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The previous version of this *Environmental Policy Outlook* incorrectly interpreted World Bank energy consumption and GDP data in table 4 and presented a misleading account of U.S. energy efficiency. The data are revised here. We regret the error.

The United States and the Environment: Laggard or Leader?

By Steven F. Hayward

If there is one country that bears the most responsibility for the lack of progress on international environmental issues, it is the United States.

—*Gus Speth*, Red Sky at Dawn[1]

Sadly, our nation is also at present the biggest engine of ecological destruction on Earth, the chief (but by no means only) force keeping humanity on collision course with the natural world.

—*Paul and Anne Ehrlich*, One with Nineveh[2]

U.S. Given Poor Marks on the Environment

—New York Times *headline, January 23, 2008*

To borrow the blunt language of Generation X and the "Millennials," does the United States suck when it comes to the environment? Contrary to the perception expressed in the epigraphs above, the answer turns out to be a resounding No; the United States remains the world's environmental leader and is likely to continue as such. But to paraphrase the old slogan of the propagandist, if a misperception is repeated long enough, it will become an unshakeable belief.

Environmental improvement in the United States has been substantial and dramatic almost across the board, as my annual *Index of Leading Environmental Indicators* and other books and reports like it have shown for more than a decade.[3] The chief drivers of this improvement are economic growth, constantly increasing resource efficiency, innovation in pollution control technology, and the deepening of environmental values among the American public that have translated into changed behavior and consumer preferences. Government regulation has played a vital role to be sure, but in the grand scheme of things, regulation can be understood as a lagging indicator that often achieves results at needlessly high cost. Were it not for rising affluence and technological innovation, regulation would have much the same effect as King Canute commanding the tides.

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But in a variation of the old complaint "what have you done for me lately?" there is widespread perception that the United States lags behind Europe and other leading nations on environmental performance. This perception is more strongly held abroad than here in the United States.

Yale University's Daniel Esty, the chief author of the World Economic Forum's very useful Environmental Performance Index (EPI)—a new iteration of which appeared in January of this year[4]—notes an interesting irony on this point. In the EPI's 2006 ranking of 133 nations, the United States ranked twenty-eighth, based on the study's comparison of sixteen key indicators. When he presents these findings in the United States, Esty reports, some audiences often ask how it is that the United States scores so *poorly* on the rankings, Americans being used to appearing near the very top of all international rankings of good things. In Europe, Esty says, audiences wonder how it is possible that the United States scores so *high* in the rankings—surely there must be some dreadful mistake in the methodology that gives the United States the unjustified high rank of twenty-eighth place![5]

While the economy has grown more than twenty-fold in real terms since 1910, fossil fuel energy consumption only grew six-fold, and per-capita CO_2 emissions only doubled—from 10.9 tons to 19.4 tons. This is not the profile of a nation that is profligate with energy.

In the 2008 edition of the EPI, the United States slipped in the rankings, falling to thirty-ninth place. Notably, the United States ranks last among the G8 nations and third to last among all advanced wealthy nations, beating only Australia and the Netherlands in the EPI rankings. It was this recent release that produced the *New York Times* headline: "U.S. Given Poor Marks on the Environment."

The EPI is not the only such measure in which the United States scores poorly; in fact, the United States does better in the EPI than in several other studies. More congenial to popular European opinion is the Climate Change Performance Index (CCPI), which is the product of a nongovernmental organization called Germanwatch.[6] Here, the United States ranks fifty-fifth out of fifty-six nations according to three broad measures of greenhouse gas emissions, energy use, and climate policy. Even China, which now rivals the United States as the leading emitter of greenhouse gases, does better in the CCPI than the United States, coming in at fortieth place. An even more typical example of popular wisdom is the Happy Planet Index, which ranks the ostensible "happiness" of the United States at 150th out of 178 countries, chiefly on account of America's carbon footprint.[7]

The EPI has many useful and important features. The report's most valuable affirmation is the link between economic growth and environmental quality. "Wealth correlates highly with EPI scores and particularly with environmental health results," the EPI notes.[8] The EPI's policy summary reiterates several essential points that receive insufficient attention in environmental discourse:

> Environmental decision making can and should be made more data-driven and rigorous. A more fact-based and empirical approach to policymaking promises systematically better results. . . . To address [data] gaps, policymakers should invest in collecting additional data and tracking a core set of indicators over time. They must also set clear policy targets and incorporate indicators and reporting into policy formation, and shift toward more analytically rigorous environmental protection efforts at the global, regional, national, state/provincial, local, and corporate scales. . . .
>
> The absence of broadly-collected and methodologically-consistent indicators for even basic concerns such as water quality—and the complete lack of time-series data for most countries—hampers efforts to shift pollution control and natural resource management onto more empirical foundations.[9]

The EPI concedes that lack of data makes it impossible to consider numerous relevant environmental issues in constructing an international performance ranking.[10]

One area in which data is easy to come by or estimate confidently from resource-use models is energy use and greenhouse gas emissions, and it is on this metric that the United States fares poorly in the EPI's methodology because the EPI assigns one-quarter of its weighting to

TABLE 1
SELECT 2008 EPI RANKINGS

EPI rank		EPI score
1	Switzerland	95.5
2	Sweden	93.1
3	Norway	93.1
4	Finland	91.4
6	Austria	89.4
10	France	87.8
12	Canada	86.6
13	Germany	86.3
14	United Kingdom	86.3
18	Portugal	85.8
21	Japan	84.5
24	Italy	84.2
25	Denmark	84.0
28	Russia	83.9
30	Spain	83.1
31	Luxembourg	83.1
34	Ireland	82.7
35	Brazil	82.7
39	**United States**	**81.0**
44	Greece	80.2
46	Australia	79.8
47	Mexico	79.8
51	South Korea	79.4
55	Netherlands	78.7
57	Belgium	78.4
102	Indonesia	66.2
105	China	65.1
120	India	60.3

SOURCE: Daniel C. Esty, M. A. Levy, C. H. Kim, A. de Sherbinin, T. Srebotnjak, and V. Mara, *2008 Environmental Performance Index* (New Haven, CT: Yale Center for Environmental Law and Policy, 2008), available at http://epi.yale.edu/Home (accessed February 13, 2008).

TABLE 2
U.S. RANKING IN THE WORLD BANK'S LITTLE GREEN DATA BOOK

U.S. G8 rank for:	
EPI	8
Fertilizer use	3
Biodiversity potential	1
Protected land area	3
Energy use per $ of GDP	3
Per capita energy ese	7
Particulate damage	6
Freshwater utilization	4
CO_2 emissions growth, 1990–2003	7

SOURCE: World Bank, *The Little Green Data Book 2007* (Washington, DC: World Bank, 2007), available at http://siteresources.worldbank.org/INTDATASTA/64199955-1178226923002/21322619/LGDB2007.pdf (accessed February 15, 2008).

three climate change metrics. Chiefly because of this weighting, the United States finishes last among the G8 nations and well down the list of advanced or wealthy nations, behind twelve of the core nations of the EU-15. Even Brazil ranks ahead of the United States on the EPI (see table 1).

This heavy weighting of climate change metrics is vulnerable to two criticisms. First, weighting any index requires some arbitrary choices and the inclusion of data sets that may not reflect true differences across nations. Some of the individual metrics besides climate change and energy use illustrate the problems inherent in any such international comparison. For example, on the EPI's measure of "ecosystem vitality," Russia scores higher than the United States, which seems implausible given the environmental ruin from decades of Soviet rule. On this single metric, the United States ranks 107th, far behind a number of African nations whose environmental records and protection regimes are at the very least dubious (Congo is fourth; Malawi, eighth; Mozambique, seventeenth; Uganda, twentieth; and Rwanda, thirty-second, for example).

Second, even within less subjective energy and climate measures, several important qualifications are left out of the calculation to the disadvantage of the United States. One way of understanding the arbitrariness of the EPI—and any similarly constructed performance index—is to select, even at random, a different set of metrics. The World Bank's *Little Green Data Book* for 2007 offers one approach that can be taken.[11] The World Bank's metrics include, for example, measures of fertilizer use, amount of land area protected for conservation purposes, an index of biodiversity benefits, energy used per dollar of economic output, an estimate of the economic damage of particulate air pollution levels, growth in CO_2 emissions from 1990 to 2003, and the proportion of a nation's freshwater resources consumed annually. Each of these metrics is susceptible to a number of qualifications, criticisms, and weaknesses, but as macro measures they are at least as suggestive as the similar measures used in the EPI.

While the United States ranks last among the G8 countries on the EPI, it ranks at the bottom of none of the World Bank categories (see table 2).

A closer look at the World Bank's Global Environmental Facility Benefits Index for Biodiversity illustrates the problem analysts face in constructing meaningful comparative indices of environmental quality. The World Bank's index is described as

> a composite index of relative biodiversity potential for each country . . . based on the species represented in each country, their threat status, and the diversity of habitat types in each country. The index has been normalized so that values run from 0 (no biodiversity potential) to 100 (maximum biodiversity potential).[12]

This opaque methodology is probably at least as susceptible to criticism as the EPI's biodiversity metric, but since they both use a 0–100 scale, the sharp contrast between their national scorings is a useful illustration of the limitations of this kind of metadata exercise. Table 3 displays the EPI and World Bank biodiversity scores. The contrast between the two scoring systems suggests that we are far from a consensus on the best methodology for judging biodiversity.

The United States is the world's leading emitter of greenhouse gases on a per-capita basis.[13] In 2004—the most recent year for which complete international data are available for comparison—the United States emitted 19.9 tons of CO_2 per capita, compared to the G8 average (excluding the United States) of 10.1 tons. Americans also use substantially more energy than European nations on a per capita basis, whether measured in oil equivalent (one of the World Bank's measures) or in kilowatt-hours (kWh) of electricity. Americans consume 7,920 kilograms oil equivalent per capita, compared to the European G8 nation average of 4,060. Per capita electricity consumption in the United States is 13,351 kWh, compared to a European G8 average of 6,483.

This comparison requires a closer look. Even on the World Bank's metric of energy use per dollar of economic output, the United States does not finish last as it does in the EPI. As Table 4 shows, the United States ranks sixth among the G8 nations, ahead of only Canada and Russia.[14] Among a wider pool of industrialized countries, the U.S. energy-output ratio is superior to Sweden and Finland, both of whom rank considerably higher than the United States on the EPI. The lower ratio of energy/GDP for these northern nations, like Canada, probably owes much to the harsh winter climate where more energy is necessary for basic heat.

Three important differences between the United States and our G8 competitors that account for our higher greenhouse gas emissions need to be more adequately

TABLE 3
EPI AND WORLD BANK BIODIVERSITY SCORES COMPARED FOR SELECT COUNTRIES

	EPI biodiversity rank	EPI biodiversity score	World Bank GEF biodiversity score
Central African Republic	1	100	1.7
Botswana	2	100	1.5
Saudi Arabia	5	95.5	3.4
Congo	6	93.4	3.4
Tanzania	13	87.2	15.1
Russia	20	79.2	37.1
Ethiopia	35	71.2	8.5
United States	40	65.3	90.3

SOURCES: Daniel C. Esty, M. A. Levy, C. H. Kim, A. de Sherbinin, T. Srebotnjak, and V. Mara, *2008 Environmental Performance Index* (New Haven, CT: Yale Center for Environmental Law and Policy, 2008), available at http://epi.yale.edu/Home (accessed February 13, 2008); and World Bank, *The Little Green Data Book 2007* (Washington, DC: World Bank, 2007), available at http://siteresources.worldbank.org/INTDATASTA/64199955-1178226923002/21322619/LGDB2007.pdf (accessed February 15, 2008).

TABLE 4
ENERGY USE PER $ GDP

	GDP $ per kg/oil equivalent
Russia	2.0
Canada	3.4
United States	4.6
France	5.9
Germany	6.2
Japan	6.4
United Kingdom	7.3
Italy	8.2
EU-15 average	6.6

SOURCE: World Bank, *The Little Green Data Book 2007* (Washington, DC: World Bank, 2007), available at http://siteresources.worldbank.org/INTDATASTA/64199955-1178226923002/21322619/LGDB2007.pdf (accessed February 15, 2008).

recognized and factored into analysis of these issues. First, one reason for higher U.S. greenhouse gas emissions is that more of our energy infrastructure is fossil fuel–based—though with the notable exceptions of France and Canada, not vastly higher. (In fact, Britain and Italy generate a higher proportion of their electricity from fossil fuels than the United States does.) Table 5 displays the proportion of electricity generated with fossil fuels in the G8 nations.

Second, American per-capita emissions are higher than European per-capita emissions in part because America's standard of living is considerably higher than the European standard of living. U.S. per-capita income is one-fourth higher than the average for European G8 nations (Russia excluded); the World Bank's *Little Green Data Book* has the U.S. 2005 per-capita income at $43,560, while the six other main G8 members are at an average of $34,833. If U.S. GDP were one-fourth lower, our greenhouse gas emissions per-capita would be about fifteen or sixteen tons per person instead of nearly twenty.

One way of appreciating the differences in the U.S. emissions inventory is to look at energy use just in the industrial sector of the economy. U.S. greenhouse gas emissions in the industrial sector are actually down 1.7 percent since 1990 and almost 5 percent since 1970. Most of the growth in U.S. greenhouse gas emissions has come from the residential and transportation sectors—each up 25 percent since 1990. U.S. energy use in the industrial sector is not far out of line with European averages. Table 6 displays industrial sector output for the year 2004 and shows the United States lagging behind Japan and the UK; coming close to France; and outperforming Italy, the Netherlands, Sweden, and Finland—all nations that rank higher than the United States on the EPI.

Third, even if U.S. GDP were one-quarter lower, U.S. per-capita emissions would still be substantially higher than the G8 average because of larger homes and longer transportation distances in the United States. The average dwelling unit in the United States is about 2,400 square feet today (up from 1,500 square feet in 1970), while the average dwelling unit in western Europe is about half that (800 square feet in Italy, 1,300 square feet in France, and 1,200 square feet in Germany, for example[15]). Because of Europe's milder summer climate, most homes are not air-conditioned. Over 60 percent of American housing units are air-conditioned, and in recently constructed housing, the number approaches 90 percent. Less than 10 percent of housing units and only 27 percent of commercial buildings in Europe have air conditioning, compared with 80 percent of commercial buildings in the United States.[16]

To be sure, the different mixes of electricity generation between Europe and the United States go a long way toward explaining lower per-capita greenhouse gas

TABLE 5
PERCENTAGE OF ELECTRICITY GENERATED FROM FOSSIL FUELS, 2004

Italy	77.3
United Kingdom	75.9
United States	**71.4**
Russia	65.3
Germany	62.3
Japan	59.4
Canada	26.2
France	9.3

SOURCE: World Bank, *The Little Green Data Book 2007* (Washington, DC: World Bank, 2007), available at http://siteresources.worldbank.org/INTDATASTA/64199955-1178226923002/21322619/LGDB2007.pdf (accessed February 15, 2008).

TABLE 6
INDUSTRIAL OUTPUT PER TON OF OIL EQUIVALENT, 2004

	Industrial output per TOE, 2000 $ (PPP)
Japan	15,826
United Kingdom	11,426
Germany	9,075
France	8,179
Austria	7,875
United States	**7,597**
Italy	7,118
Netherlands	6,426
Greece	6,141
Spain	5,791
Sweden	5,647
Belgium	5,066
Portugal	4,586
Canada	4,191
Luxembourg	3,720
Finland	3,090

SOURCE: Author's calculations from International Energy Agency data.

TABLE 7
POPULATION AND TRANSPORTATION DENSITY MEASURES

	Population	Land area (sq km)	Population density	km roads	km rail	Road + Rail	Road/rail density km/1,000 sq km	Transport energy consumption (1,000 TOE)
United States	303,000,000	7,415,756	40.9	153,956	92,523	246,479	33.2	711,862
EU-15	372,939,000	3,367,154	110.8	45,264	150,476	195,740	58.1	324,417

SOURCE: Eurostat Statistical Books, *Panorama of Transport* (Luxembourg: Office for Official Publications of the European Communities, 2007), available at http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-DA-07-001/EN/KS-DA-07-001-EN.PDF (accessed February 14, 2008).

TABLE 8
U.S. CO_2 EMISSIONS: CURRENT LEVELS AND 1910 LEVELS

	2006	1910
U.S. CO_2 emissions from fossil fuels	5,890.3 MMT	1,002.3 MMT
U.S. GDP (billion 2007 $)	13,244	551
Per capita income (2007 $)	$43,560	$5,964
Population	303,000,000	92,228,000
Fossil fuel energy (BTU Quads)	87.760 Quads	14.261 Quads
Per capita CO_2 emissions	19.4 tons	10.9 tons

SOURCE: Energy Information Administration, *Emissions of Greenhouse Gases in the United States 2006* (Washington, DC: Department of Energy, November 2007), available at www.eia.doe.gov/oiaf/1605/ggrpt/ (accessed February 13, 2008).

emissions in nations such as France, which generates 80 percent of its electricity with carbon-free nuclear power. One important sector in which there is less difference in per-unit carbon dioxide emissions is transportation. Critics of the United States usually note our low-mileage auto fleet and lack of public transit compared to western Europe. However, the United States is much larger and less densely populated than western Europe. Table 7 compares the United States (lower forty-eight states only) and the EU-15 in land area, population density, kilometers of roads and rail lines, transportation density (i.e., kilometers of roads and rail lines per thousand square kilometers), and energy consumption by road and rail transportation. The United States has to move people and goods much longer distances than western European nations, and it uses more than twice as much energy in its transportation sector because of this. The European Commission (EC) has taken note of this fact, reporting in its Eurostat *Panorama of Transport* report for 2007 that the United States performed 5.233 trillion ton-kilometers of freight transport in 2003 (the last year for which the EC has complete data), while the comparable figure for the entire EU-25 was only 2.184 trillion ton-kilometers. "Measured by tonne-kilometres, the EU-25 performs less transport (restricted to inland modes) than the United States," the EC concludes.[17] U.S. rail transport is six times the amount of the EU-25 (2,341 billion ton-miles for the United States versus 364 billion ton-miles for the EU-25). The United States actually ships a larger proportion of its freight by rail than does Europe.[18] It is hard to tell whether on a per-kilometer basis the United States has higher greenhouse gas emissions than Europe, as more of the U.S. rail infrastructure is diesel fuel powered, while Europe's rail grid is more electrified.

If these differences in standard of living and transportation density are normalized, America's per-capita greenhouse gas emissions would not be much different from western Europe. And here lies the main paradox of the misperception on this issue: it is precisely *because* the United States is highly energy efficient that we are able to afford and consume more energy than European

nations on a per-capita basis. One obvious implication of this analysis is that the United States cannot currently achieve European-level greenhouse gas emissions unless it reduces American output and lowers the nation's standard of living.

The consistent improvement in America's energy efficiency is an untold and underappreciated long-term story and can be best understood by breaking down the most popular greenhouse gas emissions reduction target that is on the table today. One way of grasping this story is displayed in table 8, which compares U.S. energy use and economic output in the year 1910, which, according to historic Department of Energy data, was when U.S. fossil fuel CO_2 emissions were 80 percent below the level of 1990—which is the target most frequently mentioned as the one we should set for the year 2050. In 1910, the nation's population was only 92 million people, per-capita income (in current 2007 dollars) was only $5,964, and total GDP (also in current 2007 dollars) was about $551 billion—about one-twentieth the size of the U.S. economy today. While the economy has grown more than twenty-fold in real terms since 1910, fossil fuel energy consumption only grew six-fold, and per-capita CO_2 emissions only doubled—from 10.9 tons to 19.4 tons. This is not the profile of a nation that is profligate with energy.

The U.S. energy story is far from over. In fact, some evidence suggests the United States is currently outperforming Europe in reducing energy intensity (the amount of energy used per unit of economic output) and greenhouse gases. According to the Department of Energy's latest annual report on the subject, U.S. greenhouse gas emissions *fell* by 1.5 percent in 2006, the first time they have fallen in a nonrecessionary year.[19] It is likely that the United States is the only industrialized nation whose greenhouse gas emissions fell in 2006 (2006 emissions data for other nations are not yet available).

The EPI and similar efforts to construct metrics to evaluate environmental condition and progress are valuable tools that deserve more attention and reflection. But because of the methodological difficulties and limitations of these kinds of exercises, the EPI and other measures should be regarded as a starting point for more serious and sustained attention to the details of environmental condition and all the relative variables that policymakers must keep in mind. The full story is more complex and much less unflattering to the United States than the newspaper headlines and advocates make out.

AEI research assistant Abigail Haddad contributed research for this article. Editorial assistant Christy Hall Robinson worked with Mr. Hayward to edit and produce this Environmental Policy Outlook.

Notes

1. James Gustave Speth, *Red Sky at Dawn: America and the Crisis of the Global Environment* (New Haven, CT: Yale University Press, 2004), 109.

2. Paul Ehrlich and Anne Ehrlich, *One with Nineveh: Politics, Consumption, and the Human Future* (Washington, DC: Island Press, 2004), 289.

3. See Seymour Garte, *Where We Stand: A Surprising Look at the Real State of the Planet* (New York: Anacom Press, 2007); Bjørn Lomborg, *The Skeptical Environmentalist: Measuring the Real State of the World* (Cambridge: Cambridge University Press, 2001); and Terry L. Anderson, ed., *You Have to Admit It's Getting Better: From Economic Prosperity to Environmental Quality* (Stanford: Hoover Institution Press, 2004).

4. Daniel C. Esty, M. A. Levy, C. H. Kim, A. de Sherbinin, T. Srebotnjak, and V. Mara, *2008 Environmental Performance Index* (New Haven, CT: Yale Center for Environmental Law and Policy, 2008), available at http://epi.yale.edu/Home (accessed February 13, 2008).

5. Daniel Esty, "The Fate of the Earth: A Roundtable on Environmental Assessment," (comments, AEI, May 16, 2006), available through www.aei.org/event1324/.

6. *The Climate Change Performance Index 2008* (Bonn: Germanwatch, December 2007), available at www.germanwatch.org/klima/ccpi2008.pdf (accessed February 15, 2008).

7. See the Happy Planet Index website at www.happyplanetindex.org.

8. Daniel C. Esty et al., *2008 Environmental Performance Index*, 7.

9. Ibid.

10. Important areas the Environmental Performance Index identifies for which data is absent or inadequate include toxic exposures, several dimensions of ambient air quality, waste management (including both household and toxic waste), nuclear safety, pesticide safety and chemical exposure, wetlands loss, health of freshwater ecosystems, agricultural soil quality and erosion, and heavy metal exposure.

11. World Bank, *The Little Green Data Book 2007* (Washington, DC: World Bank, 2007), available at http://

siteresources.worldbank.org/INTDATASTA/64199955-1178226923002/21322619/LGDB2007.pdf (accessed February 15, 2008).

12. Ibid., 238.

13. Tiny, and richer, Luxembourg actually has higher per-capita greenhouse gas emissions than the United States but can be considered an outlier on account of its small size and peculiar economy. Luxembourg's per-capita income is $58,058, and its energy use per capita is 10,481 kilograms oil equivalent, yielding per-capita CO_2 emissions of 22.1 tons.

14. The World Bank calculates this ratio with purchasing power parity (PPP) in 2000 dollars, using data for the year 2004. If market exchange rates (MER) are used, the outcome is more favorable to the United States. While there is considerable methodological controversy about which method (PPP versus MER) is best used for such calculations, the weight of expert opinion is on the side of PPP.

15. See United Nations Economic Commission for Europe, "Bulletin of Housing Statistics for Europe and North America 2006," table C2, available at www.unece.org/hlm/prgm/hsstat/Bulletin_06.htm (accessed February 13, 2008).

16. U.S. Census Bureau, Current Housing Reports, Series H150/05, *American Housing Survey for the United States: 2005* (Washington, D.C., August 2006), available at www.census.gov/hhes/www/housing/ahs/ahs05/ahs05.html (accessed February 13, 2008); U.S. Census Bureau, "Presence of Air-Conditioning in New One-Family Houses Completed," available at www.census.gov/const/C25Ann/sftotalac.pdf (accessed February 13, 2008); Center for Energy and Processes (Paris), "High Efficiency and Low Environmental Impact Air-Conditioning Systems," available at www.cenerg.ensmp.fr/english/themes/syst/index.html (accessed February 13, 2008); and Paul Waide, "Keeping Your Cool: An Overview of Trends," International Energy Agency (2004), available at www.iea.org/textbase/work/2004/cooling/waide.pdf (accessed February 13, 2008).

17. Eurostat Statistical Books, *Panorama of Transport* (Luxembourg: Office for Official Publications of the European Communities, 2007), 68, available at http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-DA-07-001/EN/KS-DA-07-001-EN.PDF (accessed February 14, 2008).

18. Curiously, freight rail volume in Europe has been declining in recent years, while it has risen in the United States.

19. Energy Information Administration, *Emissions of Greenhouse Gases in the United States 2006* (Washington, DC: Department of Energy, November 2007), available at www.eia.doe.gov/oiaf/1605/ggrpt/ (accessed February 13, 2008).