *Get out of Survival Mode*

This is written about William Clay Ford, Jr., a self-avowed environmentalist who was CEO of Ford Motor Company until 2006:

Bill Ford foresaw that energy efficiency and environmental friendliness would be crucial to the auto industry in this decade. But beyond the expensive eco-friendly makeover of the River Rouge plant, he didn't deliver much. The firm staked its near-term future on selling more and more gas-gulping SUVs and pickup trucks. In 2000, he said Ford would boost the fuel economy of its SUVs by 25 percent by 2005. In 2003, he stepped back from that promise. [In the fall of 2005], he said the company would ramp up capacity so that it could produce 250,000 hybrids a year by the end of the decade. But by June 2006, he'd backtracked, telling employees that Ford would focus on ethanol and other alternative fuels. (And, by the way, the notion of an automaker selling a quarter-million hybrids in the United States by 2010 doesn't seem particularly visionary. [In August 2006] alone, Toyota sold 25,994 hybrids.) Ford also overpromised and underdelivered on profits. In 2002, he said the company could report \$7 billion in pre-tax profits for 2006. Through the first six months of [the] year, the company instead notched a \$2.325 billion pretax loss.

Yes, the company under Bill Ford continually rolled out new models, drew up new concept cars, and introduced hybrids. But its basic business model—riding the high-margin big trucks and SUVs for all they were worth—never changed. Bill Ford continually promised long-term, game-changing business initiatives—the type you would expect from a bold, secure, forward-looking family CEO—but, like hired-gun executives, he was quick to scale back ambitions when short-term results didn't go his way. If Ford had put resources, reputation, and effort into fuel-efficiency and hybrid production, it's likely the company's results would have been even worse during the past few years. But Ford would surely be better positioned for today's environment—and for tomorrow.

Instead, its future looks grim. Under Bill Ford's

leadership, the company lost market share and lost value.¹⁰⁶

Bill Ford, to his detriment, that of his company, and ours, was a survivalist. To some extent this is attributable to corporate-law doctrines that require management to maximize profits for shareholders. Some latitude needs to be given to executives to take other considerations into account even beyond the business judgment rule. In this regard, the amendment to the corporate law of the State of Oregon is significant. This amendment permits corporations to add to their charters a provision to direct management “to conduct the business of the corporation in a manner that is environmentally and socially responsible.”¹⁰⁷ Corporations need to understand that the conditions of economic life are changing rapidly and are being shaped by the kinds of considerations described earlier in this Article. “Get out of survival mode” really means “get out of short-term economic survival mode and take the long view.” Those corporations that survive will be those who contribute to a decarbonized, dematerialized, detoxified, relocalized world.

3. *Reconsider the Global Commons, Public Trust, and Capacities of the Human*

Garrett Hardin wrote a famous article in *Science* in 1968 entitled “The Tragedy of the Commons.”¹⁰⁸ In it he pictured a hypothetical common pasture with hypothetical herders. All of the herders behaved in ways now understood to be economically “rational.” “They let their herds loose in the pasture in a single-minded effort to maximize their own gain with no thought for the future or for anybody else. The pasture was depleted, and the tragedy was born.”¹⁰⁹ Partly as a result of Hardin’s piece, it has become “an article of faith among economists . . . that a resource without a private property regime is destined for overuse.”¹¹⁰

Jonathan Rowe wrote a fascinating critique of this premise in *Worldwatch’s 2008 State of the World Report*.¹¹¹ He chides Hardin, a biologist, for proposing such a model of behavior with so little

106. Daniel Gross, *Have You Driven Out a Ford Lately?*, SLATE, Sept. 6, 2006, <http://www.slate.com/id/2149079/>.

107. Press Release, Or. Lawyers for a Sustainable Future, New Law Embeds “Sustainability” in Oregon Business Corporation Act (June 1, 2007), available at <http://www.earthleaders.org/olsf/hb2826> (heralding the signing by the Governor of Oregon of HB 2826 which was “the first state corporate code to expressly acknowledge the goal of sustainable business practices”).

108. Garrett Hardin, *The Tragedy of the Commons*, 162 SCIENCE 1243, 1244 (1968).

109. Jonathan Rowe, *The Parallel Economy of the Commons*, in 2008 STATE OF THE WORLD: INNOVATIONS FOR A SUSTAINABLE ECONOMY 138, 141 (Linda Starke ed., 2008).

110. *Id.* at 138.

111. *Id.* at 138–50.

examination of the empirical evidence.¹¹² Rowe notes the hundreds of years of history in which common pasturage did work and the arrangements people worked out among themselves to manage the commons.¹¹³ It is, rather, enclosure that is recent, and it is in the period of enclosure that the greatest exploitation of land has occurred, especially in the impersonal hands of corporations.¹¹⁴ Rowe writes:

The corporation is the creature of lawyers rather than of nature. It embodies the pure financial calculus of the ciphers that inhabit the economics texts. The bottom line really is the bottom line. This is not because corporations are run by bad people. On the contrary, the financial calculus is built into the charters through which corporations acquire legal life¹¹⁵

It is worth noting that the fiction of *homo economicus*, on which the financial calculus is based, robs humans of every cultural propensity. They act mechanically in their self-interest, seeking personal gain without regard to others and based on the pleasure/pain principle. This matches nicely Thomas Hobbes's view of the state of nature—that without a common power to rule over all, society inevitably devolves to a “war of every man against every man” wherein “there is no such thing as ownership, no legal control, no distinction between mine and thine. Rather, anything that a man can get is his for as long as he can keep it,”¹¹⁶ echoing the depraved view of humanity taught by the leaders of the Protestant Reformation.

There are relatively fixed and unexamined assumptions in our modern economic theory as regards human conduct and the possibilities for human behavior. There is no doubt that in the highly competitive and often unforgiving world of business, people feel that they are caught up in a world of intense rivalry where people think only of themselves. Yet historically we can see that this does not explain human behavior as a whole or the capacities of humans.

In contrast to current practice, we need to begin thinking of economics as a cooperative enterprise and of economic humans as morally conscious beings in an integral relationship with nature. Further, with regard to the commons, there must be a greater sense of how much we depend on common goods—the hydrological cycle, the carbon cycle, clean air and water, and so forth.¹¹⁷

112. *Id.* at 142.

113. *Id.* at 141–42.

114. *Id.* at 144–45.

115. *Id.* at 143.

116. THOMAS HOBBS, *LEVIATHAN* 58–59 (Jonathan Bennett ed. & trans., 2006) (1651), available at <http://www.earlymoderntexts.com/pdf/hobbes1.pdf>.

117. A related issue not discussed in this Article is the public trust doctrine

With respect to corporations, there should be a category of corporations that become public trusts and are subject to stricter oversight. For example, corporations that depend on public protection, such as banks, would be in this category, as would utilities that are granted monopolies. Perhaps corporations with a certain market capitalization, number of shareholders, or gross revenue would also fit in this category and possibly transnational corporations. Regulation of corporations as public trusts would have to extend beyond economic concerns to include reasonable foresight. For example, public utilities are now hampered by their reliance on production of power for revenue and are prevented by the way utility rates are set from profitably pursuing energy savings or costly investments in alternative energy. Transnational corporations should only serve where such services are needed, such as in telecommunications. Transnational corporations may be called on to divest operations that in an environmentally sustainable world can better be served at the local level. Those corporations that are subject to public-trust regulation would need to be organized under the laws of responsible jurisdictions in order to exercise their privileges.

4. *Promote Understanding and Tools for Reframing Business Enterprise*

The continuing viability of business is dependent on reframing the language and understandings of business. Businesses have a particular interest in promoting and supporting the development and use of common life-cycle assessment tools, research and education on ecological economics (economics that gives priority to the health of Earth as the primary source of economy), the development and use of Genuine Progress Indices over Gross Domestic Product, and common environmental reporting.

5. *Develop Tighter Codes of Conduct with More Enforcement Mechanisms to Be Developed by Business Associations and Individual Corporations*

Large corporations have taken significant steps in developing codes of conduct, and they have become parties to codes of conduct such as the UN Global Compact and the Ceres Principles. These common codes of conduct do not involve a commitment to achieving specific targets but only to including additional considerations in management decision making. If corporations are to achieve 80 by 50 carbon reduction or Factor 10 dematerialization by 2050, or

as it applies to governments. See, e.g., Mary Christina Wood, Professor, Univ. of Or. Sch. of Law, Governments Atmospheric Trust Responsibility, Keynote Address at the University of Oregon Journal of Environmental Law and Litigation Conference on Combating Climate Change (Oct. 19, 2007), available at <http://www.law.uoregon.edu/faculty/mwood/docs/govatmosphere.pdf>.

anything approaching this, there will need to be higher standards and greater enforcement. Corporations should be full participants in efforts to bring into being a transnational enforcement mechanism.

6. *Raise Standards for Global Trade*

Business needs to involve itself in the reform of the World Bank, the International Monetary Fund, and the World Trade Organization in line with the requirements of the future. Currently trade rules inhibit the development of common labor, environmental, and human-rights standards. These should not be seen as extrinsic to the economic process in the future.

7. *Change Marketing Practices*

Consumer marketing should move to consumer education, push advertising to pull advertising. That there will continue to be large markets with upwards of seven billion people in the world is beyond doubt. Just as corporations promote the trivial and unnecessary now, marketing efforts can move to education for safe, healthy, and environmentally sustainable consumption. Public spaces should be returned to the public without the intrusion of ubiquitous advertising. Corporate logos and names should be removed from public facilities.

8. *Support the Rebuilding of Communities and the Development of New Transportation, Industrial, and Agricultural Infrastructure*

When most Americans look out their windows, they see the last hundred years of development. In other words, little that they see was there one hundred years ago. What they are seeing is, in author Thomas Berry's words, "the distorted dream of an industrial technological paradise."¹¹⁸ It is a world of unlimited resources, unlimited mobility, and unlimited satisfaction of consumer desires. If we are to succeed, when a person looks out his or her window in 2100, he or she will see little of what is there today. I almost hate to say it, but this is a huge opportunity for corporations.

9. *Consider Dusting Off Some Old Laws: Usury and Sumptuary Laws and Cap and Trade*

Herman Daly observed this progression in exchange: First barter—commodity exchanged for commodity, or C-C; then money as a medium of exchange of commodities, C-M-C; then in modern capitalism commodities as an intermediary to the accumulation of

118. THOMAS BERRY, *THE GREAT WORK: OUR WAY INTO THE FUTURE* 201 (1999).

money, M-C-M; and finally the paper economy, M-M.¹¹⁹ The doctrine of usury makes it a crime to make money on money. Especially given the recent financial collapse, we need to dust off usury laws and determine their contemporary relevance. Likewise, medieval sumptuary laws need to be given a new look (even if they did not work so well in the past). *Black's Law Dictionary* defines sumptuary laws as "[l]aws made for the purpose of restraining luxury or extravagance, particularly against inordinate expenditures in the matter of apparel, food, furniture, etc."¹²⁰ If we are going to achieve 80 by 50 and Factor 10, we are going to have to become self-limiting, and sumptuary laws may be a part of this, which, oddly, brings us to cap and trade. When I began writing this Article I favored a carbon tax over cap and trade. What I came to realize is that raising prices does not restrict those who are willing and able to pay the higher prices and that the higher prices negatively affect social equity. With respect to carbon, only cap and trade imposes a limit. Living within biophysical limits will be a dimension of a viable future. Cultural and spiritual growth will not, however, be limited.

10. *Support Conservation Biology and a Fair Future*

Health of Earth's life systems, equity (which does not mean sameness or equal economic circumstances), and sustainable sufficiency should become the bywords of corporate life and governance.

VI. THE ROLE OF LAWYERS IN CORPORATE REFORM

I will close this Article with remarks on the role of lawyers in the reform of corporations.

Attorneys play multiple roles. Attorneys represent regulators, and they represent the regulated. For corporate attorneys the role is defined as advocate. A great deal of corporate environmental-law work is aimed at the right to pollute and to make sure that the polluter does not pay. In regard to CO₂ emissions, much of the work is aimed at avoiding regulation of the same. In general, the predominant concern of corporate attorneys is the protection of property rights and freedom of action for the purpose of promoting the public welfare through the growth of commerce within the limits of the law. In these roles corporate attorneys perform a useful function. However, just as officers and directors of corporations have new responsibilities in regard to the future, so do attorneys.

Attorneys have special skills in relation to how to relate fact to law and how to structure relations. They cannot in practice impose their opinions on their clients, but they can make themselves available to clients who are ready to engage the challenges and

119. DALY, *supra* note 49, at 39.

120. BLACK'S LAW DICTIONARY 1605 (rev. 4th ed. 1968).

directions discussed in this Article. Attorneys will find that many of their clients are ready. Already, for example, various law firms have departments of environmental and/or social corporate responsibility, such as Foley Hoag in Washington, D.C., and Greenberg Traurig in Florida.¹²¹ Such efforts will necessarily be balanced weighing on the one hand protection against liabilities and on the other advancing environmental responsibility. Just as it is the practice of businesses to hire lawyers to lobby for business regulations, there is a need now to engage lawyers in developing some of the concepts and standards discussed above. Further, there is a need for the faculty of law schools to develop them.

For attorneys to do this will require additional training. While related to what has been called environmental law, what is needed goes beyond it. Some groups have called it “Earth Jurisprudence,” which has some merits. The term, however, is somewhat misleading because it is a combination of protection of Earth and ensuring a viable human future.

I feel that what I have been able to develop in this Article is mostly prologue, though essential prologue for me. It provides background for development of the concepts discussed above. I trust that this conference on Corporate Governance and Climate Change will provide a fruitful base for much needed work.

121. Foley Hoag LLP, Corporate Social Responsibility, <http://www.foleyhoag.com/en/Services/Corporate-Social-Responsibility.aspx> (last visited Sept. 1, 2009); Greenberg Traurig Practice Industries, <http://www.gtlaw.com/Experience/Practices/ClimateChange> (last visited Sept. 1, 2009).