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The Population Crisis: The Stork, the Plow, and the IRS

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THE POPULATION CRISIS: THE STORK, THE PLOW, AND THE IRS

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Tax policy can function as an economic and social tool to influence behavior. The U.S. Congress, however, has failed to use this tool in addressing problems of overpopulation in this country. Instead, as Professor Mona Hymel argues, current tax policy exacerbates problems of overpopulation in three specific areas: reproductive rates, the strain on agricultural and natural resources, and the overconsumptive lifestyle of U.S. citizens. As it functions now, the U.S. tax system has a pronatalist bias, it fails to encourage sustainable farming practices and the conservation of resources, and it actually encourages overconsumption. This pattern can be altered, however, through proposals made by Professor Hymel such as environmental taxes, preferential treatment for practices such as organic farming, and the elimination of tax exclusions that encourage urban sprawl, to name a few. Since the United States sets the pace for the world on important social issues, Professor Hymel argues that it is imperative for the country to take the lead on addressing the catastrophic effects of overpopulation. Tax policy provides a viable place to start.

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I. INTRODUCTION

> As the twentieth century draws to a close, humanity faces the daunting prospect of supporting its population without inducing catastrophic and irreversible destruction on Earth's life-support systems. Human and agricultural fertility are on a collision course: the stork is threatening to overtake the plow.[1]

More than 600 of the world's most distinguished scientists, including a majority of the living Nobel laureates in the sciences, issued a warning to humanity in 1992.[2] They warned that only a few decades remained to stop unrestrained population growth and environmentally devastating economic practices before efforts to achieve a sustainable future "will be lost and prospects for humanity immeasurably diminished."[3] In 1994, the world's scientific academies echoed this warning.[4] The very rapid rates of human-induced climate change, combined with fragmentation of natural habitats for agriculture and development activities, are unprecedented.[5]

The human population took from origin until 1830 to reach the one billion mark.[6] By the year 2050, world population is predicted to top ten billion.[7] If fertility levels remain at 1990 levels, the United Nations predicts that by the year 2150, world population will approach 694 billion.[8] Likewise, U.S. population increases are

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1. PAUL R. EHRLICH ET AL., THE STORK AND THE PLOW 1 (1995).

2. *See* Union of Concerned Scientists, World's Leading Scientists Issue Urgent Warning to Humanity, Nov. 18, 1992, Press release, *available in* LEXIS, Envirn Library, Panews File. A follow-up warning was issued in 1997, just prior to the Kyoto Summit on Global Warming. *See World Scientists' Call for Action at the Kyoto Climate Summit* (last visited Aug. 20, 1998) <http://dieoff.org/page123.htm>.

3. Union of Concerned Scientists, *supra* note 2.

4. *See* POPULATION—THE COMPLEX REALITY: A REPORT OF THE POPULATION SUMMIT OF THE WORLD'S SCIENTIFIC ACADEMIES 17-18 (Sir Francis Graham-Smith ed., 1994) [hereinafter THE COMPLEX REALITY].

5. *See* Gretchen C. Daily, *Introduction: What Are Ecosystem Services? in* NATURE'S SERVICES: SOCIETAL DEPENDENCE ON NATURAL ECOSYSTEMS 1, 3-6 (Gretchen C. Daily ed., 1997) [hereinafter NATURE'S SERVICES].

6. *See* STEPHEN D. MUMFORD, THE LIFE AND DEATH OF NSSM 200: HOW THE DESTRUCTION OF POLITICAL WILL DOOMED A U.S. POPULATION POLICY 29 (1996).

7. *See* Elizabeth Rohrbough, Comment, *On Our Way to Ten Billion Human Beings: A Comment on Sustainability and Population*, 5 COLO. J. INT'L ENVTL. L. & POL'Y 235, 235 (1994); Erla Zwingle, *Women and Population*, NATIONAL GEOGRAPHIC, Oct. 1998, at 38 (stating that the United Nations estimates world population in 2050 will range from 7.7 billion to 11.2 billion).

8. *See id.*; *see also* Edwin R. McCullough, *Through the Eye of a Needle: The Earth's Hard Passage Back to Health*, 10 J. ENVTL. L. & LITIG. 389 (1995) (concluding that at

staggering. U.S. population will come close to doubling between now and the year 2050.[9] As the world's most prolific consumers, Americans, along with the rest of humanity, face a disturbing future.

This Article examines the extent to which current U.S. tax policies implicate this collision course between the stork and the plow.[10] To date, the impact of our tax policies on problems of overpopulation has been given only minimal and scattered consideration.[11] Given the potential enormity of this problem, I evaluate how the current tax system exacerbates the problems associated with overpopulation. In Part II, I begin by describing the overpopulation problem from a scientific or anthropological

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1992 rates world population could surpass 109 billion by 2100); James Scheuer, *A Disappointing Outcome: United States and World Population Trends Since the Rockefeller Commission*, SOC. CONT., Summer 1992, at 203, 205 (discussing the responsibility of the current generation to protect future generations through public policy, judicial, and legislative forums in light of the current state of the Earth's health). Whether Earth can support even 10 billion people is very questionable. *See* EHRLICH ET AL., *supra* note 1, at 6. Something will happen to stop world population growth. We can help to shape that something, or we can leave it to natural forces.

9. By comparison, in 1920, the United States population was 105 million. *See* BUREAU OF THE CENSUS, U.S. DEP'T OF COMMERCE, STATISTICAL ABSTRACT OF THE U.S.: 1996, at 8 tbl.1 [hereinafter STATISTICAL ABSTRACT]. In 1960, the population of the United States had increased to 179 million, *see id.*, and as of 1998, our population is more than 270 million. *See* Zwingle, *supra* note 7, illus. at 42. By the year 2050, the U.S. population is predicted to reach more than 400 million. *See* STATISTICAL ABSTRACT, *supra*, at 9 tbl.3. Estimates are made assuming an ultimate total fertility rate of 2245 per 1000 women, a life expectancy of 82 years, and an annual net immigration of 820,000. *See id.* Total fertility rate is "the number of births that 1000 women would have in their lifetime if, at each year of age, they experienced the birth rates occurring in the specified year." *See id.* at 77, tbl.94 headnote.

10. John Atcheson, chief of the EPA's Prevention Integration Branch through 1991, believes that Americans would not object to using the tax system to assist in environmental policy because "[e]nvironmental issues currently enjoy substantial public support." John Atcheson, *The Department of Risk Reduction or Risky Business*, 21 ENVTL. L. 1375, 1400-01 (1991). He contends that current tax policies relating to "our agriculture, land use, energy and transportation, and manufacturing policies and laws [are] geared to maximize short term production and exploitation." *Id.* at 1401. Furthermore, he believes that "[w]e could revise fiscal policies to favor sustainable practices, freeing the market to stimulate development in environmentally friendly directions.... Such a fiscal policy could be billed as planetary preventative maintenance, or rent on global occupancy, payable to our children's children." *Id.*

11. *See* THE PRESIDENT'S COUNCIL ON SUSTAINABLE DEVELOPMENT, POPULATION AND CONSUMPTION TASK FORCE REPORT (visited Aug. 23, 1998) <http://www.whitehouse.gov/PCSD/Publications/TF_Reports/pop-chap-1.html> [hereinafter PCSD REPORT]; Boris I. Bittker, *Federal Income Taxation and the Family*, 27 STAN. L. REV. 1389, 1449 (1975); Edward H. Rabin, *Population Control Through Financial Incentives*, 23 HASTINGS L.J. 1353, 1364 (1972); Daniel C. Schaffer & Donald H. Berman, *Tax Exemptions and the Birthrate: The Singleminded Approach to Public Policy*, 3 ENVTL. AFF. 687, 689 (1974); Lawrence Zelenak, *Children and the Income Tax*, 49 TAX L. REV. 349, 397 (1994).

perspective.[12] I then discuss the U.S. history in dealing with overpopulation problems to set the political stage for current consideration of the problem.[13] My discussion about the U.S. population problem focuses on three components: the raw numbers of people,[14] the supply and use of agricultural and natural resources, and the amount of resources people consume.[15] Part III discusses why the federal tax system should be used to address population problems. In Part IV, I analyze, in depth, the impact that U.S. tax policies have on U.S. reproductive rates. In Part V, I consider the impact of U.S. tax policies on our resources, through agricultural and land use tax provisions. In Part VI, I complete the carrying capacity analysis by looking at tax policies that implicate resource consumption. Within each component, I describe how current tax policy implicates and perpetuates population problems, and I suggest solutions and alternatives within the current system. Finally, at the conclusion of each part, I include proposals that reconceptualize U.S. tax policy within a framework that seeks to avoid this doomsday.[16]

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12. *See infra* notes 17-105 and accompanying text.

13. *See infra* notes 106-61 and accompanying text.

14. *See infra* notes 35-44 and accompanying text. Some speculate that environmental degradation will effectively reduce the population. Scientific evidence suggests that environmental pollutants have in fact caused disruption of the normal function of the human reproductive system, with effects such as reduced sperm counts. *See* Zygmunt J.B. Plater, *Facing a Time of Counter-Revolution—The Keypone Incident and a Review of First Principles*, 29 U. RICH. L. REV. 657, 684 n.56 (1995); Marla Cone, *Sexual Confusion in the Wild: From Gators to Gulls, Scientists Say Pollution May be Playing Havoc with Animals' Hormones*, L.A. TIMES, Oct. 2, 1994, at A1; *see also* WORLD HEALTH ORGANIZATION, PUBLIC HEALTH IMPACT OF PESTICIDES USED IN AGRICULTURE 38 (1990) (indicating that dibromochloropropane has caused male sterility); James Steven Carpenter, Note, *Farm Chemicals, Soil Erosion, and Sustainable Agriculture*, 13 STAN. ENVTL. L.J. 190, 194-95 (1994) (noting studies that "suggest a link between pesticide exposure and adverse reproductive effects in humans").

15. *See infra* notes 45-105. The three components that I focus on constitute "carrying capacity." *See* discussion *infra*, Part II.A. Thomas Homer-Dixon, head of the Peace and Conflict Studies Program at the University of Toronto, observes: "We have to stop separating politics from the physical world—the climate, public health, and the environment." Robert D. Kaplan, *The Coming Anarchy*, ATLANTIC MONTHLY, Feb. 1994, at 44, 60. Homer-Dixon believes that we have been prisoners of social-social theory, which assumes there are only social causes for social and political changes rather than natural causes. *See id.* According to Daniel Deudney, an expert on the environment's connection to security interests: "This social-social mentality emerged with the Industrial Revolution, which separated us from nature. But nature is coming back with a vengeance, tied to population growth. It will have incredible security implications." *Id.*

16. Reshaping tax policy with the goal of reducing problems of overpopulation is merely a part of a necessary sea change in national policy and the American way of thinking. William Pedersen argues that "our environmental programs operate largely without regard to the broader world and with remarkably little influence on it" because

Tax policy has a strong influence on behavior that impacts overpopulation, and we need to reexamine current tax policies with this impact in mind.

I present a substantial body of science to support my conclusions. However, I recognize that controversy over this scientific evidence exists. And, of course, no one knows exactly what the future holds. Nonetheless, the analysis that follows is valuable for a number of reasons. First, while one might disregard some data, the volume of data is staggering. Thus, these predictions warrant attention to and analysis of a worst case scenario. Second, to the extent that many of these problems materialize, having already considered them puts us in a better position to deal with them when they do occur. Finally, even if the entire problem were presented as the hypothetical case, it illustrates the enormous influence the tax system plays in shaping society. To the extent one envisions neutrality in our tax system, this Article debunks its existence and challenges the reader to consider the road ahead.

II. THE STORK AND THE PLOW: BACKGROUND ON THE POPULATION PROBLEM

> "Overbreeding" does not bring its own punishment because we are committed to the welfare state. To couple the concept of freedom to breed with the belief that everyone born has an equal right to the commons is to lock the world into a tragic course of action.[17]

A. *Carrying Capacity*

One can view the problem of overpopulation as too many people living on the resources available in a given area. This view, however, oversimplifies matters. One important complication is the concept of Earth's (or the United States's) "carrying capacity."[18] Scientists

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these programs have "no tie to national institutions and values." William F. Pedersen, *"Protecting the Environment"—What Does That Mean?*, 27 LOY. L.A. L. REV. 969, 969 (1994). He contends that because the United States has no meaningful environmental goals, environmental protection methods operate "toward what is expedient, rather than what will actually accomplish the desired end. These defects in our ends and means reflect a failure of political dialogue—a failure to pay serious public attention to the design and function of government institutions, or to the values they embody." *Id.*

17. Garrett Hardin, *Tragedy of the Commons*, 162 SCIENCE 1243, 1246 (1968).

18. *See* Lester R. Brown, *Facing Food Insecurity*, *in* STATE OF THE WORLD 1994: A WORLDWATCH INSTITUTE REPORT ON PROGRESS TOWARD A SUSTAINABLE SOCIETY 177, 193 (Linda Starke ed., 1994) [hereinafter STATE OF THE WORLD 1994] ("Perhaps the greatest gap in formulating population policy has been the failure to consider carrying

describe carrying capacity as "the maximum population size of any organism that an area can support, *without reducing its ability to support the same species in the future.*"[19] Characteristics of both the area and the organism determine carrying capacity.[20] For example, a larger, resource-rich area, like the forests in the Pacific Northwest, will, all else equal, have a higher carrying capacity than the desert in Southern Arizona. Likewise, surviving on vegetation, more rabbits can be maintained in a given area than larger animals, like coyotes, that eat the smaller animals.[21] For humans, the matter is more complicated. First, people differ tremendously in the types and quantities of resources they consume.[22] Second, trade enables humans to exceed their local carrying capacities.[23] Finally, humans may undergo extremely rapid cultural (including technological) evolution in the composition and amount of resources consumed.[24]

One cannot view overpopulation in terms of the Earth's carrying capacity as merely exceeding some fixed number of people;[25] rather, it depends on the cultural and economic characteristics of the population in question. More broadly, one can view all environmental problems as merely a subset of the problems resulting from overpopulation.[26] This results because overpopulation not only

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capacity. If national governments calculate the food carrying capacity of their countries, they can integrate this analysis into population policy.").

19. EHRLICH ET AL., *supra* note 1, at 3-4 (emphasis added).

20. *See id.* at 4.

21. *See id.*

22. For example, two rabbits are very much alike in terms of the resources they consume, but "an average Kenyan is nothing like an average American in this regard." *Id.* The average American eats "meat, packaged food, and soft drinks" while the average Kenyan eats insufficient grains and unsafe drinking water. ALAN THEIN DURNING, HOW MUCH IS ENOUGH?: THE CONSUMER SOCIETY AND THE FUTURE OF THE EARTH 27 (1992). In 1989, the average American used 10,127 kilograms of coal equivalent while the average Nigerian used 192 kilograms. *See id.* at 53.

23. For example, the population of the Netherlands uses roughly 17 times more land than there is within the country for food and energy alone. The Netherlands is effectively importing carrying capacity from other parts of the globe. *See* EHRLICH ET AL., *supra* note 1, at 4.

24. Consider the vast number of ways American resource use has changed, as well as increased, since the pioneer days. *See id.*

25. Similarly, carrying capacity has been defined as "[*t*]*he number of individuals who can be supported without degrading the physical, cultural and social environment, that is, without reducing the ability of the environment to sustain the desired quality of life over the long term.*" VIRGINIA D. ABERNETHY, POPULATION POLITICS: THE CHOICES THAT SHAPE OUR FUTURE 6 (1993).

26. *See* Paul R. Ehrlich et al., *Population Growth, Economic Growth, and Market Economies*, 2 CONTENTION 17, 23 (1992); Hardin, *supra* note 17, at 1244-45. Ehrlich states that natural scientists have discovered signs that limits to both population and economic growth are imminent. *See* Ehrlich et al., *supra*, at 23. Many times these limits

involves the numbers of people inhabiting the Earth but also the intricate relationship between the amount of the Earth's resources that each individual consumes and the amount of resources available. The "population problem" thus might also be described as circumstances in which population growth, poverty, and degradation of the local environmental resource base perpetuate each other over long periods of time.[27]

The complex interrelations that constitute the overpopulation problem demonstrate that merely looking at the raw numbers of people or reproductive rates in any particular country cannot give a complete or accurate picture of how to solve this problem. Furthermore, no matter how one frames the problems of overpopulation, the dilemma remains the same: In the near future, humanity will likely have to decide whether we prefer a relatively higher standard of living requiring a smaller population or a larger population that must endure a lower standard of living.[28]

In this Part, I attempt to define and quantify roughly the United States's carrying capacity, and to analyze whether and how we may have exceeded that carrying capacity. In general, the United States's carrying capacity would be the maximum human population that the resources contained on the U.S. land mass can support without reducing our ability to support the same population in the future.[29]

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are described as "global change" and include "the potential for climatic disruption due to enhancement of the greenhouse effect, ozone depletion, acid deposition, desertification, and the loss of biodiversity." *Id.* Further, natural scientists "see approaching limits reflected in social phenomena directly and indirectly connected with population growth, including extreme crowding and social disruption in cities, growing disparities between rich and poor, the increase in international migration, especially of 'ecological refugees,' and the AIDS epidemic." *Id.*; *see also* Atcheson, *supra* note 10, at 1405 ("We have long recognized the link between population and pollution. From Malthus to Ehrlich, writers have observed that the consequences of unconstrained population growth ranged from mass starvation to severe shortages of nonrenewable natural resources to staggering quantities of waste.").

27. *See* Partha Dasgupta, *The Population Problem: Theory and Evidence*, 33 J. ECON. LIT. 1879, 1880 (1995).

28. *See* Atcheson, *supra* note 10, at 1406. For a discussion regarding relying on technological advances to solve these problems, see *infra* notes 90-105 and accompanying text.

29. *See* EHRLICH ET AL., *supra* note 1, at 3-4. Considering the United States in isolation artificially simplifies the analysis of carrying capacity, because, as already discussed, carrying capacity includes the ability to import resources from other areas. *See supra* note 25 and accompanying text. However, due to the United States's unique position as world leader and world resource provider, the implications for the rest of the world will be devastating if the United States exceeds its carrying capacity (excluding import ability). Furthermore, domestic tax policy analysis requires the study of conditions in the United States.

However, the United States's carrying capacity not only depends upon the ability of our resources to support our population size but also is complicated by standard-of-living expectations. For example, Americans want "high-quality recreational opportunities, coexistence with an abundance and diversity of wild species, tolerable work-to-home commuting conditions, favorable conditions for child rearing, and safe neighborhoods."[30] Therefore, for purposes of this analysis, U.S. carrying capacity is defined by reference to the number that we can support without harming the physical, ecological, cultural and social environments.[31] In places where population size reduces the ability to provide the desired environment, overpopulation exists.[32] To examine overpopulation without some standard of living target would be meaningless; overpopulation ultimately manifests itself in quality of life and cost of living.[33] Finally, any precise definition of carrying capacity is impossible due to the large number of variables and the nature of estimates and predictions.[34]

B. *United States Carrying Capacity*

> So this is the World, and there are almost six billion people on it. When I was a kid, there were only three. It's hard to keep up.[35]

Many people believe that overpopulation is a problem only in third world countries.[36] This misconception is an unfortunate and costly. While U.S. reproductive rates are lower than those in many third world countries,[37] our population size continues to grow.[38] Even

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30. ABERNETHY, *supra* note 25, at 246.

31. *See id.*

32. *See id.*

33. This analysis generalizes standard of living as though we in the United States all enjoy the same standard of living. Of course, this is not the case; in fact, I attribute the widening disparity between living standards in the United States, in part, to problems of overpopulation. *See infra* notes 97-105 and accompanying text.

34. *See* JOEL E. COHEN, HOW MANY PEOPLE CAN THE EARTH SUPPORT? (1995). Cohen analyzes at least 66 attempts to estimate carrying capacity, all of which can be picked apart and second-guessed.

35. JERRY MCGUIRE (TriStar Pictures, Inc. 1996).

36. *See* ABERNETHY, *supra* note 25, at 259; MUMFORD, *supra* note 6, at 32; Paul R. Ehrlich & Anne. H. Ehrlich, *The Most Overpopulated Nation*, *in* ELEPHANTS IN THE VOLKSWAGEN: FACING THE TOUGH QUESTIONS ABOUT OUR OVERCROWDED COUNTRY 125, 125 (Lindsey Grant ed., 1992) [hereinafter ELEPHANTS IN THE VOLKSWAGEN].

37. For example, the average number of children born per woman in sub-Saharan Africa in 1994 was 5.9; in Kenya, it was 6.3; and in some other African nations, it varied between 6.0 and 7.4. *See* EHRLICH ET AL., *supra* note 1, at 13, 18.

38. In the United States, the average family size was below replacement (1.7 to 2.0)

if the United States held birth rates at replacement level, and each adult in the parent generation were replaced by just one child in the next, the population would not stop growing for sixty to seventy years, because of the current age composition.[39] Thus, reproductive rates alone do not indicate whether the population is growing. Furthermore, with the recent upturn in U.S. reproductive rates, our population will continue to grow well into the next century.[40]

Carrying capacity also depends on how many people the soil can support. Therefore, we also need to know the limits of our resources. These limits depend upon the quantity and use of those resources. We can determine these limits by measuring our "impact" on the environment. The impact of a particular population on the Earth is the product of its population size, its per capita consumption or affluence, and the environmental impact upon and loss of resources used to supply that affluence.[41] In most third world nations, population size dominates ecological effects, while affluence and

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in the early 1970s, but reproductive rates have recently increased to 2.1. *See* EHRLICH ET AL., *supra* note 1, at 19; STATISTICAL ABSTRACT, *supra* note 9, at 77 tbl.94 (excluding births to nonresident mothers); Judith E. Jacobsen, *Population, Consumption, and Environmental Degradation: Problems and Solutions*, 6 COLO. J. INT'L ENVTL. L. & POL'Y 255, 269 (1995). The population in the United States is growing at a rate in excess of 1% annually, about 25% of which is due to immigration. *See* Paul R. Ehrlich & Anne H. Ehrlich, *Introduction*, 23 HASTINGS L.J. 1345, 1346-47 (1972); Philip Martin & Elizabeth Midgley, *Immigration to the United States: Journey to an Uncertain Destination*, POPULATION BULL., Sept. 1994, at 1, 8-9.

39. *See* Ehrlich & Ehrlich, *supra* note 38, at 1347. As explained by Jacobsen, if the fertility rate fell to a replacement level of about 2.1 children per woman of the parent generation, the overall size of the population would still grow because of the large size of the generation of children already born but not at childbearing age. *See* Jacobsen, *supra* note 38, at 260.

> Their ranks are so large, compared with the older generations that supply most of the deaths, that their childbearing insures some population growth, even if their fertility is low. The young age group guarantees more births than deaths for some time, even at replacement level fertility. This phenomenon of continued population growth at low fertility levels is sometimes referred to as demographic momentum.

Id.

40. *See* Jacobsen, *supra* note 38, at 255. The United States is the only major industrialized country experiencing population growth on a significant scale. *See id.* at 269. Furthermore, fertility has been rising in recent years. *See id.* It is now about 2.1 children per woman, which is high for a wealthy industrialized county. *See id.* This increase, coupled with a rise in immigration, makes population stabilization in the United States unlikely. *See id.* In Part IV of this article, I analyze, in depth, the impact that U.S. tax policies have on U.S. reproductive rates.

41. *See* EHRLICH ET AL., *supra* note 1, at 26-27. One can express this concept with the equation: I (environmental impact) = P (population size) x A (affluence per person) x T (technology), or I = PAT. *See id.* at 26.

environmental impact of affluence are relatively small.[42] The United States, however, not only contains the world's third largest population (more than a quarter billion people), but is the fastest growing population of the major industrialized nations.[43] When we multiply this population by the high levels of affluence and consumption of resources, the United States has one of the highest per capita impacts on the environment.[44]

The population problem, as described in this Article, is a multi-layered, multi-dimensional problem. Therefore, before we can consider how taxes might play a role in these problems, a more in-depth picture of overpopulation is required.[45] Furthermore, overpopulation issues are not new to the U.S. political scene. Thus, a description of U.S. history on these issues helps to explain current U.S. policies and to predict obstacles that may prevent future resolution of these problems.[46]

United States population growth is moderate only in comparison with that of the third world.[47] As of 1992, our growth was at a rate two to ten times faster than any western European country except Liechtenstein and Iceland.[48] If population is defined in terms of environmental impact, the United States is the most overpopulated country on the planet.[49] Relying on technology alone to solve these problems is a huge risk.[50] Decreasing U.S. population as well as lowering consumption levels, would be a more prudent course and

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42. *See* Jacobsen, *supra* note 38, at 265-68.

43. *See id.* at 269.

44. *See* Ehrlich et al., *supra* note 26, at 32. For example, in just a few years, the cost of garbage disposal in United States cities has risen from $5 to $10 per ton to an average of more than $150 per ton, due to scarcity of dumping sites. *See* ABERNETHY, *supra* note 25, at 247. Water costs are also rising, though water quality is declining. *See id.* Infrastructure is decaying nationwide. *See* Peter Dreier, *America's Urban Crisis: Symptoms, Causes, Solutions*, 71 N.C. L. REV. 1351, 1370 (1993). For example, in New York state, 68% of the bridges are structurally or functionally inadequate for current traffic. *See id.* In the 1980s, public investment (non-military) in the U.S. fell to 2.4% of GNP—half of that spent in the 1970s, and one quarter of that spent during the 1950s and 1960s. *See id.* at 1371.

45. *See infra* Part II.C.

46. *See infra* Parts II.D. & E.

47. *See* Jacobsen, *supra* note 38, at 269.

48. *See* ABERNETHY, *supra* note 25, at 259.

49. *See* Ehrlich et al., *supra* note 26, at 32.

50. While technological advances may help in some areas, like converting from fossil fuels to solar-based energy sources, no substitutes exist for certain "essential biological and water resources," such as depleted crop land, range land, fisheries, water, and forests. Sandra Postel, *Carrying Capacity: Earth's Bottom Line*, *in* STATE OF THE WORLD 1994, *supra* note 18, at 1, 9.

should be a top priority for policymakers.[51]

Experts designate the energy security of the United States as a good indicator of whether America has surpassed its carrying capacity.[52] Anthropologist Virginia Abernethy believes that U.S. "energy security is a key element of America's long-run sustainable carrying capacity."[53] She notes that "except for amenities provided by nature and our communities, per capita energy use is a good proxy for *standard of living*."[54] Because carrying capacity estimates assume a particular standard of living, estimates of per capita energy use provide a good approximation of carrying capacity.[55] Therefore, to judge if the United States is within its carrying capacity, given the present standard of living, we must determine if our rate of energy use is sustainable.[56] As Abernethy puts it: "The related policy question is: Does the United States enjoy energy security? Geologists, computer modelers, petroleum industry analysts, and life scientists largely concur in projecting a bleak future."[57]

In fact, a number of geologists have predicted that the cost of oil production will exceed the value of the goods and services derived from oil sometime shortly after the turn of the century.[58] Although older wells are expected to be profitable for some years longer,

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51. *See* EHRLICH ET AL., *supra* note 1, at 121. Judith Jacobsen explains it this way: "[I]f reducing consumption . . . is important, if moderating the scale of this activity would ease environmental strains, then, by the same logic, any population growth in a country with high levels of consumption is as severe a crisis as the environmental problems that it intensifies." Jacobsen, *supra* note 38, at 269.

52. Energy security refers to whether U.S. supplies of energy, mostly oil, can be maintained in the future given our increasing use and dependence on foreign countries for supplies. If the United States lost its oil supplies, national security would be threatened.

53. ABERNETHY, *supra* note 25, at 249.

54. *Id.* Paul Ehrlich also uses per capita energy use as an indicator of the environmental impact per person of a society. *See* EHRLICH ET AL., *supra* note 1, at 26. By this measure, the impact of the average American (estimated in 1991) was approximately "20 times that of a Costa Rican, 50 times that of a Malagasi and 70 times that of a Bangladeshi." *Id.* Therefore, even minute population increases in a rich country like the United States cause far more environmental harm than significantly higher population increases in poorer countries because of the high A (affluence per person) x T (technology) factors. *See id.*; *see also supra* note 41 (discussing these factors within a population impact formula).

55. *See* ABERNETHY, *supra* note 25, at 249.

56. *See id.* at 250.

57. *Id.* While the U.S. population constitutes merely 5% of the total world population, the U.S. consumes 25% of the world's energy. *See id.* at 299.

58. *See id.* at 250-51. They reached this conclusion by using a declining energy/profit ratio for domestic petroleum, which represents the amount of energy spent "to find, produce, refine and distribute energy" compared to the amount of profit earned from selling that energy. *Id.* at 250. This ratio has declined from fifty to one shortly after World War II to eight to one in the mid-1980s. *See id.*

"exploration and production sectors of the industry in the United States have entered a period of accelerated decline."[59] Additionally, while the per capita consumption of oil barely increased from 1970 to 1990, total energy consumption increased during that period by 24%.[60] Almost the entire increase—93%—is attributable to population growth.[61] Given the questionable state of U.S. energy security, many scientists believe that the United States has already exceeded its carrying capacity.[62]

C. *When the Stork and the Plow Collide: Effects of Exceeding Carrying Capacity*

Research suggests a strong connection among population, economic, and environmental circumstances.[63] Economists, however, tend not to identify the relationship between economic and environmental circumstances with overpopulation, despite the fact that we have been dealing with overpopulation concerns for the last four decades.[64]

In the 1960s, scientists began to express fear that overpopulation was a problem in the United States.[65] Many expressed concerns

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59. *Id.* at 251-52.

60. Energy consumption in the United States dramatically exceeds that of the rest of the world. *See* Rohrbough, *supra* note 7, at 237. Estimates show that individuals here use approximately 200,000 kcal/day as compared to 100,000 kcal/day in western European countries and 20,000 kcal/day in rural societies of developing countries. *See id.*

61. *See* ABERNETHY, *supra* note 25, at 252.

62. Scientists at Cornell University estimate that "at a standard of living only slightly lower than is enjoyed today, the sustainable population size for the United States is less than half its present number." ABERNETHY, *supra* note 25, at 253. Based on these predictions, Abernethy believes that we "should expect sudden shocks that will massively drive down the standard of living." *Id.* at 253. She suggests that the "time frame for experiencing 'sudden shocks' is perhaps thirty to fifty years—beyond most legislators' lifetimes. But all our children and grandchildren should prepare, if our generation cannot reverse present demographic and environmental trends." *Id.* at 255. *See also* Postel, *supra* note 50, at 4 ("As a result of our population size, consumption patterns, and technology choices, we have surpassed the planet's carrying capacity.").

63. *See* Dasgupta, *supra* note 27, at 1880.

64. *See id.*

65. *See generally* PAUL R. EHRLICH, THE POPULATION BOMB xi (1968) (asserting that the United States must take immediate action toward population control either through voluntary or compulsory means if necessary); Hardin, *supra* note 17 (discussing how increasing population and man's tendency to maximize his own wealth without regard to others will overwhelm our environment and its resources); *see also* DAVID M. HEER, SOCIETY AND POPULATION (1968) (discussing the causes and effects of the population explosion from a sociological perspective); NATHAN KEYFITZ, INTRODUCTION TO THE MATHEMATICS OF POPULATION (1968) (analyzing population growth and its effects through mathematical formulas); Colin Clark, *World Population*, 181 NATURE 1235, 1235-36 (1958) (stating historic world population trends); Edward S.

regarding the U.S. future if the projected population numbers became reality.[66] The U.S. population, of course, has increased dramatically.[67] Looking at the economic and environmental circumstances of modern America, many of those concerns were well founded. For example, a 1969 report by the National Commission on Urban Growth anticipated the need to create 100 new communities averaging 100,000 people each and ten new cities averaging at least one million persons by the turn of the century.[68] This recommendation accommodated only twenty million persons—one-fifth of the expected population increase from 1970 to the year 2000.[69] Even then, scholars lamented the demographic shift of poor blacks to the cities while more affluent whites moved to the suburbs.[70] City governments already suffered from lack of tax revenues.[71]

Maurice Stans, then-U.S. Secretary of Commerce, expressed hope that the solution to future urban problems could be solved, but only if the overwhelming population pressures on metropolitan areas subsided.[72] He predicted a future with four gigantic metropolitan areas: BosWash, an unbroken stretch of people, infrastructure, and industry from Boston to Washington; ChiPitts, a band of heavy industry from Chicago to Pittsburgh; SanSan, from San Francisco to San Diego; and JaMi, along Florida's east coast from Jacksonville to Miami.[73] We know these cities today. In the 1970s commentators warned that our lifestyles, and ultimately our existence, are

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Deevey, Jr., *The Human Population*, SCI. AM., Sept. 1960, at 195, 195-204 (discussing world population history in scientific terms); J. H. Fremlin, *How Many People Can the Earth Support?*, N. SCIENTIST, Oct. 29, 1964, at 285, 285-87 (predicting the radically changed nature of Earth if its population doubled every 37 years). Both Hardin and Ehrlich are credited with bringing population problems to the forefront of public interest in the United States during the 1960s.

66. *See, e.g.*, Roger O. Egeberg, *Defusing the Population Bomb New Role for Government*, TRIAL, Aug.-Sept. 1970, at 10, 10-11 (identifying the ever-increasing threat of a growing domestic population); Maurice H. Stans, *Alternative to the Anthill Society*, TRIAL, Aug.-Sept. 1970, at 14, 15 (stating the necessity of policy as a tool to manage the growing U.S. population). When he wrote the article, Stans was the U.S. Secretary of Commerce.

67. *See supra* note 9.

68. *See* Report of the National Committee on Urban Growth Policy, *reprinted in* THE NEW CITY 172 (Donald Canty ed., 1969) [hereinafter Urban Growth Policy Report]; Stans, *supra* note 66, at 15.

69. *See* Urban Growth Policy Report, *supra* note 68, at 172; Stans, *supra* note 66, at 15.

70. *See The Crowded Future*, *reprinted in* THE NEW CITY, *supra* note 68, at 32.

71. *See id.* at 31. In 1932, municipalities collected 25% of all tax revenue; by 1970, these collections had dropped to 6%. *See* Stans, *supra* note 66, at 14.

72. *See* Stans, *supra* note 66, at 14.

73. *See id.*

dependent upon our ecological system; however, this system will deteriorate if our efforts to preserve as well as enhance the environment fail to keep pace with population growth.[74] Finally, they wondered: "What quality will the pressures, frustrations and congestion of megalopolis impart to the character of future Americans? Will they be the same productive, optimistic, friendly, outgoing, dynamic people who have traditionally populated this nation?"[75] Twenty-eight years later, the answers to these questions are troubling.

Many American families have realized, for the first time in American history, that they may not be able to give their children as much as, or more than, they received. Between 1979 and 1988, real median family income for young families, that is, those with a household head ages twenty-five to thirty-four, fell by 4.8%.[76] For instance, "[i]n 1988, the level of household debt relative to disposable income reached a post World War II high of ninety-four percent."[77] Families with incomes less than $17,500 experienced even greater relative increases in debt-to-income ratios.[78] Today's families incur even more debt than ever.[79]

In the late 1960s, President Richard Nixon grappled with population issues in the United States. Concerned for future children, he realized: " 'Where they grow up—and how—will more than any one thing, measure the quality of American life in the years ahead.' "[80] He was right. Unfortunately, the quality of American life has deteriorated,[81] in large measure, due to population pressures. It is estimated that 20% of children in the United States live in poverty.[82] On May 1, 1991, the National Commission on Children,

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74. Egeberg, *supra* note 66, at 10.

75. Stans, *supra* note 66, at 14.

76. *See Reclaiming the Tax Code for American Families: Hearing Before the Select Comm. on Children, Youth, and Families*, 102d Cong., 1st Sess. 6 (1991) [hereinafter *Reclaiming the Tax Code*].

77. *Id.* at 7.

78. *See id.*

79. For instance, in 1995, 73% of families had some debt, primarily mortgage and home equity loans, installment loans, and credit card debt. *See* STATISTICAL ABSTRACT, *supra* note 9, at 509 tbl.774. Consumer credit in 1980 totaled $355 billion, but by 1994 it had risen to $3.2 trillion. *See id.* at 508 tbl.771.

80. Stans, *supra* note 66, at 14 (quoting President Richard M. Nixon).

81. *See* Dreier, *supra* note 44, at 1362 ("During the 1980s, the rich got richer, the middle class saw their living standards decline and more Americans suffered in poverty."). *See, e.g.*, DURNING, *supra* note 22, at 37-48 (discussing the fact that increasing income and increasing consumption do not ensure happiness); *infra* note 100 (discussing the ever-increasing gap between rich and poor in the United States).

82. *See* NATIONAL COMM'N ON CHILDREN, BEYOND RHETORIC: A NEW

chaired by Senator John D. Rockefeller, IV, issued a national policy for America's children and families.[83] The Commission warned, "[W]e must set a new course to save our children, strengthen their families, and regain control of our national destiny. There are no quick fixes to the problems that threaten the lives and prospects of so many of America's young people."[84]

There are those who believe that there is no population problem. They point to increases in world economic development to indicate that fears of rapid population growth causing deterioration in living standards have not been borne out by recent experience.[85] They count on economic growth to reduce the rate of population growth.[86] These conclusions, however, are flawed. Depletion of the environmental resource-base[87] upon which all production ultimately depends does not factor into conventional indicators of the standard

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AMERICAN AGENDA FOR CHILDREN AND FAMILIES: FINAL REPORT OF THE NATIONAL COMMISSION ON CHILDREN 4 (1991) [hereinafter BEYOND RHETORIC]. In 1991, 21.8% of all American children lived below the poverty line. *See* Dreier, *supra* note 44, at 1363-64. The official poverty line relies on out-of-date standards. *See id.* Updated standards suggest that one out of every three children is poor. According to the U.S. Bureau of the Census, in 1994, more than 21% of all children lived below the poverty level. The numbers rose to more than 40% for Black and Hispanic children. *See* STATISTICAL ABSTRACT, *supra* note 9, at 472 tbl.731.

83. *See* John D. Rockefeller, IV, *Preface* to BEYOND RHETORIC, *supra* note 82, at vii.

84. *Id.*

85. *See, e.g.*, JULIAN L. SIMON, THE ULTIMATE RESOURCE (1981); BEN J. WATTENBERG, THE BIRTH DEARTH 49-64 (1987) (evaluating the connection, if any, between rapid population growth and economic success); Nicholas Eberstadt, *Population, Food and Income: Global Trends in the Twentieth Century*, *in* THE TRUE STATE OF THE PLANET 7, 8-10, 30-38 (Ronald Bailey ed., 1995).

86. *See* Johnathon Adler, et al., *Benchmark: The Ecological and Economic Trends That Are Shaping the Natural Environment and Human Societies*, *in* THE TRUE STATE OF THE PLANET, *supra* note 85, at 398; Stephen Enke, *Population Growth and Economic Growth*, 32 PUB. INTEREST 86, 94 (1972). Stephen Enke contends that the notion that population growth is "good for business" is premised on an oversimplified analogy. *See id.* As applied to one business in isolation, more people will translate into more sales, at least initially. *See id.* Over the long-term, however, as a city's population grows, competing businesses will move in; thus, increasing populations do not necessarily translate into more customers per firm. *See id.* Furthermore, even if a particular business garners more sales when its local population base increases, this microeconomic phenomena might not apply at the macroeconomic level. *See id.* Generally, per capita incomes rise at a faster rate when fertility declines. *See id.* For example, in the United States, if we compare 1933 to 1923, 1933 boasted a larger population, but 1923 boasted higher per capita spending. *See id.* Therefore, the choice for the United States in 25 years may be between more customers with fewer dollars or fewer customers with more money to spend. *See id.* The result: no net benefit to the economy. *See id.* Since Enke's observations, we have seen population increase, while real incomes and savings have decreased. *See supra* notes 76-79 and accompanying text.

87. The environmental resource base "includes soil and its cover, freshwater, breathable air, fisheries, and forests." Dasgupta, *supra* note 27, at 1883.

of living. Past movements of gross income and agricultural production do not reflect reductions of this natural capital, i.e. the resource base. For example, increases in agricultural production do not reflect the mining of the soil. By focusing on such indicators as Gross National Product ("GNP"), economists ignore ecologists' concerns about the links between sustained population growth, increased output, and the state of the environment.[88] Consuming irreplaceable environmental capital, such as fertile soils, ice-age groundwater, and biodiversity, is not growth.[89]

Some economists argue that human ingenuity has and will continue to overcome the stresses that growing populations impose on the environment.[90] They argue that, for every disappearing resource, human ingenuity will find or create substitutes.[91] A study of biodiversity, however, suggests that this conclusion is incorrect.[92]

Biodiversity sustains a resilient ecosystem.[93] If an ecosystem loses its ability to recover from stresses, it can shift to a wholly new state under minor stresses.[94] Biodiversity must be present to take over the functions of species that are lost or destroyed.[95] But substitution of species, which sounds similar to economic models dealing with substitutability in technological processes, presupposes that species are "waiting in the wings." This assumption is precarious; scientific evidence suggests that we are dipping into our

88. *See id.* Ecologists have shown that when we take the environmental resource-base into account (measuring net national product ("NNP")), GNP per head can increase while NNP per head decreases. *See id.*

89. *See* Ehrlich & Ehrlich, *supra* note 36, at 128.

90. *See* SIMON, *supra* note 85, at 196-215; Eberstadt, *supra* note 85, at 26-38. Not everyone agrees that the growing population is a problem. Economist Julian Simon believes we may enjoy cumulative benefits from an increase in population size, even in poor countries. He contends that population scientists have discounted human beings as a valuable resource. *See* SIMON, *supra* note 85, at 4, 10. But to be a valuable resource, people need the means with which to develop. Vast and increasing numbers of children are born and raised in poverty. They suffer from undernourishment retarding their cognitive and motor development and future capacity to be valuable resources. *See* Dasgupta, *supra* note 27, at 1897-98. Overall, the arguments rejecting overpopulation as a problem are unconvincing.

91. *See* SIMON, *supra* note 85, at 221.

92. *See* Dasgupta, *supra* note 27, at 1883. Biodiversity is a central part of an ecosystem's development because it makes a system functional by providing the means for "preserving and regenerating soil, recycling nutrients, pollinating crops, and filtering pollutants." *Id.*

93. Resilience is the capacity of an ecosystem to recover from shocks and stresses. *See id.*

94. *See id.*

95. *See id.*

natural capital.[96]

Reducing population growth is also desirable on economic grounds. Gross National Product per head rises as the fertility rate declines, thus, the savings rate increases.[97] In turn, "the productive value of the last million dollars of investment, relative to the last 100 . . . employees, shifts against capital and in favor of labor."[98] Relative to capital, labor becomes more scarce. Over time, if fertility stays low, the real earnings of a full-time employee should be higher. There would be a tendency towards a more equal income distribution "[t]o the extent that poorer families earn their incomes from work, and richer families from property."[99] Given the growing disparity between the rich and the poor,[100] which commentators suggest is another manifestation of overpopulation, this result itself is desirable result.[101]

The growing population is a problem in the United States and has been recognized as such for more than thirty years.[102] The manifestations of U.S. overpopulation are becoming even more evident.[103] Those who suggest that economic growth will solve the

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96. *See id.* at 1884. Scientists have estimated that humans use 40% of the net energy created by terrestrial photosynthesis. *See id.*

97. *See* Enke, *supra* note 86, at 91.

98. *Id.* at 92.

99. *Id.* Reducing the ever-growing gap between the rich and poor would be one benefit of population reduction. *See* Postel, *supra* note 50, at 19-20.

100. Among industrialized nations, the greatest disparity between rich and poor exists in the United States. *See* AFFLUENZA (PBS television broadcast, Sept. 15, 1997). In 1970, 14.9% of all families had incomes of $15,000 or less, while 8% of all families had incomes of $75,000 or more. By 1994, 15.6% of all families had income of $15,000 or less, while 17.2% of all families had incomes of $75,000 or more. *See* STATISTICAL ABSTRACT, *supra* note 9, at 466 tbl.717. Even more dramatic are the income distribution figures between 1970 and 1994. In 1970, the bottom fifth of American families received 5.4% of aggregate income, while the top fifth received 40.9%. The top 5% of Americans received 15.6% of all income. By 1994, the bottom fifth received only 4.2% of aggregate income, while the top fifth received 46.9% and the top 5% received 20.1% of all income. *See id.* at 467 tbl.719.

101. *See* EHRLICH ET AL., *supra* note 1, at 236-37.

102. *See infra* note 106 and accompanying text.

103. United States immigration policies also play a serious role in population analysis. *See* Vernon M. Briggs, Jr., *Political Confrontation with Economic Reality: Mass Immigration in the Post-Industrial Age*, *in* ELEPHANTS IN THE VOLKSWAGEN, *supra* note 36, at 72-73 (1992); Garrett Hardin, *Siamese Triplets of Policy: Population, Environment and Immigration*, *reprinted in* 1 THE CARRYING CAPACITY BRIEFING BOOK at IV-97 (1996). *See generally* ABERNETHY, *supra* note 25 (explaining the role of immigration policy in the United States's nonmoderate population growth). For purposes of this Article, I do not distinguish between native born and immigrants in the U.S. when dealing with specific tax provisions. *See infra* note 266. Analysis of U.S. immigration policy is beyond the scope of this Article.

problem have failed to consider non-economic data that undercut their position.[104] Ultimately, the evidence overwhelmingly suggests that a reduced population will lead, not only to greater environmental security, but also to greater economic security.[105]

D. *The U.S. Government's Attempted Response to Carrying Capacity Problems*

The previous discussion highlights only a few of the predicted and manifested effects of overpopulation that concerned the United States in the 1960s and 1970s. In fact, during that period, fear of overpopulation was such that Congress and President Nixon took an active role in assessing it. Congress began considering problems of overpopulation in the mid 1960s.[106] Then on July 18, 1969, just one day after Armstrong first set foot on the moon, President Nixon sent a message to Congress concerning the problems of population growth.[107] That message expressed deep concern for the future of the United States if problems of population growth were not addressed.[108] In response, Congress established the Commission on Population Growth and the American Future, led by John D. Rockefeller, III, to investigate and make recommendations on problems of overpopulation.[109] In 1972, the Rockefeller Commission submitted to President Nixon recommendations on nearly fifty areas of policy and action to deal with anticipated problems of overpopulation in the United States.[110] Based on this report, Nixon directed a study, known as NSSM 200 (National Security Study

104. *See* SIMON, *supra* note 85; Eberstadt, *supra* note 85, at 11 (stating that the "tragedies that befallen large populations over the past several generations" were not caused by overpopulation, but can be traced directly to the policies or practices of presiding governments"); *cf.* Dasgupta, *supra* note 27, at 1883-84 (emphasizing the need to consider the changes in the environment resource-base in economic figures and suggesting that humans can overcome nonresilience of the ecosystem with technology).

105. *See* MUMFORD, *supra* note 6, at 471-78; Dasgupta, *supra* note 27, at 1879-80 (stating that "population growth, poverty, and degradation of the local environmental resource-base can fuel one another over extended periods of time").

106. *See* Rabin, *supra* note 11, at 1353. Congress held hearings on population problems between 1965 and 1968 under the leadership of Senator Gruening. *See Establish a Commission on Population Growth and the American Future: Hearings on S. 2701 Before Comm. on Gov't Operations*, 91st Cong. (1969); *Population Crisis: Hearings on S. 1676 Before the Subcomm. on Foreign Aid Expenditures of the Senate Comm. on Gov't Operations*, 89th Cong. (1966).

107. *See President's Special Message to the Congress on Problems of Population Growth*, 271 PUB. PAPERS 521-30 (July 18, 1969); Egeberg, *supra* note 66, at 10.

108. *See* MUMFORD, *supra* note 6, at 33.

109. *See id.* at 45-46.

110. *See id.* at 47-57.

Memorandum), "of the impact of world population growth on U.S. security and overseas interests."[111] The agencies that undertook the study presented President Nixon with in-depth report on December 10, 1974.[112]

The results of the NSSM 200 study were stark.[113] In its recommendations to President Nixon in 1974, the NSSM 200 report noted that current population growth and food demands were unprecedented historically.[114] The NSSM 200 report stated that although population growth was integrally related to problems of the economy, agricultural outputs, resource demand, and pollution, solving these other problems depended in large measure on the extent to which we could bring population growth under control.[115] The NSSM 200 report stated that, to keep future population within reasonable bounds, it was "urgent" that we initiate measures to reduce fertility and that they be effective in reducing fertility in the 1970s and 1980s.[116] The NSSM 200 report continued:

> Past experience gives little assistance to predicting the course of these developments because the speed of today's population growth, migrations, and urbanization far exceeds anything the world has seen before. Moreover, the consequences of such population factors can no longer be evaded by moving to new hunting or grazing lands, by conquering new territory, by discovering or colonizing new continents, or by emigration in large numbers.[117]

The NSSM 200 report concluded: "The world has ample warning that we all must make more rapid efforts at social and economic development to avoid or mitigate these gloomy prospects. We should be warned also that we all must move as rapidly as possible toward stabilizing national and world population growth."[118]

The NSSM 200 study also evaluated the effects of population factors on political stability. Its conclusions regarding the way

111. *Id.* at 61-62. Through the NSSM 200, the President directed the Secretary of Defense, the Secretary of Agriculture, the Director of Central Intelligence, the Deputy Secretary of State, and the Administrator of the Agency for International Development to complete this project. *See id.*

112. *See id.* at 63. The report is titled "NSSM 200: Implications of Worldwide Population Growth For U.S. Security and Overseas Interests (NSSM 200 report)." *See id.*

113. *See id.* at 65-81, 435-558.

114. *See id.* at 65, 437-38, 455-61.

115. *See id.* at 437-38.

116. *See id.* at 50-51.

117. *Id.* at 490.

118. *Id.*

population factors affect the initiation and course of conflict were apocalyptic.[119] In fact, its predictions regarding the social effects of overpopulation have materialized less than thirty years later.[120] The report, detailing the results of a study examining forty-five local conflicts, reached two major conclusions. First, the report recognized that "population factors are . . . critical in, and often determinants of, violent conflict in developing areas."[121] The study of local conflicts concluded that " '[s]egmental (religious, social, racial) differences, migration, rapid population growth, differential levels of knowledge and skills, rural/urban differences, population pressure and the spatial location of population in relation to resources—in this rough order of importance—all appear to be important contributions to conflict and violence.' "[122] Second, the study noted that " 'conflicts which are regarded in primarily political terms often have demographic roots: Recognition of these relationships appears crucial to any understanding or prevention of such hostilities.' "[123]

Even more telling, the report indicated that population factors do not "act alone or, often, directly to cause the disruptive effects. They act through intervening elements—variables. They also add to other causative factors[,] turning what might have been only a difficult situation into one with disruptive results."[124] Finally, the NSSM 200 study reported that population factors contribute to breakdowns in social structures; unemployment; poverty; lowered opportunities for education; fewer jobs for those who do obtain education; interracial, religious, and regional rivalries; and sharply increased administrative burdens on governments.[125] The NSSM 200

119. *See id.*

120. *See* Lindsey Grant, *The L.A. Riots and U.S. Population Nonpolicy*, *reprinted in* 2 THE CARRYING CAPACITY BRIEFING BOOK, *supra* note 103, at VIII-33; Thomas Homer-Dixon, *Destruction and Death*, *reprinted in* 2 THE CARRYING CAPACITY BRIEFING BOOK, *supra* note 103, at VIII-43; Robert Kaplan, *The Coming Anarchy*, *reprinted in* 2 THE CARRYING CAPACITY BRIEFING BOOK, *supra* note 103, at VII-56.

121. MUMFORD, *supra* note 6, at 479, 480-82.

122. *Id.* at 479 (quoting NAZLI CHOUCRI, POPULATION DYNAMICS AND LOCAL CONFLICT; A CROSS-NATIONAL STUDY OF POPULATION AND WAR, A SUMMARY (1974), *reprinted as modified in* NAZLI CHOUCRI, POPULATION DYNAMICS AND INTERNATIONAL VIOLENCE: PROPOSITIONS, INSIGHTS, AND EVIDENCE 112 (1974)).

123. *Id.* America has both the highest murder and crime rates of any industrialized country. A murder occurs every 25 minutes, a rape every six minutes, a burglary every 10 seconds, and a robbery every four seconds. For instance, in 1993 government statistics indicated that two out of every five Americans were injured in an assault or robbery. *See* Dreier, *supra* note 44, at 1367; *see also* STATISTICAL ABSTRACT, *supra* note 9, at 201 tbl.310 (reporting crimes and crime rates by type from 1984 to 1994).

124. MUMFORD, *supra* note 6, at 479.

125. *See id.* at 480.

report concluded that these adverse conditions "contribute frequently to harmful developments of a political nature, . . . [such as] juvenile delinquency, thievery, . . . organized brigandry, kidnapping and terrorism," and other outbreaks of violence.[126]

The implications of overpopulation on societal stability are even clearer today. Virginia Abernethy, noted anthropologist and economist, states:

> In 1972, we numbered just over 210 million. In 1993, the United States holds about 50 million people more. Our numbers grow by 58,000 a week, or over 3 million a year. That is an annual growth rate of more than 1.1%, and the social, environmental, and urban problems that the commission saw then are now worse. In 1972, was homelessness an issue? Access to health care by the middle class? Private debt? Stagnant real disposable personal income? Today, how many American families have a deepening sense of unease?[127]

Almost thirty years after the NSSM 200 report was issued, Americans are finally beginning to realize that overpopulation is a problem in the United States. When asked in 1994 whether they thought overpopulation was a serious world problem, 86% of Americans responded that they thought it was a very serious or somewhat serious problem.[128] When asked whether they believed that overpopulation would affect the United States, 79% of

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126. *Id.*; *see also* Omar Saleem, *Be Fruitful, and Multiply, and Replenish the Earth, and Subdue It: Third World Population Growth and the Environment*, 8 GEO. INT'L ENVTL. L. REV. 1, 7-8 (1995) (discussing the link between population growth and violent conflict in Rwanda and Haiti); Thomas F. Homer-Dixon et al., *Environmental Change and Violent Conflict*, SCI. AM., Feb. 1993, at 38 (analyzing and confirming the relationship of conflict and overpopulation).

127. ABERNETHY, *supra* note 25, at 10. The National Coalition for the Homeless has estimated the number of homeless to be anywhere from 500,000 to 7 million. *See* NATIONAL COALITION FOR THE HOMELESS, HOW MANY PEOPLE EXPERIENCE HOMELESSNESS?, NCH FACT SHEET #2 (visited October 2, 1998) <http://www2.ari.net/home/nch/numbers.html>; *see also* NATIONAL LAW CENTER ON HOMELESSNESS AND POVERTY, MEAN SWEEPS: A REPORT ON ANTI-HOMELESS LAWS, LITIGATION AND ALTERNATIVES IN 50 UNITED STATES CITIES 1 (1996) (noting that 700,000 people are homeless on any given night). A 1994 study found approximately 7.2 million adults nationwide had experienced homelessness between 1989 to 1994. *See* Bruce Link et al., *Lifetime and Five-Year Prevalence of Homelessness in the United States: New Evidence on an Old Debate*, 65 AM. J. ORTHOPSYCHIATRY 347, 351 (1995); *see also* MARTHA R. BURT, OVER THE EDGE: THE GROWTH OF HOMELESSNESS IN THE 1980S 3-4 (1992) (indicating the increase of homelessness in the 1980s and suggesting there were 15 to 25 homeless persons for every 10,000 people living in the United States).

128. *See* Roper Center, Accession No. 0224199, Question No. 063, Sept. 1, 1994, *available in* LEXIS, News Library, Rpoll File.

Americans believed that it would.[129] Despite recognition of the problem, the number of annual births in the United States will not fall for many years, even with a decline in fertility rates.[130] From the moment the birth rate drops to replacement level, population will continue to increase for about seventy-five years before it begins to level off.[131] This result means that the United States will continue to see manifestations of overpopulation increase for some time to come.[132]

In 1974, the NSSM 200 report raised the following questions: Should the United States embark on a major research endeavor to determine ways to protect out water supply, and the environment in general, including climate changes? Should the United States dictate population control measures for ourselves and for other countries? Should the United States attempt to use our protein sources more efficiently through changes in food consumption practices?[133]

The U.S. government failed, however, to answer these questions adequately, either in 1972 or at any time since then[134] because it never pursued any of the recommendations in the NSSM 200 report.[135] The report became a classified document and was not released until July of 1989.[136] In 1984, President Reagan's representative to the United

129. *See* Roper Center, Accession No. 0224200, Question No. 064, Sept. 1, 1994, *available* in LEXIS, News Library, Rpoll File.

130. *See* Enke, *supra* note 86, at 95. Population size grows when there are more births than deaths. *See* Jacobsen, *supra* note 38, at 260. Due to a large young population that has not yet begun to bear children as compared with the smaller parental generation, the number of births will outpace deaths for some period of time, even if the number of births per person declines. *See id.*

131. *See* Enke, *supra* note 86, at 95; *supra* note 39 (explaining why population will continue to rise even if the birth rate drops to replacement levels).

132. In studies commissioned by the American Academy of Arts and Sciences and the University of Toronto, 30 experts examined the connection between population, environmental problems, and civil or international strife. The experts concluded that "scarcities of renewable resources are already contributing to violent conflicts in many parts of the developing world." Homer-Dixon et al., *supra* note 126, at 38. More conflict will make it increasingly difficult to encourage cooperative behavior and the development of national and international policies that will be critical for dealing with the population-resource-environment predicament. *See* EHRLICH ET AL., *supra* note 1, at 255; *see also* James P. Karp, *Sustainable Development: Toward A New Vision*, 13 VA. ENVTL. L.J. 239, 247 (1994) ("Cities are unsafe and the number of homeless has escalated. The quality of our global environment is declining in many areas. We now hear reports that the next generation will not be better off than their parents.").

133. *See* MUMFORD, *supra* note 6, at 511.

134. *See* Scheuer, *supra* note 8, at 203 (discussing the demise of the U.S. policy on overpopulation). For a fascinating account of the underlying politics, see MUMFORD, *supra* note 6, at 93-127.

135. *See* MUMFORD, *supra* note 6, at 95, 97.

136. *See id.* at 435.

Nations Population Conference declared that population issues were not important and announced that the U.S. government was planning to further cut its funding for family planning assistance.[137] President Bush, likewise, initiated no change in U.S. policy.[138] While President Clinton recognizes the seriousness of overpopulation issues,[139] the United States has implemented no policies to deal with overpopulation issues, despite increased U.S. fertility rates and increased immigration to this country.[140]

E. *The Stork Whips the Plow into Submission: Current Environmental Regulation*

> Annual increases in the U.S. population mean that conservation and pollution-control measures become an accommodation to growth rather than a solution. All efforts at lasting environmental protection will be defeated by the claims of needy people. People need jobs, need water, need oil—and there goes the environment. Add enough people, and any potential gain from per capita conservation is overwhelmed.[141]

Though not addressing overpopulation directly, the United States has enacted a complicated scheme of statutes and regulations to reduce some of the outward manifestations of overpopulation, commonly referred to as pollution.[142] In fact, the entire U.S. environmental regulatory scheme has evolved over just the last twenty-five years. These laws, which consist primarily of command-and-control regulations[143] regulating pollutant emissions, have come under much criticism.[144] In general, "command and control

137. *See* EHRLICH et al., *supra* note 1, at 105.

138. *See id.* at 106.

139. *See* PCSD Report, *supra* note 11, at Executive Summary 1-2.

140. *See* Scheuer, *supra* note 8, at 204.

141. ABERNETHY, *supra* note 25, at 301.

142. *See, e.g.*, National Environmental Policy Act of 1969, 42 U.S.C. §§ 4321-4347 (1994); Clean Air Act, 42 U.S.C.A. §§ 7401-7671q (West 1995 & Supp. 1998); Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C.A. §§ 9601-9675 (West 1995 & Supp. 1998).

143. *See* RICHARD L. REVESZ, FOUNDATIONS OF ENVIRONMENTAL LAW AND POLICY 130 (1997). Revesz states that under the command-and-control technique, similar polluting sources must meet the best available technology standard. *See id.* Under this standard, the responsible party must install whatever technology is available to either reduce or eliminate "nontrivial risk[s]" as long as the cost of this technology will not cause the plant or industry to shutdown. Bruce A. Ackerman & Richard B. Stewart, *Reforming Environmental Law*, 37 STAN. L. REV. 1333, 1335 (1985).

144. *See* Linda A. Malone, *The Necessary Interrelationship Between Land Use and Preservation of Groundwater Resources*, 9 UCLA J. ENVTL. L. & POL'Y 1, 63-72 (1990);

regulations tend to force all businesses to adopt the same measures and practices for pollution control."[145] Therefore, all businesses share equally in the pollution control burden, regardless of any one business's relative impact.[146] Requiring all businesses to conform to the same standard can be both costly and counter-productive.[147]

Uniform standards tend to force some businesses into using unreasonably expensive means of controlling pollution because emission control costs can vary substantially between and even within businesses, and the appropriate technology in one circumstance may be inappropriate in another.[148] In other words, the standards do not take into account individual business circumstances. For example, one manufacturing process might more easily accommodate a particular pollution standard than another manufacturing process subject to the same regulation. Instead of focusing on overall pollutant reduction and allowing for individual firm variance, one standard is set for all firms with the hope that the overall target will be achieved. The result is inefficient.

In addition, command-and-control regulations stifle development of new technologies that could provide greater levels of pollution control.[149] Businesses have little or no incentive to exceed control targets. To the extent that a business does invest in new technology, its reward may be imposition of a higher performance standard.[150] Money that could go to research may instead fund legal battles over defining acceptable technologies and standards of performance.[151] Furthermore, even though the Environmental Protection Agency is responsible for the implementation of environmental laws, policing compliance is very difficult.[152]

Eric W. Orts, *Reflexive Environmental Law*, 89 NW. U. L. REV. 1227, 1231, 1235-41 (1995) (proposing a new environmental law system similar to the current tax system with a regulatory enforcement agency like the Internal Revenue Service); Susan L. Smith, *Ecologically Sustainable Development: Integrating Economics, Ecology, and Law*, 31 WILLAMETTE L. REV. 261, 295-97 (1995); Richard B. Stewart, *U.S. Environmental Regulation: A Failing Paradigm*, 15 J.L. & COM. 585, 587-91 (1996); Philip Weinberg, *Public Transportation and Clean Air: Natural Allies*, 21 ENVTL. L. 1527, 1528 (1991).

145. Robert N. Stavins & Bradley W. Whitehead, *Dealing with Pollution*, 34 ENV'T, Sept. 1992, at 7, 8.

146. *See id.*

147. *See id.*; *infra* note 162-65 and accompanying text (discussing the use of tradable permits designed to alleviate some of the problems of command and control regulations through the use of economic incentives).

148. *See* Stavins & Whitehead, *supra* note 145, at 9.

149. *See id.*

150. *See id.*

151. *See id.*

152. *See* Robert W. Collin & Robin M. Collin, *Equity as the Basis of Implementing*

Current environmental laws generally address environmental problems by reference to the source of the pollutant, as opposed to changing the incentive structure to encourage environmentally responsible behavior.[153] Environmental regulation has seen some success, but its usefulness is " 'limited or even counterproductive if not accompanied by fiscal and economic policies that provide positive incentives for environmentally sound development.' "[154] The notion of "development" must be reconceived such that preservation of ecological support systems and biodiversity become part of all plans. Furthermore, restricting use of nonrenewable resources in conjunction with strategies for management of these resources is imperative.

Critiquing the current environmental regime, Professor Susan Smith believes that environmental laws reflecting the traditional approach to environmental and natural resource management are *not* the equivalent of sustainable development[155] for four reasons. First, environmental policy has been dominated for the last twenty years by concern for human health, rather than by concern for "preserving ecological support systems."[156] "Second, existing natural resource law[s] do[] not systematically protect biodiversity."[157] Third, these laws in no way assure continued availability of public or private resources; in contrast, laws promoting sustainable development would place constraints on the consumption of nonrenewable resources.[158] Finally, private or nonfederal renewable resources are not required to be "managed for sustained-yield."[159] Professor Smith concludes that "[t]he fundamental underpinning of natural resource and environmental law in the United States is the indeterminate

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Sustainability: An Exploratory Essay, 96 W. VA. L. REV. 1173, 1183 (1994) ("There are many environmental laws that are simply not enforced, especially pollution laws.").

153. *See generally* Frances H. Irwin, *An Integrated Framework for Preventing Pollution and Protecting the Environment*, 22 ENVTL. L. 1 (1992) (discussing the lack of a systematic conceptual framework to solve environmental problems among existing U.S. environmental agencies).

154. Maurice Strong, Energy, the Environment, and Global Economic Growth: Summary of Remarks at the Energy, the Environment, and Global Economic Growth Conference, University of Tulsa (February 23-26, 1994), *in* 2 TULSA J. COMP. & INT'L L. 121, 122 (1994).

155. Sustainable development entails the notion that development must meet the needs of the present without compromising the needs of the future. *See* WORLD COMM'N ON ENV'T AND DEV., OUR COMMON FUTURE 8 (13th ed. 1991) [hereinafter OUR COMMON FUTURE].

156. *See* Smith, *supra* note 144, at 296.

157. *Id.*

158. *See id.*

159. *Id.*

balancing of the benefits of environmental protection against its costs without consideration for future generations."[160] Consistent with these criticisms, and despite our increasing web of environmental regulation, we continue to deplete our resource base, raising serious carrying capacity concerns.[161]

The United States therefore faces a serious challenge—learning to live within its carrying capacity. Many changes—legal, social, and political—will be necessary to meet this challenge. With criticism of the current environmental regulatory scheme in mind, I offer an alternative (or supplemental) approach in which tax policy is used to change incentive structures towards reducing our impact on the environment.

III. THE IRS: THE STORK AND THE PLOW GO SHOPPING—TAX POLICY CHOICES

A. Tax Policy as an Economic Tool to Confront Overpopulation

Because of the difficulties of enacting and enforcing command-and-control environmental regulations,[162] the United States has already demonstrated some level of interest in the use of economic incentives, such as taxes and transferable permits, in lieu of command-and-control regulation. Pollution abatement and control currently costs the United States well over $100 billion annually.[163] By lowering the costs of reaching agreement and affording states and industry greater flexibility, economic incentives can facilitate agreement.[164] For example, a Bush administration proposal to use a system of transferable pollution permits to reduce sulfur emissions

160. *Id.* at 297.

161. *See supra* notes 17-140 and accompanying text (discussing carrying capacity problems in the United States).

162. Struggles among competing interest groups have resulted in delay and complexity in enacting environmental regulatory legislation. *See* Richard B. Stewart, *International Trade and Environment: Lessons from the Federal Experience*, 49 WASH. & LEE L. REV. 1329, 1344 (1992). Stewart notes:

> [T]he Clean Air Act is the most notable example.... [R]egional and other political and economic conflicts blocked congressional agreement on measures to deal with acid precipitation .... The problem of reaching workable compromise has been even more notable in the [European] Community, which until recently could enact environmental legislation only by unanimous agreement in the Council.

Id. at 1344 (footnotes omitted).

163. *See* STATISTICAL ABSTRACT, *supra* note 9, at 239 tbl.384.

164. *See.* Stavins & Whitehead, *supra* note 145, at 9.

broke the legislative logjam on acid rain.[165]

Policy instruments involving direct market incentives can be a low-cost solution to the problem of attaining ambient environmental standards.[166] Market-based policies do not set standards for each individual firm; instead they set targets for a given geographic area or by industry type.[167] For example, the government might determine to reduce water pollution by 20% over the next five years. It would then establish financial incentives so that the cost of polluting becomes more expensive than the cost of a cleaner technology. Thus, firms in an entire industry would reduce the aggregate level of pollution and meet the desired goal.[168] Therefore, the market-based approach encourages efficient sharing of the pollution control burden among firms.[169] Market-based instruments also encourage technological innovation because they force firms to account for environmental costs.

Taxes use market mechanisms to transmit information to the consumer by charging a price for currently unpriced goods and services provided by the natural environment.[170] Economists have been critical of policy approaches depending on direct regulation and either ambient or technological standards because these approaches do not communicate to the consumer the costs associated with environmental degradation.[171] Despite this criticism, governments and regulatory agencies historically have favored command-and-control approaches to pollution regulation.[172] Times must change. Governments need to consider whether these old approaches are still viable. In fact, where established market economies exist, "direct environmental taxes would often interfere less in the economy than existing regulations."[173]

Environmentalists tend to favor an economic approach that would assess taxes or charges against activities that are

165. *See* Stewart, *supra* note 162, at 1344.

166. *See* Stavins & Whitehead, *supra* note 145, at 9.

167. *See id.*

168. *See id.*

169. *See id.*

170. *See* Wen-yuan Huang & Michael LeBlanc, *Market-Based Incentives for Addressing Non-Point Water Quality Problems: A Residual Nitrogen Tax Approach*, 16 REV. AGRIC. ECON. 427, 427 (1994).

171. *See* ROBERT REPETTO ET AL., GREEN FEES: HOW A TAX SHIFT CAN WORK FOR THE ENVIRONMENT AND THE ECONOMY 7 (1992).

172. *See* Huang & LeBlanc, *supra* note 170, at 427.

173. C. EUGENE STEUERLE, THE TAX DECADE: HOW TAXES CAME TO DOMINATE THE PUBLIC AGENDA, 189 (1992).

environmentally harmful.[174] Thus, regulators would set the level of the tax by reference to the amount of pollutant discharged or the degree of harm caused. Although taxing pollution would provide an obvious economic disincentive to pollute, setting the appropriate tax rate could be very difficult.[175] The regulators would need to estimate both the potential environmental harm a particular pollutant may cause and the effect of a particular rate in changing behavior in order to set the rate schedule.[176] Realistically, regulators would not be able to determine either the marginal cost or benefit functions with sufficient accuracy to calculate the optimal tax rate.[177] Instead, regulators would have to develop estimates of damages and benefits, and set tax rates accordingly. Despite these difficulties, environmental taxes are receiving increased attention and support.[178]

Market-based regulations, and thus taxing schemes, can also influence consumer preferences. This type of regulation attempts

174. President Clinton's failed "BTU tax" proposed in 1994 is an example of such a tax, as are several of the tax proposals in Parts VI and V of this article. President Clinton proposed a broad-based BTU tax designed to raise revenue while also reducing pollution. *See* Dawn Erlandson, *The BTU Tax Experience: What Happened and Why It Happened*, 12 PACE ENVTL. L. REV. 173, 173 (1994). The revenue from the tax was to be used to fund transit and clean water projects as well as fee increases for grazing rights and mining royalties. *See id.* at 175. The proposal suffered a political death. *See id.* at 173; *infra* note 761; *see also* A.C. PIGOU, A STUDY IN PUBLIC FINANCE (3d ed. 1949) (pioneering the use of taxes to estimate externalities). "Pigouvian" taxes are meant to change behavior, but not distort it. *See* Dieter Helm & David Pearce, *Economic Policy Towards the Environment: An Overview*, *in* ECONOMIC POLICY TOWARD THE ENVIRONMENT 1, 7 (Dieter Helm ed., 1991).

175. *See* Eckard Rehbinder, *Environmental Regulation Through Fiscal and Economic Incentives in a Federalist System*, 20 ECOLOGY L.Q. 57, 74 (1993). Rehbinder concludes that setting the pollution tax rate is difficult because the market does not dictate the price. *See id.* Any tax artificially sets the price for the use of the absorption capacity of the ecosystem. *See id.* Therefore, he concludes, pollution taxes are not "market instruments, [but] a special type of interventionist strategy that makes an instrumental use of the market, forcing firms to internalize the state-determined costs of environmental degradation." *Id.*; *see also* Orts, *supra* note 144, at 1242 (discussing the difficulty of setting the fee schedule for pollution changes and energy taxes).

176. *See* Huang & LeBlanc, *supra* note 170, at 427.

177. *See id.* at 428.

178. *See* SANFORD E. GAINES & RICHARD A. WESTIN, TAXATION FOR ENVIRONMENTAL PROTECTION: A MULTINATIONAL LEGAL STUDY (1991); ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT, MANAGING THE ENVIRONMENT: THE ROLE OF ECONOMIC INSTRUMENTS (1994) [hereinafter MANAGING THE ENVIRONMENT]; ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT, TAXATION AND THE ENVIRONMENT: COMPLEMENTARY POLICIES (1993) [hereinafter COMPLEMENTARY POLICIES]; ROBERT REPETTO ET AL., *supra* note 171, at 7; ERNST U. VON WEIZSÄCKER & JOCHEN JESINGHAUS, ECOLOGICAL TAX REFORM: A POLICY PROPOSAL FOR SUSTAINABLE DEVELOPMENT (1992); *Pollution Tax Forum: Colloquium*, 12 PACE ENVTL. L. REV. 1 (1994).

"(1) to aid consumer identification of 'green products' or environmentally harmful products and (2) to assure truthful environmental advertising claims."[179] For example, a tax on environmentally harmful products would provide consumers with the information necessary to make more environmentally sound choices.[180]

It is evident that the enactment of green taxes may shift behavior towards more environmentally benign activities, yet it is also evident that existing tax policies contribute to these problems.[181] Policymakers need to reexamine the Internal Revenue Code to uncover existing tax provisions that undermine concepts of sustainability.[182] This undertaking is a complex one. The relationships between various tax provisions and their effect on carrying capacity will take time to understand. The complexities of the economy and society add to the difficulty of trying to identify those tax policies that can move us towards sustainability and those that can not. Despite these complexities, such reform is both feasible and necessary.[183]

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179. Orts, *supra* note 144, at 1246. For example, the European Union's eco-label award scheme establishes a procedure for government certification of environmentally friendly products. *See* Council Regulation 880/92, 1992 O.J. (L 99) 1-5.

180. *See* Stavins & Whitehead, *supra* note 145, at 30 ("[T]ax differentiation ... provides more favorable prices for 'green' products."); *see generally* Howard A. Latin, *Environmental Deregulation and Consumer Decision-Making Under Uncertainty*, 6 HARV. ENVTL. L. REV. 187 (1982) (assessing whether market prices that reflect a product's value could influence consumers).

181. *See* Brian S. Dunkiel, *Should Tax Policy Be Subject to NEPA?*, ENV'T, Dec. 1996, at 16, 16 ("Taxes enacted primarily to raise revenue can have a significant impact on the environment.").

182. *See id.* (pointing out that the Code has more than 9000 provisions but labels only four as environmental). Sustainability is defined as using renewable resources at rates that do not exceed their rates of regeneration; using nonrenewable resources at rates that do not exceed the development of renewable substitutes; and pollution emissions that do not exceed the assimilative capacity of the environment. *See* Lindsay Grant, *Sustainability Part I: On the Edge of an Oxymoron*, NPG FORUM, Mar. 1997, at 1. Grant critiques the use of "sustainable development" and the controversy over its meaning. *See id.* He believes that the term "sustainability" embodies the goal of avoiding environmental degradation, whereas the "development" aspect of "sustainable development" does not. *See id.* at 5. The 1987 report of the World Commission on Environment and Development defined "sustainable development" as development that "meets the needs of the present without compromising the ability of future generations to meet their own needs." OUR COMMON FUTURE, *supra* note 155, at 8. Sustainability is used throughout this Article, as opposed to sustainable development.

183. Changes in tax policy alone, however, will not suffice. Rather, we should pursue a combination of regulatory solutions. Russia's system of environmental taxes, one of the most developed in the world, is an example of a comprehensive market approach. The Russians believe that *harnessing* market forces will enable them to deal with their environmental problems. In developing its system of environmental markets, Russia has

Ultimately, any policy should attempt to foster a sense of responsibility for carrying capacity limitations in individuals and firms at all levels. A system in which the overall tax burden would not increase, and the environmental tax revenues would relieve economically destabilizing tax burdens, would positively affect the economy.[184] As one commentator has noted: "Tax, regulatory, and spending programs could create powerful sticks and carrots that would promote green technologies and discourage pollution-prone ones."[185] Such a system would also result in lower remediation costs and fewer health risks.[186] The end product would be a tax code that could help the United States to live within its carrying capacity.[187]

B. Tax Policy as a Social Tool to Confront Overpopulation

> An attempt to find ways to modify tax systems to make them help at least in a small way in dealing with the population explosion—the greatest social problem of all—without adding to the individual problems of the disadvantaged, should be regarded by tax theorists and

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pursued five initiatives:

> First, the creation of a comprehensive system of environmental taxes, fees, and tradable emissions permits. Second, the creation of a sustainable market for recycling, environmentally beneficial technology, and environmental monitoring equipment.... Third, the development of environmental consultant services.... Fourth, the creation of a system of environmental insurance, and an accompanying system of environmental audits. Finally, Russia is examining ways of integrating its developing environmental markets with the world markets.

J. Andrew Hoerner, *Russia Seeks to Harness Market Forces to Clean Up Environment, Choosing Taxes over Regulation*, TAX NOTES INT'L, May 18, 1992, at 1025, 1025-26. Despite problems, Russia's attempts to deal with its environmental problems are laudable. *See* COMPLEMENTARY POLICIES, *supra* note 178 (examining use of taxes for environmental purposes in OECD countries). Most types of air and water pollution and solid waste disposal are subject to taxation in Russia. The tax rates vary with the toxicity of the pollutants. These taxes "generate the revenues necessary to fund environmental protection measures." Hoerner, *supra*, at 1026. Unlike other models, however, the Russian system makes "no effort to equate the revenues to the total value of the environmental damage done." *Id.*; *see also* MANAGING THE ENVIRONMENT, *supra* note 178, at 134-35 (surveying environmental changes and taxes in Russia).

184. *See* Ignasi Gispert, *Fiscal Instruments in the EU: Are We Moving Towards Ecological Tax Reform?*, 1995 EUR. ENVTL. L. REV. 305, 306-10.

185. James Gustave Speth, *Risk Analysis and the U.S. Environmental Protection Agency: EPA Must Help Lead an Environmental Revolution in Technology*, 21 ENVTL. L. 1425, 1458 (1991).

186. *See* Gispert, *supra* note 184, at 310.

187. *See id.* (advocating fiscal neutrality). I generally do not address in this Article whether suggested changes should raise revenue, be revenue neutral, or decrease tax revenue.

technicians as a major challenge.[188]

Tax policy can be an effective and important social tool to send messages and influence the behavior of individuals.[189] The tax system is already responsible for implementation of many social policies.[190] Thus, as a messenger, U.S. tax policy could help in resolving the overpopulation problem.[191] In dealing with a problem of this magnitude, one important aspect for the government will be to advocate population reduction and to inform its citizenry of the severity of the overpopulation problems in this country.[192] The symbolic aspect of tax policies makes the tax system a particularly well-suited tool for sending messages and encouraging individuals to reform attitudes and behaviors.[193]

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188. Dan Throop Smith, *High Progressive Tax Rates: Inequity and Immorality*, 20 U. FLA. L. REV. 451, 461 (1968).

189. *See* Philip Weinberg, *Environmental Protection in the Next Decades: Moving From Clean Up to Prevention*, 27 LOY. L.A. L. REV. 1145, 1146 (1994). Weinberg believes that "tax incentives can ... play a major role in encouraging our better natures." *Id.* He cites "the federal income tax credits for rehabilitating landmark buildings and for solar energy" as offering a much faster return on the investment than the marketplace alone. *Id.* (footnotes omitted) (citing Revenue Act of 1962, Pub. L. No. 87-834, 76 Stat. 960; Tax Reform Act of 1976, Pub. L. No. 94-455, 90 Stat. 1520 (formerly codified at I.R.C. § 46 (f)(g)), *repealed by* Tax Reform Act of 1986, Pub. L. No. 99-514, 100 Stat. 2857). He also believes that a serious gasoline tax, considerably higher than the 4.3 cent-a-gallon adopted in 1993, "would ... increase car pooling and public transportation use." *Id.* at 1146-47.

190. I accept without discussion that we should use the tax system to implement social policy, even though others would disagree. For example, we use the tax system to encourage charitable contributions and home ownership through deductions. *See* I.R.C. §§ 163(h), 170 (1994); *see also* STANLEY S. SURREY, PATHWAYS TO TAX REFORM: THE CONCEPT OF TAX EXPENDITURES 5 (1973) (describing various income tax subsidies and deductions of the 1971 Tax Expenditures); Douglas A. Kahn & Jeffrey S. Lehman, *Tax Expenditure Budgets: A Critical View*, 54 TAX NOTES 1661 (1992) (examining how the federal income tax confirms societal values); Stanley S. Surrey & Paul R. McDaniel, *The Tax Expenditure Concept: Current Developments and Emerging Issues*, 20 B.C. L. REV. 225 (1979) (describing the role of the tax expenditure concept in policy issues).

191. Richard Williamson, Deputy Assistant Secretary for International Affairs, has stated, " '[o]ur priorities need to change .... The priorities we've had in the past—the goals, the missions, the way we've done business—just don't meet the needs of moving into the 21st century.... Energy tax policy is another avenue for the government to promote certain behaviors.' " Richard Williamson, The Clinton Administration's New Energy Policies: Summary of Remarks at the Energy, the Environment, and Global Economic Growth Conference, University of Tulsa (February 23-26, 1994), *in* 2 TULSA J. COMP. & INT'L L. 115, 115 (1994).

192. *See* Cass R. Sunstein, *Legal Interference with Private Preferences*, 53 U. CHI. L. REV. 1129, 1137 (1986); *see also* Smith, *supra* note 144, at 301 (mentioning inculcating sustainability as a value and implementing policies as a means of institutionalizing sustainable development).

193. *See* Daniel Shaviro, *Beyond Public Choice and Public Interest: A Study of the Legislative Process as Illustrated by Tax Legislation in the 1980s*, 139 U. PA. L. REV. 1,

To reduce the effects of overpopulation, society must value the world that would result from reducing the population. Laws fostering the concept of reducing overpopulation would be short-lived unless those concepts became commonly held beliefs. However, law does influence societal values. Preferences often change to conform with new legal rules.[194] According to Professor Cass Sunstein, seatbelt regulations are an example of preference-shaping laws.[195] Because of the high initial subjective costs of using seatbelts, a disincentive exists to change behavior when no regulation exists.[196] Once a regulation requiring the use of seatbelts takes effect, the costs of changing behavior decrease, and people adapt their preferences to the new regulation.[197] Soon, more people wear seatbelts and actually prefer the new behavior to the old modes of behavior.[198]

Using the tax system to promote a U.S. policy on overpopulation would also have global effects. U.S. citizens are not the only reluctant servants to the tax code; foreign individuals and entities who live or operate in the United States must also comply with U.S. tax laws.[199] The U.S. tax regime even operates in foreign arenas to the extent that foreign persons or entities generate U.S. source income, thereby creating an opportunity for the United States to

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111 (1990); *see also* Orts, *supra* note 144, at 1264-65 (contending that tax policies implicate our social systems, such as the family, through the dependency exemption, and religion, by exemption of religious organizations from tax). He suggests that these indirect influences of the tax system on society are "reflexive in the sense that the legal requirements encourage an attitude of self-reference and self-reflection of persons and social institutions outside the legal system." *Id.* at 1265.

194. *See* Cass R. Sunstein, *Social Norms and Social Roles*, 96 COLUM. L. REV. 903 (1996). Sunstein states: "[A]ny preference for an action is partly a function of social norms and the agent's attitude toward those norms." *Id.* at 941. *See generally* Dan M. Kahan, *Social Influence, Social Meaning, and Deterrence*, 83 VA. L. REV. 349, 351 (1997) (describing the ways in which laws impact people's behavior as well as responses by others). "[T]he law creates and shapes information about the kinds of behavior that members of the public hope for and value, as well as the kinds they expect and fear." *Id.*; *see also* Lawrence Lessig, *Social Meaning and Social Norms*, 144 U. PA. L. REV. 2181, 2188 (1996) (" 'Meaning talk' simply points to the techniques for changing context that might change the cost of behaviors within that context.").

195. *See* Sunstein, *supra* note 192, at 1137.

196. *See id.*

197. *See id.*

198. *See id.* Another example of these types of laws, according to Sunstein, are laws against sexual harassment. *See id*; *see also* Smith, *supra* note 144, at 301 ("Law in particular plays a critical role in implementing sustainable development.").

199. *See* I.R.C. § 871 (West Supp. 1998) (taxing nonresident aliens on income received from sources within the United States "to the extent the amount is not effectively connected with the conduct of a trade or business in the United States"); *id.* § 882 (West Supp. 1998) (taxing foreign corporations on income connected with a business in the United States).

export policies promoting population stabilization and sustainability around the world. To date, however, the United States has failed to exploit this opportunity.[200]

National taxing and spending systems are ideal for implementing national social policies that impact the population at large. Tax policies should consciously, rather than unconsciously, and responsibly influence population reduction, consumption reduction, and agricultural responsibility. Although current tax laws may not deal with overpopulation per se, they are clearly relevant to the population problem. Well-known environmentalist Zygmunt Plater recognizes that "[t]ax policy and federal spending policy can provide potent incentives to market players to accommodate important public values."[201]

Many scholars and analysts are revisiting the methods used to deal with U.S. environmental problems because of problems caused by the current environmental regulatory scheme.[202] In fact, the tax code already contains several provisions designed to have environmental impact.[203] However, when dealing with environmental issues, tax laws have been enacted or amended on an ad hoc basis.[204] A better approach, which I advocate here, would be to develop a comprehensive tax policy regime that incorporates concepts of sustainability, thereby addressing the environmental problems caused by overpopulation.

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200. *See* text accompanying *supra* notes 104-40 (explaining the failure by the United States to develop a policy on overpopulation). In 1974, the Commission on Population and the American Future recognized that problems of overpopulation were "more long term and complex than first appeared and that a short term burst of activity or moral fervor will not solve it." MUMFORD, *supra* note 6, at 500. In light of this realization, the Commission feared that "the U.S. might abandon its commitment to assisting in the world's population problem, rather than facing up to it for the long-run difficult problem that it is." *Id.*

201. Plater, *supra* note 14, at 679. Plater contends that regulation is necessary to "offset the dynamic power and inside perspective of human decisionmakers in the marketplace who are so powerfully inclined to externalize costs onto the public. There is an inevitable utilitarian need for good fences, imposing civic values and a long term civic perspective upon market processes." *Id.* at 677.

202. *See supra* Part II.E.; *see also* REPETTO ET AL., *supra* note 171, at 7 (arguing that applying environmental changes will help environmental improvement at minimum cost).

203. *See, e.g.*, I.R.C. § 4661 (1994) (imposing a tax on sales of certain toxic chemicals); *id.* § 4681 (1994) (imposing a tax on ozone-depleting chemicals sold or used by manufacturers, producers, or importers); *see also* REPETTO ET AL., *supra* note 171, at 6 (proposing state environmental charges).

204. *See* I.R.C. §§ 162, 163, 164 (West Supp. 1998). The same is true for administrative guidance from the I.R.S. *See* Rev. Rul. 95-74, 1995-2 C.B. 36; Rev. Rul. 94-38, 1994-1 C.B. 35; *see also* I.R.C. § 198 (West Supp. 1998) (enacted in 1997 to deal with the tax treatment of costs of environmental remediation).

I advocate the reassessment of our current tax policies with population and environmental issues in mind.[205] Many tax provisions foster wasteful resource consumption, encourage questionable allocation of those resources, and promote reproduction.[206] As previously discussed,[207] our poor energy security indicates that the United States has exceeded its carrying capacity.[208] For example, our oil dependence may signal that we exceed our carrying capacity in ways that U.S. tax policy may help to reverse by affording economic and social incentives to discourage energy consumption or promote technological change.[209] Regrettably, however, Congress has historically implemented energy tax policy without consideration of energy consumption's effects on the environment.[210] More generally, notions of overpopulation likewise have not influenced our formation of tax policy.

In contrast, Congress rarely enacts legislation without considering its impact on the *economy*.[211] Although legislators sometimes study the environmental impact of more general legislation,[212] they rarely consider the population or environmental

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205. Virginia Abernethy promotes the concept of "green accounting," which captures the idea that the "depletion of natural capital impoverishes a society in the long run." ABERNETHY, *supra* note 25, at 6. This system adjusts the grand total of economic activity by subtracting the value of natural capital that has been *used up* once and for all. *See id.*

206. *See infra* Parts IV, V & VI.

207. *See supra* notes 52-62 and accompanying text.

208. *See* Strong, *supra* note 154, at 126. When asked about raising the price of energy to reflect social and environmental costs, Maurice Strong stated, "the most effective tool governments have is the tax system." *Id.* He noted that while Clinton's failed BTU tax was not popular, "it was an effort to increase the incentive to develop alternative sources, to make America less energy-intensive, to make it more competitive overall economically, and to decrease dependence on outside sources of oil." *Id.* Mr. Strong believes that "[a] tax is probably the best single method of accomplishing those goals. The marketplace as presently designed will not automatically incorporate the environmental costs of producing oil. It will take national policy." *Id.*

209. *See id.* at 128. Strong notes: "We have never had a successful major development of an energy source without substantial and sustained support at the level of government policies and tax incentives." *Id.*

210. *See infra* notes 706-50 and accompanying text (discussing extractive industries tax provisions and their origin).

211. *See* Omnibus Budget Reconciliation Act of 1993, Pub. L. No. 103-66, § 14001, 107 Stat. 312, 683; Omnibus Budget Reconciliation Act of 1990, Pub. L. No. 101-508, § 13101, 104 Stat. 1388-574 (codified as amended at 2 U.S.C.A. §§ 901-907d (West 1997 & Supp. 1998)); Balanced Budget and Emergency Deficit Control Act of 1985 (Gramm-Rudman-Hollings Act), Pub. L. No. 99-177, § 252, 99 Stat 1037, 1072 (codified as amended at 2 U.S.C.A. § 902 (West 1997 & Supp. 1998)) (requiring all legislation passed by Congress to be revenue neutral, the "pay-as-you-go" requirement, thus prompting economic analysis of all legislation).

212. *See* 42 U.S.C. § 4332 (1994) (requiring all federal agencies to complete an environmental impact statement for all "major federal actions").

impact of tax legislation.[213] Through carefully crafted tax policies, the United States could implement provisions that discourage overpopulation, discourage wasteful consumption, and still stimulate investment activity.

In the sections that follow, I examine ways in which tax policies might impact carrying capacity. Because carrying capacity depends on population size, resource quantities, and the consumption of those resources, I organize the tax policy analysis around these three components. First, I consider the impact of the tax code on reproduction. I discuss several tax provisions that directly and indirectly impact a parent's decision to have a child and the implications therefrom.[214] Second, I analyze the impact of tax policies on our current agricultural system as a proxy for assessing the quantity of resources.[215] In particular, I consider historical and current tax policies that have influenced modern agriculture to adopt environmentally unsound practices. Finally, I examine U.S. consumption patterns and the ways that tax policies may influence these patterns.[216]

IV. THE STORK: TAX POLICIES AND HAVING BABIES

A. *How Tax Policies Make More Work for the Stork*

Historically, national policies on population in the United States have reflected a pronatalist bias.[217] This position stems primarily from our Western patriarchal culture in which high fertility has been an integral part of religious, political, and economic doctrine.[218]

213. *See* Dunkiel, *supra* note 181, at 16 ("Relatively little is known about the environmental implications of most taxes, however, and policymakers seldom give the matter much thought.").

214. *See infra* Part IV.

215. *See infra* Part V.

216. *See infra* Part VI.

217. Paul Ehrlich believes that "retrograde population policies on the part of the Reagan and Bush administrations, especially in limiting family planning aid, greatly hindered progress toward a sustainable world, and greatly harmed women in the process." EHRLICH ET AL., *supra* note 1, at 103. While Ehrlich believes that the Clinton administration has implemented more ethical policies, he fears that "the human future may already have been badly compromised." *Id.*; *see also* Enke, *supra* note 86, at 95 (recognizing that the U.S. has had an implicit pronatalist policy); Ben J. Wattenberg, *The Easy Solution to the Social Security Crisis*, N.Y. TIMES, June 22, 1997, § 6 (Magazine), at 30, 31 (advocating increased immigration and pronatalism as a solution to the social security crisis).

218. *See* Paula Abrams, *The Tradition of Reproduction*, 37 ARIZ. L. REV. 453, 454 (1995).

Likewise, government regulation of reproductive decisions has been pronatalist.[219] As a result, the ideas presented in this Article represent a departure from tradition. To some, these ideas may seem quite radical, and even unconstitutional.[220] Nonetheless, because the magnitude of overpopulation issues is potentially so great, we may be forced to reconsider these traditions.[221]

Consistent with national population policies, U.S. tax policies historically have been pronatalist, primarily through government subsidies that provided for the financial burden of children. For example, the tax system subsidizes childbearing through the dependency exemption, which increases as the number of children in the household increases.[222] This approach, however, is shortsighted in so far as it only considers the burden of children in an individual family. Overpopulation problems mandate that tax policies also consider the societal costs of each child.[223] Included in these societal costs is the collateral harm that children suffer from living in an overpopulated world. For example, hunger-related deaths are most often suffered by infants and small children.[224] In poor families,

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219. *See id.* at 491. In more recent times, this pronatalist tradition has come into conflict with reproductive rights issues, such as abortion. *See id.*; *see, e.g.*, Roe v. Wade, 410 U.S. 113 (1973) (analyzing state abortion statutes under a fundamental rights test).

220. For discussion of the constitutional issues involved such as privacy rights and freedom of religion, see Abrams, *supra* note 218, at 484-500; Rabin, *supra* note 11, at 1363-99 (concluding that ideas, such as those presented in this Article, would pass constitutional muster).

221. For an excellent article discussing the discriminatory impact these traditions have had on women, see Abrams, *supra* note 218. For example, women traditionally could not own or inherit property and were expected to serve men and produce heirs. *See* Abrams, *supra* note 218, at 481-82.

222. "Income tax laws exert some influence on reproductive decisions through deductions for unlimited numbers of dependent children. If nothing else they send a message of approval for large families." EHRLICH ET AL., *supra* note 1, at 109. Since 1995, when the Republicans became the majority, Congress has enacted U.S. tax laws that are essentially pronatalist. *See, e.g.*, I.R.C. § 24 (1997) (allowing a child tax credit of $500 to each qualifying child).

223. Families have the right to determine the number and spacing of their children. However, we must temper this legal right with a couple's moral obligation to act responsibly and in a manner that benefits the needs and welfare of the community as a whole. *See* Rabin, *supra* note 11, at 1382-90; Lisa B. Gregory, Note, *Examining the Economic Component of China's One Child Family Policy Under International Law: Your Money or Your Life*, 6 J. CHINESE L. 45, 46 (1992) (concluding that China's one-child family policy would conform to international conventions); Note, *Legal Analysis and Population Control: The Problem of Coercion*, 84 HARV. L. REV. 1856, 1902-06 (1971) (analyzing the constitutionality of using coercive measures to control population growth and concluding that such measures would pass constitutional muster). *See generally* Abrams, *supra* note 218 (discussing reproductive tradition in the United States).

224. *See* EHRLICH ET AL., *supra* note 1, at 22.

fathers generally are fed first; women and children are last.[225] The children, however, are most vulnerable to malnutrition and diseases.[226] Furthermore, to the extent that the number of poor families increases, studies show that such economic deprivation is readily transmitted to their children.[227] Far from condemning children to a life of poverty and misery, however, these suggestions in this Article will contribute to forestalling the terrible consequences that stem from overpopulation.

A recent article by Jonathan Barry Forman indicates that having children does make a federal income tax difference, particularly at the poverty level.[228] He analyzed the income and social security tax liabilities of individuals with incomes at or below the U.S. Department of Health and Human Services' poverty income guidelines,[229] concluding that low-income families *with children* generally would not owe any federal taxes for 1996.[230] In contrast, he found that some low-income unmarried individuals and childless couples would owe federal taxes for 1996 because federal tax thresholds were lower than poverty income guidelines.[231] This difference between married couples with children and childless couples or single individuals results from a combination of the standard deduction, personal exemptions, and the earned income credit.[232] These phenomena prompt population scientists to urge that we make structural changes in our economy so children no longer constitute sources of income.[233]

A preliminary consideration, of course, is whether tax policy can or should influence reproduction. Some argue that we should not use tax policy as a tool to implement reproductive policy.[234] One

225. *See id.*

226. *See id.*

227. *See* Marya Burinic, *Population Policy and Family Planning Programmes: Contributing from a Focus on Women*, *in* THE COMPLEX REALITY, *supra* note 4, at 223-24.

228. *See* Jonathan Barry Forman, *Poverty Levels and Federal Tax Thresholds: 1996*, 71 TAX NOTES 943, 943-46 (1996).

229. *See id.*

230. *See id.*

231. *See id.*

232. *See id.*

233. *See* EHRLICH ET AL., *supra* note 1, at 87. Ehrlich believes the cost of children should "compete for income dollars with consumer durables such as TV sets and automobiles." *Id.*; *see also* Partha Dasgupta, *The Population Problem*, *in* THE COMPLEX REALITY, *supra* note 4, at 169-70 (proposing policies for "alleviating the population problem [that] increas[e] the costs of children [and] reduc[e] the benefits of reproduction.").

234. *See* Zelenak, *supra* note 11, at 398; *see also* Bittker, *supra* note 11, at 1449

commentator suggests that the current total fertility rate is so close to replacement level that it is difficult to make the case for the existence of any sort of population crisis.[235] This view, however, misconceives the overpopulation problem.[236] While we in the United States may be bearing children at near replacement level, each U.S. child is on average the equivalent of at least twelve children in underdeveloped countries.[237] Therefore, even if our fertility rate is low, the impact of our population on our resources is enormous. A 14% shrinkage in the U.S. population—back to 224 million people—would remove roughly as much pressure from the Earth's ecosystems as a reduction of 400 million people in poor countries.[238] Even those who advocate an increase in child-related tax breaks recognize that "[f]or a society troubled by overpopulation, not every birth would represent a contribution to society."[239]

Overpopulation is both a community issue and a global one: In the long run, children will suffer the most from a failure to address these problems.[240] Changing the incentive structure will be instrumental in encouraging society to change its behavior. Parental demand, more than any other factor, determines family size.[241] If parents *perceive* children as too costly, then demand for children will diminish.[242]

One commentator has concluded that, although using the tax system to encourage population growth has been ineffective, a system

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(arguing that most people do not consider tax implications when deciding whether to procreate).

235. *See* Zelenak, *supra* note 11, at 398. The total fertility rate ("TFR") is the average number of children per woman. Technically, it is the number of births that 1000 women would have in their lifetime if, at each year of age, they experienced the birth rates occurring in the specified year. Replacement level TFR is 2110:1000. Due to childhood deaths and a higher male birth rate, the ratio is over 1 to 1. *See* STATISTICAL ABSTRACT, *supra* note 9, at 77 tbl.94.

236. *See supra* Part II.

237. *See* EHRLICH ET AL., *supra* note 1, at 26-27.

238. *See* EHRLICH ET AL., *supra* note 1, at 265.

239. Charles R. O'Kelley, Jr., *The Parenting Tax Penalty: A Framework for Income Tax Reform*, 64 OR. L. REV. 375, 406 n.102 (1986).

240. Ehrlich suggests that we view the problem from a child's perspective:

> Since all children have impacts on local, regional, and global life-support systems, the number of children a person has, like each person's patterns of consumption, are a legitimate concern of the children themselves (whose well-being may be strongly affected by the number of their siblings), their families, their communities, their nations, and civilization as a whole.

EHRLICH ET AL., *supra* note 1, at 277.

241. *See generally* Dasgupta, *supra* note 27, at 1887 (linking population growth to education and social status of female as well as male parents).

242. *See id.*

that included disincentives to have children would work.[243] He suggests that people rarely decide to have children because the government will subsidize the cost, but they frequently decide not to have children if they feel they cannot afford them.[244] Therefore, increasing the disincentive to have children, by additional taxes or the elimination of subsidies, would be effective in reducing population, even though tax incentives probably have not worked to increase family size.

In fact, we in the United States occasionally have debated tax proposals to encourage child birth as well as tax proposals to discourage child birth.[245] Most proposals have recommended either increasing or decreasing the dependency exemption or substituting a dependency credit for the dependency exemption.[246] An interesting aspect of these proposals is their chronology. The only legislative proposal supporting a U.S. policy of population control was introduced in Congress in 1970, the year after President Nixon commissioned the study on overpopulation.[247] In contrast, proposals favoring pronatalist policies have appeared more recently.[248] This trend reveals current policymakers' denial of the population problem.[249]

Others insist that the United States abandoned President

243. *See* Rabin, *supra* note 11, at 1365 (citing studies concluding that pronatalist programs have had no significant impact on the birth rate); *see also* ABERNETHY, *supra* note 25, at 74, 80 (claiming that penalizing incremental fertility works while subsidizing the costs if children encourages a preference for large families).

244. *See* Rabin, *supra* note 11, at 1365 (citing the steep drop in the U.S. birth rate during the 1930s, which some have attributed to the Great Depression); *see also* JUDITH JACOBSEN, PROMOTING POPULATION STABILITY: INCENTIVES FOR SMALL FAMILIES, 23 (1983) (arguing that economic disincentives are an effective means of discouraging people from having lots of children because parents often choose to have fewer children when economic times are tough).

245. *See* Zelenak, *supra* note 11, at 397.

246. *See id.* at 356 nn.38-40.

247. *See* S. 3632, 91st Cong. (1970). For a discussion of the study commissioned by President Nixon, see *supra* notes 109-40 and accompanying test.

248. *See* WATTENBERG, *supra* note 85, at 150-51; *see also* S. 949, 105th Cong. § 101 (1997) (proposing a $500 per child tax credit); H.R. 2014, 105th Cong. § 101 (1997) (codified at I.R.C. § 24 (West Supp. 1998)) (same).

249. Several commentators have suggested that this movement away from concern about population problems relates directly to activities of the Vatican. *See* MUMFORD, *supra* note 6, at 95-371; Scheuer, *supra* note 8, at 204 (1992). Apparently, President Nixon publicly rejected the population report hoping to attract Catholics to vote for him in 1972. *See* MUMFORD, *supra* note 6, at 95. According to Mumford, an organized group of Catholic Bishops convinced Presidents Nixon, Ford, Carter, Reagan, and Bush that without the support of the Catholic vote, which the bishops claimed to control, the presidency would be out of reach. *See id.* at 95-130. Overpopulation problems have not disappeared since 1970, but they are, unfortunately, politically unpopular. *See id.*

Nixon's policies because we lowered our total fertility rate ("TFR") to replacement level.[250] In fact, substantial evidence suggests that lower U.S. TFR levels had very little to do with abandonment of U.S. population policies.[251] The evidence suggests instead that politics played a significant role in the abandonment of these carefully thought out policies.[252] In any event, politicians face the fall out from exacerbated population problems today.

In 1970, Senator Bob Packwood introduced a tax proposal with the stated purpose of reducing the U.S. population.[253] It is the only tax proposal ever introduced in Congress with the purpose of encouraging smaller families.[254] It provided that, beginning January 1, 1973, no income tax dependency deductions would be allowed for more than two natural children.[255] It would have grandfathered children already born. The two-child limitation also would not have applied to adopted children or to children who were the result of multiple births if their birth occurred when the parents had less than two children.[256] Senator Packwood recognized that his proposal had limited impact on very rich and very low income taxpayers.[257] Critics of the proposal argued that, because the two-child limit would not impact these families, Congress should not enact it.[258] In response, Senator Packwood emphasized that the critical reason for passage was to make clear that the government supported population stability.[259] Furthermore, Senator Packwood's proposal to limit the dependency exemption to two children accompanied proposals concerning family planning and legalized abortion, as part of a

250. *See* Zelenak, *supra* note 11, at 398 n.246.

251. *See generally* MUMFORD, *supra* note 6, 363-71 (claiming, inter alia, that politics and influence from the Vatican are the main influences on U.S. population policy).

252. *See* EHRLICH ET AL., *supra* note 1, at 104-05; MUMFORD, *supra* note 6, 363-71; Scheuer, *supra* note 8, 203.

253. *See* S. 3632, 91st Cong. (1970).

254. *See* Senator Bob Packwood, *Incentives for the Two-Child Family*, TRIAL, Aug.-Sept. 1970, 13, 13.

255. *See id.*

256. *See id.* at 16.

257. *See id.*

258. *See id.*

259. *See id.* Population experts believe that the government's message is critical. "With a little leadership at the top—say a president who kept pointing out that patriotic Americans stopped at two children *maximum*—we could probably achieve [negative population growth] in the United States within a couple of decades." Ehrlich & Ehrlich, *supra* note 36, at 130; *see also* John R. Weeks, *How to Influence Fertility: The Experience So Far*, *in* ELEPHANTS IN THE VOLKSWAGEN, *supra* note 36, at 195-96 (noting that a "consistent set of governmental initiatives aimed at lower fertility is almost certain to have the long-term effect of leading couples to think more consciously about the family size decisions").

comprehensive population reduction program.[260] Senator Packwood believed that the combination of these proposals would have a dramatic effect on stabilizing the population and waylaying environmental doom.[261]

Current policymakers lack the foresight Senator Packwood showed in 1972, insofar as they ignore the effects that promotion of pronatalist policies will have on U.S. overpopulation problems. For example, Congress recently enacted a $500 per child tax credit,[262] in addition to existing benefits.[263] Furthermore, if Congress wants to increase savings in this country, reducing incentives to have children would certainly help, because each birth in this country likely brings yet another high-consuming lifestyle.[264]

Greater foresight is revealed in measures like President Clinton's $5000 tax credit for families who adopt children and his proposal to remove long-standing roadblocks to interracial adoption.[265] Though Clinton has not promoted this measure as part of a population control policy, it would have this effect. By advocating adoption, families can achieve their desired family size without bringing additional children into the world. Of course, adoption has the added benefit of eliminating the governmental costs—both economic and social—of raising unwanted children.[266]

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260. *See* Packwood, *supra* note 254, at 16.

261. *See id.* at 16. Packwood's proposal is considered in more detail in text *infra* accompanying notes 296-99.

262. *See* H.R. 2014, 105th Cong., § 101 (1997) (codified at I.R.C. § 24 (West Supp. 1998)).

263. *See infra* Part IV.B (discussing existing tax benefits for children).

264. As of 1995, Americans consumed all but 4.5% of their disposable income. *See* STATISTICAL ABSTRACT, *supra* note 9, at 451 tbl.696.

265. *See* I.R.C. § 23 (West Supp. 1998) (effective for tax years beginning after December 31, 1996).

266. Foreign adoptions raise additional issues. Certainly, from one perspective, Americans who adopt foreign children are to be applauded; they care for a child already born. On the other hand, one might question whether foreign adoptions do not encourage foreign governments to rely on U.S. adoptions as a population safety valve. The same is true for U.S. immigration policies. It is questionable whether the general welfare of Americans can be maintained "[w]ith legal and illegal immigration now surpassing one million annually." Scheuer, *supra* note 8, at 204. For example: "It will become increasingly difficult to provide the proper education to additional millions of immigrants . . . when we already [are] failing to educate our own population adequately." *Id.*; *see also* Martin & Midgley, *supra* note 38, at 1 (explaining current immigration patterns and policies in the United States). Current immigration policies contribute substantially to U.S. population increases. If immigration remains at its current levels, the U.S. population will hit at least 383 million by 2050, nearly 25% larger than if immigration had stopped in 1993. *See* Martin & Midgley, *supra* note 38, at 5. As a general rule, immigrants have higher fertility rates than native-born Americans, which accentuates immigration's impact on population growth. *See id.* Additionally, a greater

In sum, tax policy can serve as a useful tool in influencing reproductive behavior. In the following discussion, I examine several Code sections that subsidize family responsibilities relating to children and how these provisions aggravate population problems.[267]

B. *The IRS and the Stork: Specific Examples*

1. Dependency Exemption

The dependency exemption is the most obvious tax incentive promoting childbirth. The exemption is a flat $2650 deduction for each dependent child, regardless of how many children the taxpayer may have.[268] Thus, the more dependent children a couple has, the greater the tax benefit. The amount a taxpayer saves via the exemption, however, depends on the taxpayer's marginal tax rate.[269] Moreover, the exemption is phased out after a taxpayer's income reaches a certain threshold.[270] As a result, high income parents receive no exemptions for their dependents.[271] The resulting exemption conceivably provides an incentive to lower and middle income taxpayers to have more children.[272]

Commentators have offered various rationales for the dependency exemption.[273] Ability to pay, the primary justification

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percentage of immigrants than native-born Americans are of reproductive age. *See id.* at 7; ABERNETHY, *supra* note 25, at 209-11; *see also* Peter L. Reich, *Environmental Metaphor in the Alien Benefits Debate*, 42 UCLA L. REV. 1577, 1583 (1995) (discussing the economic contribution made by immigrants in the United States). Regardless of one's views on immigration, the vast majority of immigrants are taxpayers; thus, the suggestions in this Article impact them as well. *See* Martin & Midgley, *supra* note 38, at 32.

267. *See infra* notes 269-345; Zelenak, *supra* note 11, at 350.

268. *See* I.R.C. § 151(d)(1), (4) (West Supp. 1998). The amount of the exemption is indexed for inflation, and is $2650 for 1997. *See* Rev. Proc. 96-59, 1996-2 C.B. 395.

269. For a taxpayer in the 15% tax bracket, one $2650 exemption saves $397.50 in taxes. For a taxpayer in the 28% bracket, an exemption saves $742.

270. *See* I.R.C. § 151(d)(3) (West Supp. 1998). For a married couple filing a joint return, the threshold level was $181,800 in 1997. For a head of household, the threshold was $151,500. *See* Rev. Proc. 96-59, 1996-2 C.B. 396.

271. For each $2500 by which Adjusted Gross Income exceeds the threshold, the taxpayer loses 2% of all exemptions. For 1997, the exemption was completely phased out at $304,300 for a joint return and $274,000 for head of household. *See* Rev. Proc. 96-59, 1996-2 C.B. 396.

272. *See* Wattenberg, *supra* note 217, at 30 (suggesting that, although he believes we should provide incentives to have children, the new $500 per child tax credit is not enough to raise fertility rates).

273. These rationales can be classified as either tax-internal or tax-external. Both have justified the dependency exemption. *See* Zelenak, *supra* note 11, at 357. A tax-internal rationale stems from some guiding principle within the tax system. A tax-external rationale stems from use of the tax system as a policy tool (i.e., those items the

for allowance of a dependency exemption,[274] rests on the proposition that a fair tax system must tax only discretionary income—income above the subsistence level.[275] Accordingly, income tax liabilities should vary with ability to pay. Family responsibilities affect ability to pay; therefore, one might conclude that the dependency exemption is necessary to adjust for these family responsibilities.[276]

Yet if ability to pay is its only justification, the current dependency exemption loses force for taxpayers with higher incomes, because of the phase out.[277] To the extent we are attempting to adjust for ability to pay and not merely trying to protect persons at lower income levels, then even at a very high income level, a person with dependent children has less ability to pay than a similarly situated person with no children. Thus, ability to pay may not completely explain the dependency exemption.

One might instead view the money parents spend on children as voluntary consumption expenditures.[278] As such, these expenditures would have no more relevance to ability to pay than expenditures for food, clothing, or vacations.[279] Some argue, however, that raising children is not voluntary.[280] But one *can* limit the size of one's family. Under an income tax, if we viewed the cost of children as consumption, a dependency exemption would not be warranted.

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federal government designates as tax expenditures).

274. *See id.*

275. Ability to pay is "the capacity of paying without undue hardship on the part of the person paying or an unacceptable degree of interference with objectives that are considered socially important by other members of the community." RICHARD B. GOODE, THE INDIVIDUAL INCOME TAX 18 (1964). Tautological, of course, this definition concludes that society should tax what it should tax. *See* Alvin Warren, *Would a Consumption Tax Be Fairer Than an Income Tax?*, 89 YALE L.J. 1081, 1092 (1980). I do not challenge the tautology but merely question what society should tax.

276. *See* STAFF OF SENATE COMM. ON FINANCE, 105TH CONG., 1ST SESS., REPORT ON THE REVENUE RECONCILIATION ACT OF 1997, at 3 (Comm. Print 1997) (discussing the reasons for implementing a $500 per child tax credit as taking into account a family's ability to pay taxes as family size increases); Zelenak, *supra* note 11, at 357.

277. *See* Zelenak, *supra* note 11, at 366-67.

278. *See* HENRY C. SIMONS, PERSONAL INCOME TAXATION 140 (1938); Bittker, *supra* note 11, at 1445; Zelenak, *supra* note 11, at 359 (attributing the argument to Henry Simons).

279. We currently do not allow taxpayers to deduct the cost of food, clothing, or vacations. *See* I.R.C. § 262 (West Supp. 1998).

280. *See* Zelenak, *supra* note 11, at 359. Zelenak contends that the initial decision to have a child may not necessarily be voluntary. Even if the acquisition of the child is voluntary, he argues that a parent's continued support obligation for that child is not voluntary. *See id.* at 360. *But see* Ehrlich et al., *supra* note 26, at 30-31 (noting that while sometimes medical expenses are beyond a person's control, justifying a tax deduction, individuals can control family size; therefore, the dependency exemption is not warranted).

Even those who take this position, however, are reluctant to abandon family responsibility completely in determining tax liability.[281] Nonetheless, whether one views children as a parent's consumption choice or as a legitimate constraint on taxpaying ability, when determining how tax policy should take population into account, these arguments set the parameters for debate.

Were the world not already seriously burdened by overpopulation, one might more readily view the choice to have a child as a legitimate factor in ability to pay analysis. But one must, in our overpopulated world, balance the societal burden of supporting more children against an individual family's ability to pay. A family that decides to have a child imposes staggering and growing costs on society.[282] Those costs, at the societal level, far exceed those of the family. Thus, any tax provision that is not, at a minimum, neutral regarding childbirth must either serve an extraordinary need or be discarded.

For example, evidence indicates that there are economies of scale as family size increases.[283] Therefore, based on ability to pay, one *could* argue that the dependency exemption should decrease as the number of children increase. Prudent population policy, however, insists that, *at a minimum* (because we are taking into account some notion of ability to pay), the exemption *decrease* with increasing numbers of children.

Various studies suggest, however, that the 1986 exemption levels assumed inaccurately low poverty levels.[284] Those who adhere to the ability to pay justification for the dependency exemption draw support for their arguments for an increase in the amount of the

281. *See* Bittker, *supra* note 11, at 1446-47.

282. For example, public education costs, infrastructure costs, and environmental improvement costs will all increase due to added population pressure. *See* ELEPHANTS IN THE VOLKSWAGEN, *supra* note 36, at 147-48. In 1981, estimates indicated that raising children cost about 10% to 16% of GNP. *See id.* Another societal cost of too many people involves the overcrowding that increased population size ultimately causes. For example, dense populations provide a "fertile ground for the spread of viruses." Dasgupta, *supra* note 233, at 166. Individually, however, a family would not take societal crowding into account when deciding whether or not to have a child because families usually have access to environmental resources that are common property. As a result, they do not fully bear or take into account the societal cost of rearing their children. *See id.*

283. *See* Zelenak, *supra* note 11, at 382. The evidence suggests that the economies of scale are approximately 5 to 10%. *See id.* (citing THOMAS J. ESPENSHADE, INVESTING IN CHILDREN 4 (1984)).

284. *See id.* at 385.

exemption from these studies.[285] From a population perspective, it might be better to offer a larger exemption for the first two children, but no exemption for any subsequent child in order to encourage zero population growth.[286]

Some commentators suggest that the dependency exemption is too small to have much influence on a family's decision to have a child.[287] However, a very small influence can be significant for population reduction, because even minute changes in the birth rate produce enormous differences in the ultimate population size.[288] Again, "[b]ecause each person in the United States wields so much power in resource use and environmental harm, *each person counts a great deal.*"[289] Boris Bittker has suggested that the dependency exemption is perhaps more important as a symbol of national policy than as an influence on the birth rate.[290] If we were to use the dependency exemption to express population policy, Bittker would deny the deduction for a year or two after the birth of an "excess" child, as a symbolic measure, then restore it in order to measure the parents' taxpaying ability more adequately.[291]

Those favoring the dependency exemption have offered two additional rationales. First, they argue we should subsidize parental care of children because of the benefits to society of well-reared children.[292] Second, they argue the government should make sure that parents have the means to provide the necessary care for their

285. *See id.*; *Reclaiming the Tax Code*, *supra* note 76, at 39-41 (statement of Robert Shapiro, Vice President, Progressive Policy Institute).

286. Other commentators believe, however, that it would be inappropriate, in light of parental obligations, to decrease child-care related tax benefits for existing children in order to discourage excessive additional births. Grandfathering can easily address such concerns. *See* O'Kelley, *supra* note 239, at 406; Orts, *supra* note 144, at 1264-65.

287. *See, e.g.*, Schaffer & Berman, *supra* note 11, at 689.

288. *See id.* at 691.

289. Jacobsen, *supra* note 38, at 272 (emphasis added).

290. *See* Bittker, *supra* note 11, at 1449; *see also* PCSD REPORT, *supra* note 11, at 8 (noting that one common suggestion from those interested in financial incentives is limiting the federal tax deduction to two children only). The PCSD Report concludes that "[i]t is unlikely that this would affect child bearing . . . because of the extent of unintended fertility. But such an action could have symbolic value; the federal government would be stating an official, rhetorical preference for small families by adopting such a provision." *Id.*

291. *See* Bittker, *supra* note 11, at 1449.

292. *See Reclaiming the Tax Code*, *supra* note 76, at 52 (stating that the Heritage Foundation claims that children should be viewed as a socially beneficial private investment); ELAINE C. KAMARCK & WILLIAM A. GALSTON, PROGRESSIVE POLICY INSTITUTE, PUTTING CHILDREN FIRST: A PROGRESSIVE FAMILY POLICY FOR THE 1990S, at 22 (noting that nurturing children has great societal value); Zelenak, *supra* note 11, at 357.

children.[293] In other words, we view an investment in children as good for society or as necessary to ensure that children eat. The current dependency exemption, however, fails under either view. If we view children as good for society, the phase out of the exemption makes little sense. Furthermore, if we want to ensure that children eat, a means-tested child-care subsidy or food subsidy would be more effective. As noted by Professor Lawrence Zelenak: "There is no reason to expect that society will get much return on a tax subsidy that requires so little of parents beyond adding the child to the family."[294] Thus, neither rationale fully explains the current dependency exemption.

In light of the significance of current population problems, the tax system should *at a minimum* be reproduction neutral. Ideally, it should discourage reproduction, or at least "excess" reproduction.[295] If we analogize giving subsidies for children to giving subsidies for spouses, providing a subsidy for more than one spouse would seem preposterous. Yet, if a two-child family were to violate social and legal norms, as does bigamy, then offering a tax subsidy for the second child would seem as preposterous as does offering a tax subsidy for a second spouse. A government for which resources are scarce should spend every dollar wisely and cautiously. When we consider competing goals—reducing overpopulation versus concern for family responsibility—it seems clear that the dependency exemption is far too broad.

In his 1970 proposal, Senator Packwood explicitly sought to reduce population growth by limiting the dependency exemption to a taxpayer's first two children.[296] Some proponents of population reduction criticized the Packwood proposal as too modest, because it only discouraged third and later children.[297] Because a higher percentage of births were first or second children, and because a larger percentage of third or later births occurred in non-taxpaying families, Professor Edward Rabin concluded that the denial of the exemption would have little effect.[298] Professor Rabin proposed two

293. *See* Ehrlich et al., *supra* note 26, at 31. These rationales represent tax-external arguments and depend on the usefulness of the tax laws in promoting particular non-tax objectives.

294. Zelenak, *supra* note 11, at 389-90.

295. By "excess," I mean reproduction above either replacement level or some agreed upon level necessary to reduce the population to its agreed upon optimum size.

296. *See* Packwood, *supra* note 254, at 13.

297. *See* Rabin, *supra* note 11, at 1366.

298. *See id.* at 1366-67. Rabin supports these conclusions using statistics from 1968 Census data. *See id.*

alternatives: complete abolition of the dependency exemption or a compromise proposal.[299]

Abolition of the dependency exemption would prevent tax policy from encouraging the birth of even the first two children.[300] Rabin believed that the financial hardship of raising two children without a deduction would more effectively discourage a third child than denying the deduction for the third child.[301] He also concluded that denial of the deduction for the first child could postpone its birth, thus reducing the likelihood of a third child and increasing the gap between generations, both resulting in lower population growth.[302]

Because complete abolition seemed too politically extreme, Rabin offered an alternative. The compromise proposal contemplated "no exemption for the first three children" and would have permitted "only modest exemptions for additional children."[303] Like the deduction for extraordinary medical expenses, the dependency exemption would be available only to those with extraordinary parental expenses (that is, those with four or more children). Although appearing to reward large families, removing the exemption for the first three children would more than offset any benefit from the fourth.[304] Finally, from a tax equity standpoint, Rabin argued that it would be fairer to give the exemption to larger families that are in greater need.[305]

To summarize, at least four methods of reforming the dependency exemption might act to influence reproduction: (1) repealing the exemption altogether; (2) allowing an exemption for only two children (based on the notion that two children are an acceptable level of reproduction); (3) disallowing the exemption except in extraordinary circumstances (for example, the birth of a fourth child); and (4) denying the deduction for a year or two after the birth of an "excess" child. All of these proposals appeared in the early 1970s, when population problems were far less severe than they are today.[306] A reassessment of the dependency exemption suggests that only the most stringent of these proposals would be prudent

299. *See id.* at 1367.
300. *See id.* at 1368.
301. *See id.*
302. *See id.*
303. *Id.*
304. *See id.* at 1369.
305. *See id.*
306. *See supra* Part II.C.

policy today.[307] This conclusion is particularly persuasive when we reconsider the less than compelling rationales in support of the current exemption.

Ability to pay, some argue, mandates the dependency exemption.[308] However, ability to pay is a normative notion relying on societal values because, as already mentioned, it means that "society should appropriately tax what it should appropriately tax."[309] I believe that policymakers should consider the following propositions in determining what our society should appropriately tax. First, a responsible family has an obligation to society to take overpopulation into account when determining family size. Second, as to low-income taxpayers, the earned income credit provides a better means of subsidizing family responsibilities than deductions like the dependency exemption.[310] Third, an unreasonably large family size should not factor into ability to pay. Fourth, to the extent that today's families value their current lifestyles, smaller families might help to protect this lifestyle for future generations. Fifth, the costs to society of overpopulation are becoming increasingly oppressive and require immediate consideration.[311] Finally, to the extent that tax subsidies relieve today's families of the burden of excess children, future generations will bear that burden.

A cogent response to those who believe the dependency exemption is necessary on an "ability to pay" argument, however, is that if we truly care about the effect that children have on ability to pay, a better concern would be to reintroduce greater progressivity into the tax rate structure.[312] Policymakers historically have used

307. A number of countries have eliminated income tax deductions for dependent children in light of population concerns. In Singapore, taxpayers can take a full dependency exemption for only two children, and a limited deduction for a third. *See* JACOBSEN, *supra* note 244, at 21, 22. The United Kingdom income tax system does not allow tax exemptions for children beyond the first child. That system allows only one exemption and then only in the case of a single parent. *See* John Tiley & David Williams, *Environmental Taxes in the United Kingdom, in* TAXATION FOR ENVIRONMENTAL PROTECTION: A MULTINATIONAL LEGAL STUDY 159, 173 (Sanford E. Gaines & Richard A. Westin eds., 1991).

308. *See* Zelenak, *supra* note 11, at 357.

309. Warren, *supra* note 275, at 1092.

310. *See infra* Part IV.B.3 (discussing the earned income credit and family responsibility).

311. *See supra* Part II.

312. *See* Allan Carlson, *A Pro-Family Income Tax*, 94 PUB. INTEREST 69, 75 (1989) (suggesting that from the perspective of the family, a somewhat progressive income tax structure is superior because a flat tax generally shifts the tax burden from the wealthy to the middle class); Schaffer & Berman, *supra* note 11, at 693 (suggesting that one reason *not* to take the dependency exemption out of the tax code is because it would reduce

progressivity as a tool for redistribution,[313] yet progressivity does not possess the negative characteristic of promoting larger families. In fact, one negative consequence of U.S. overpopulation problems in the last twenty years has been the increasing gap between the rich and the poor.[314] Many believe that the middle class is a vanishing breed.[315] Progressivity and its redistributional effects could work toward halting or possibly decreasing the gap between the rich and poor in the United States, while remaining neutral on family-size decisions.[316]

In sum, the dependency exemption should be repealed. In light of population problems, it sends the wrong message. To the extent we should consider family responsibility in determining tax liability, the dependency exemption is much too imprecise.

2. Head-of-Household Status

Another tax provision affected by the presence of children is head-of-household status. The benefits of the dependency exemption increase with the addition of each child. In contrast, head-of-household status produces a large benefit for the first child of an unmarried taxpayer, but no additional benefit for more children.[317]

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progressivity).

313. *See* JOHN RAWLS, A THEORY OF JUSTICE 277-78 (1971); Joseph Bankman & Thomas Griffith, *Social Welfare and the Rate Structure: A New Look at Progressive Taxation*, 75 CAL. L. REV. 1905, 1906 (1987); Walter J. Blum & Harry Kalven, Jr., *The Uneasy Case for Progressive Taxation*, 19 U. CHI. L. REV. 417, 418 (1952).

314. *See* Postel, *supra* note 50, at 5. In 1960, the richest 20% of the world's people absorbed 70% of global income; by 1989, the share of the wealthy had climbed to nearly 83%. *See id.* The poorest 20% saw their share of global income drop from an already meager 2.3% to just 1.4%. *See id.*; *infra* note 100. The ratio of the richest fifth's share to the share of the poorest thus grew from 30 to 1 in 1960 to 59 to 1 in 1989. *See* Postel, *supra* note 50, at 5.

315. *See Reclaiming the Tax Code*, *supra* note 76, at 15 (statement of Celinda Lake, Vice President, Greenberg-Lake, Washington, D.C.); Dasgupta, *supra* note 27, at 1898; Postel, *supra* note 50, at 5.

316. Partha Dasgupta believes that this widening gap results from a combination of higher fertility and more demand for scarce resources among the poor. Members of the middle class, having greater access to resources, are able to limit family size and propel themselves into higher income levels. *See, e.g.*, Dasgupta, *supra* note 27, at 1898 (discussing the lower fertility rates among urban middle class families in India). This rich/poor gap is a major cause of environmental decline. It fosters overconsumption at the top and persistent poverty at the bottom. Ample evidence indicates that people on either end of the income scale are far more likely than middle income people to damage the Earth's ecological health. The rich are very high consumers of energy, raw materials, and manufactured goods, and the poor must often cut trees, grow crops, or graze cattle in destructive ways merely to survive from day to day. *See* Postel, *supra* note 50, at 5-6.

317. A taxpayer qualifies for head-of-household status if, at the end of the tax year, the individual is not married and has at least one dependent. *See* I.R.C. § 2(b) (West

Head-of-household status increases both a taxpayer's standard deduction and his or her tax rate schedule.[318] For the 1997 tax year, a single taxpayer with no dependents would have been entitled to a standard deduction of $4150 and reaches the 36% tax bracket at $124,650 of taxable income,[319] while a head-of-household taxpayer is entitled to a standard deduction of $6050 and reaches the 36% bracket at $138,200 of taxable income.[320] Neither a married couple's standard deduction nor its rate schedule increases with the addition of a dependent.[321] Finally, head-of-household benefits continue regardless of income, unlike the dependency exemption, which is phased out at higher income levels. Thus, a taxpayer who qualifies as a head of household is allowed a standard deduction of $6050, a dependency exemption for each dependent child, and taxable income is subject to a lower tax rate—a significant tax subsidy for a single parent.[322]

The head of household's unique status results primarily from history and politics, rather than well-reasoned policy. In 1948, Congress designed a rate schedule for married taxpayers that permitted income splitting, effectively doubling the amount of income in each tax bracket for married taxpayers, as compared with single taxpayers.[323] Although this change did not correlate with family responsibilities and was enacted to equalize separate and

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Supp. 1998).

318. *See id.* § 1(b) (West Supp. 1998) (setting the tax rates for head of household); Rev. Proc. 96-59, 1996-2 C.B. 393 (same); I.R.C. § 2(b)(1) (West Supp. 1998) (defining head of household); *id.* § 63(c) (West Supp. 1998) (setting the standard deduction for head of household); Rev. Proc. 96-59, 1996-2 C.B. 395 (same).

319. *See id.* § 63(c)(2)(c) (West Supp. 1998) (standard deduction); Rev. Proc. 96-59, 1996-2 C.B. 395 (same); I.R.C. § 1(c) (West Supp. 1998) (rate schedule); Rev. Proc. 96-59, 1996-2 C.B. 393 (same). All taxpayers move into the highest tax bracket, 39.6%, at $271,050 of taxable income. *See* I.R.C. § 1(a)-(c) (West Supp. 1998); Rev. Proc. 96-59, 1996-2 C.B. 393.

320. *See* I.R.C. § 63(c)(2)(B) (West Supp. 1998) (standard deduction); Rev. Proc. 96-59, 1996-2 C.B. 395 (same); I.R.C. § 1(b) (West Supp. 1998) (tax rate schedule); Rev. Proc. 96-59, 1996-2 C.B. 393 (same).

321. *See* I.R.C. §§ 1(a), 63(c)(2) (West Supp. 1998).

322. *See id.* § 1(b) (West Supp. 1998) (tax rate schedule); Rev. Proc. 96-59, 1996-2 C.B. 393 (same); I.R.C. § 63(c)(2)(B) (West Supp. 1998) (standard deduction); Rev. Proc. 96-59, 1996-2 C.B. 395 (same); I.R.C. § 151(c) (West Supp. 1998) (dependency exemption); Rev. Proc. 96-59, 1996-2 C.B. 395-96 (same).

323. In other words, a married couple can split their combined income into two halves and then apply to each half the single rate schedule. This has the effect of doubling (or widening) the tax brackets for a married couple. For example, a married couple with income of $30,000 can split the $30,000 equally between them and then apply the rate schedule separately to each $15,000 (effectively taxing the entire $30,000 at the lowest possible tax rate). A single person with income of $30,000 would not have this benefit.

community property jurisdictions, single parents complained that they needed similar consideration.[324] Congress succumbed and enacted head-of-household status in 1951.[325] As a result, the Code now treats a single person with a child more favorably than a married couple with a child.

Head-of-household status does not necessarily promote large families. A taxpayer with one dependent can take advantage of the benefit, but receives no additional benefits for more children. However, head-of-household status clearly does encourage the first child. One could reasonably argue that, because of the seriousness of overpopulation, we should abolish any incentive to have even one child. On the other hand, statistics show that women overwhelmingly tend to be the head of these single-parent families. In 1995, single males headed only 4.6% of the households in the United States, whereas single females headed 17.6%.[326] Furthermore, almost two-thirds of the poor adults in the United States are women, and a single mother heads more than half of all poor families.[327] Because financial independence of women correlates with reduced fertility,[328] a tax provision that helps mostly women might in fact do more to reduce fertility than to increase it.[329] No statistics exist regarding the effects of the tax subsidies and fertility in this country. Without more information, one might speculate that head-of-household status is more valuable as an empowerment tool for women than as a birth incentive. If so, we should retain it.

3. Earned Income Tax Credit

The earned income tax credit ("EITC") primarily seeks to subsidize low-wage persons who have parental responsibilities.[330]

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324. *See* Bittker, *supra* note 11, at 1417; Zelenak, *supra* note 11, at 404.

325. *See* Revenue Act of 1951, Pub. L. No. 183, § 301, 65 Stat. 452, 480-83 (current version at 26 U.S.C.A. §§ 1-2 (West 1997 & Supp. 1998)); Zelenak, *supra* note 11, at 404. Wider brackets and the larger standard deduction afford single parents some of the benefits of income splitting that married couples enjoy.

326. *See* STATISTICAL ABSTRACT, *supra* note 9, at 59 tbl.68.

327. *See* PCSD REPORT, *supra* note 11, Exec. Summary at 11.

328. *See* ABERNETHY, *supra* note 25, at 147; EHRLICH ET AL., *supra* note 1, at 100; JACOBSEN, *supra* note 244, at 31.

329. *See infra* Part IV.C (discussing the relationship between tax incentives and reduced fertility).

330. Congress greatly expanded the EITC in 1993. *See* Omnibus Budget Reconciliation Act of 1993, Pub. L. No. 103-66, § 13131(a), 107 Stat. 312, 433-35 (codified as amended at I.R.C. § 32 (West Supp. 1998)). Thereafter, it has assumed a major role in the U.S. welfare system. Thus, we now have a large-scale public assistance program that relies on the tax laws that have heretofore primarily applied to the taxpaying middle class.

The EITC is a refundable credit; thus, if the credit produces a negative tax liability, the government issues a check to the taxpayer for that amount. Although a childless wage earner receives a small credit,[331] the addition of a qualifying child increases both the credit percentage and the eligible wage base.[332] The addition of a second child results in even greater increases in both the credit percentage and the eligible wage base.[333] Families with more than two children yield no additional benefit.[334] The credit is, however, phased out at relatively low levels of income.[335]

Two explanations may account for why the EITC grants no additional wage supplement for more than two children.[336] The first relates to the distributional tables Congress used in determining how various tax changes affected different income groups. These tables were based on a tax filing unit (a household), without regard to

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Moreover, this welfare program is being administered by the Internal Revenue Service rather than by a governmental welfare agency. Low-income wage earners can claim benefits by merely filing a tax return. The hope is that the EITC will be less demeaning to recipients and cheaper to administer than traditional welfare programs. The EITC is expected to provide more subsidies than Aid to Families with Dependent Children (AFDC). For 1997, the EITC's projected subsidy to low income persons is $26.6 billion, while that of AFDC (federal and state) is $25.4 billion. *See* MARVIN A. CHIRELSTEIN, FEDERAL INCOME TAXATION: A GUIDE TO THE LEADING CASES AND CONCEPTS 173 (7th ed. 1994). Many of the suggestions in this Article implement the theory behind the EITC; i.e., using the IRS to implement social policy more efficiently and effectively than other government agencies. *See* Anne L. Alstott, *The Earned Income Tax Credit and the Limitations of Tax-Based Welfare Reform*, 108 HARV. L. REV. 533 (1995) (discussing and critiquing the use of the earned income tax credit as a social welfare tool); *see also* George K. Yin & Jonathan Barry Forman, *Redesigning the Earned Income Tax Credit Program to Provide More Effective Assistance for the Working Poor*, 59 TAX NOTES 951 (1993) (identifying problems with the implementation of the EITC and suggesting splitting the EITC into a tax break for the working poor and a tax break based on the number of children).

331. A childless wage earner receives a credit of 7.65% on the first $4340 of earned income. *See* I.R.C. § 32(b)(1)(A), (2)(A) (West Supp. 1998); Rev. Proc. 96-59, 1996-2 C.B. 394. The credit serves to refund the wage earner's portion of the payroll taxes on the first $4340 of wages.

332. The credit percentage increases from 7.65% to 34%, and the wage base increases from $4340 to $6500. *See* I.R.C. § 32(b)(1), (2)(A) (West Supp. 1998); Rev. Proc. 96-59, 1996-2 C.B. 394.

333. The credit percentage for a second child increases from 34% to 40%, and the wage base increases from $6500 to $9140. *See* I.R.C. § 32(b)(1), (2)(A) (West Supp. 1998); Rev. Proc. 96-59, 1996-2 C.B. 394.

334. Thus, the sensitivity of the credit to the number of children differs from both the dependency exemption, which is equally sensitive to all children, and head-of-household status, which is sensitive only to the first child. *See* Zelenak, *supra* note 11, at 351-52.

335. With one child, the credit is phased out at adjusted gross income of $25,760. With two children, the credit is phased out at adjusted gross income of $29,290. *See* I.R.C. § 32(b)(2) (West Supp. 1998); Rev. Proc. 96-59, 1996-2 C.B. 395.

336. *See* Zelenak, *supra* note 11, at 401.

family size.[337] Yet use of a "tax filing unit makes larger families appear to be better off than they [actually] are, and masks the progressivity of tax relief targeted at larger families."[338] As a result, Congress may have believed that a family with more than two children was economically similar to a family with only two children.[339]

The second and more interesting possible explanation is that Congress may have believed that low-income workers should not have more than two children, or if they do, that the government should not subsidize the additional children.[340] While clearly controversial, this notion was never overtly articulated in Congress. Moreover, we could view this suggestion in a more positive light. Congress could use the two-child limit to advocate a policy for smaller families across the economic board. To the extent that having two children is consistent with our population policy (which is debatable) the EITC should not only provide its greatest benefit for two children, but it also should decrease or disappear with the birth of additional children. It might even be preferable to increase the EITC subsidy for the first two children. Thus, Congress could use population policy to justify politically a two-child limitation.

While it may be possible to justify the earned income tax credit on the grounds that it assists small low-income families, it does provide a benefit to parents for having children. Policymakers must weigh such an incentive against the problems of overpopulation. We as a society may be more inclined to help lower income families because we believe they deserve our help or have less ability to pay. Nonetheless, the earned income credit provides no more assurance than does the dependency exemption that the subsidy will actually

337. *See* STAFF OF JOINT COMM. ON TAXATION, 103D CONG., 1ST SESS., METHODOLOGY AND ISSUES IN MEASURING CHANGES IN THE DISTRIBUTION OF TAX BURDENS 97-99 (Joint Comm. Print 1993); Zelenak, *supra* note 11, at 402.

338. Zelenak, *supra* note 11, at 402; *see also* Gene Steuerle, *Are Children Mistreated by Tables on the Distribution of Income?*, 56 TAX NOTES 369-70 (1992) (analyzing the table used by Congress on the distribution of changes in taxes and expenditures and concluding that Congress should use tables based on per capita income instead of income per family).

339. *See* Zelenak, *supra* note 11, at 402 (citing Steuerle, *supra* note 338, at 370, for attributing this conclusion to former Treasury Deputy Assistant Secretary for Tax Policy Michael Graetz).

340. *See Reclaiming the Tax Code*, *supra* note 76, at 60; Zelenak, *supra* note 11, at 402. Gary L. Bauer, President, Family Research Council, stated: "Limitations on family size (both the EITC and the proposed Family Wage Supplement currently cut off benefits after two children) are justifiable for cash transfer recipients who are not yet self-sufficient, but are inappropriate for low-income taxpaying families." *Reclaiming the Tax Code*, *supra* note 76, at 60.

benefit the children. In general, by not requiring taxpayers to account for amounts they actually spend on children, the law trades simplicity for accuracy. In sum, we might come to view the earned income credit as consistent with a population stabilization policy, but, under comprehensive reform, we would probably prefer a subsidy for low income families more closely tied to amounts actually spent on children.

4. Child Care Credit

Unlike the EITC, the dependency exemption, and head-of-household status, the child care credit is based on the amount a parent actually spends on care for a child. Subject to limitations, child care costs a parent incurs while at work are eligible for a tax credit.[341] The credit equals 20% of the amount a taxpayer spends on child care "to enable the taxpayer to be gainfully employed."[342] The statute limits expenses eligible for the credit to $2400 for one child and $4800 for two or more children.[343]

Congress has chosen to treat children as a given, rather than as a personal consumption choice, for purposes of the dependency exemption by taking into account the cost of children under the ability to pay analysis.[344] By limiting the expenses eligible for the child care credit, Congress has not treated children as a given for purposes of work-related child care costs. Consistency requires that, having chosen to treat children as a given for the dependency exemption, we should also accept the existence of children as a given in determining the deductibility of child care expenses. Thus, if children are treated as a given, all child care costs incurred to enable a parent to work should qualify as deductible business expenses.[345] Therefore, if we truly want to provide a subsidy for the cost of children, then the child care credit, conditioned on money actually

341. *See* I.R.C. § 21 (West Supp. 1998).

342. *Id.* § 21(b)(2)(A) (West Supp. 1998). The credit rate for taxpayers with AGI of $10,000 or less is 30%. The credit percentage is phased down to 20% for taxpayers with AGI in excess of $28,000. *See id.* § 21(a)(2) (West Supp. 1998).

343. *See id.* § 21(c) (West Supp. 1998). Section 129 of the Code also provides a child care benefit. This section excludes from income up to $5000 for child care an employer provides as part of a dependent care assistance program. *See id.* § 129(a)(2) & (d) (West Supp. 1998). This provision is even less sensitive to family size than the child care credit, for the maximum excludable amount does not depend on the number of children. *See id.* § 129(a)(2)(A) (West Supp. 1998).

344. *See supra* notes 274-80 and accompanying text.

345. Zelenak, *supra* note 11, at 410. This argument was rejected in *Smith v. Commissioner*, 40 B.T.A. 1038, 1039 (1939), *aff'd without opinion*, 113 F.2d 114 (2d Cir. 1940), which still controls.

spent on a child's care, is much more effective than the dependency exemption, which merely rewards parents for a child's existence.

This analysis suggests two observations. First, Congress is not so wedded to the idea of taking into account family responsibilities under an ability to pay analysis as the dependency exemption suggests. Second, if we want to subsidize the cost of children, designing a subsidy that depends directly on the benefit to the child is not so difficult. The design of the child care credit strengthens the claim that existing provisions relating to family responsibilities can be reconstructed to help implement population reduction policies. The child care credit, which treats children as consumption choices, more closely exemplifies the type of provision policymakers could employ as part of a comprehensive population stabilization policy package.

In sum, this discussion has examined existing provisions in the Internal Revenue Code and how policymakers might reconstruct them in light of population problems. This analysis is, of necessity, not exhaustive, but seeks only to illustrate how one might reconceptualize tax policy in light of overpopulation.[346] The point is that policymakers must revisit existing tax policies that affect the family in establishing the nation's commitment to population stabilization.

C. Giving the Stork a Rest: Tax Policy for Small Families

1. Tax Reform and Factors that Reduce the Birth Rate

In this discussion, I briefly analyze education, family planning, and deferred incentive or retirement programs as examples of tax reform designed to deal with population problems. Thus, the government might implement population stabilization policies by providing tax incentives that promote behaviors that tend to be strongly correlated with lower birth rates, such as completion of higher levels of education.[347] Of course, any incentive or disincentive designed to lower birth rates must take into account cultural factors that can influence their effectiveness and also must consider the cultural pluralism of the United States.[348] Yet despite this cultural

346. Additional tax policies we might consider in this regard are the medical expense deduction for dependent children and the current treatment of imputed income of homemakers. *See* I.R.C. § 213(a) (West Supp. 1998); Edward J. McCaffery, *Taxation and the Family: A Fresh Look at Behavioral Gender Biases in the Code*, 40 UCLA L. REV. 983, 1001-05, 1055-58 (1993).

347. *See infra* notes 352-61 and accompanying text.

348. For example, introduction of birth control devices has been effective in cultures

diversity, many parents are motivated by economic concerns that can be roughly estimated.[349] Even then, economic factors can vary among families and cultures: to some, more children means financial security in old age; others have many children because they grew up in large families. One might suspect, and studies have shown, a stronger correlation between certain identifiable factors and the fertility rate.[350] Tax policies should take into account those factors that most strongly correlate with fertility declines and should promote those factors through tax incentives.[351]

Lower birth rates correspond closely to the educational level of the mother—the more highly educated she is, the lower her birth rate.[352] Education encourages delays in the age of marriage, which would be expected to reduce fertility.[353] Literacy and receptiveness to new ideas complement family planning programs, which in turn result in longer birth-spacing.[354] Education also increases women's opportunities for work and the opportunity cost of their time. In short, the personal and economic cost of child-rearing is higher for educated mothers. Educated mothers also tend to "value education for their children more highly, and so would be more likely to make a conscious tradeoff between the quality and number of their children."[355]

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in which women have control over family decisions, but have been ineffective where women have less control. *See* EHRLICH ET AL., *supra* note 1, at 81-87. Admittedly, most studies evaluating declines in fertility have occurred in underdeveloped poor countries. However, I suggest that incentives and disincentives are likely to have impact in the United States where widespread introduction of birth control devices has contributed to lower fertility rates.

349. *See* JACOBSEN, *supra* note 244, at 13.

350. *See* Dasgupta, *supra* note 27, at 1884-95 (citing to studies that link education, improvements in health and nutrition, and empowerment of women, as well as other factors, to reduced fertility rates).

351. *See* JACOBSEN, *supra* note 244, at 13.

352. *See* EHRLICH ET AL., *supra* note 1, at 72; Dasgupta, *supra* note 27, at 1887; Zwingle, *supra* note 7, at 36-55. Surveys suggest a close association between education and desired family size. In Liberia, for example, women with no education wanted 6.8 children on average. Those women who had a primary education wanted 5.3 children, and those with secondary or higher education wanted 4.5. *See* Fred T. Sai, *Obstacles to Family Planning, in* THE COMPLEX REALITY, *supra* note 4, at 304.

353. *See* Dasgupta, *supra* note 27, at 1887; *see also* EHRLICH ET AL., *supra* note 1, at 72 (discussing the fact that education shows women that they have more opportunities than motherhood).

354. *See* Sai, *supra* note 352, at 304.

355. Dasgupta, *supra* note 27, at 1887. Dasgupta states that the "quality of a child depends on the amount of time and resources devoted to it. It depends as well on the time and effort devoted by the child in acquiring education and skills." Dasgupta, *supra* note 233, at 168; *see also* EHRLICH ET AL., *supra* note 1, at 263 (discussing how education can not only decrease birth rates but also be directed so that people make wise social and

Many believe that the quality of our public education system has declined over the past twenty years.[356] School-aged teens account for approximately 13% of all births.[357] Many times these teens are forced to drop out of school.[358] While revamping the educational system through the federal tax code is not likely, and may even exceed Congressional power,[359] providing federal tax incentives for education may help.[360] Policymakers could design deductions or credits to promote education, particularly for young children. For example, we could increase the child care credit to include additional costs for child care that provides additional or after-school education. We might also create tax deductions or credits for adult remedial education. Furthermore, Congress could expand the child care credit to include expenses incurred while a parent is obtaining an education.[361] Subsidizing education is a worthwhile goal regardless of

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ecological decisions).

356. *See* BEYOND RHETORIC, *supra* note 82, at 179-80; Karp, *supra* note 132, at 246-47. In an assessment of 20 school systems around the world, American children ranked 10th in arithmetic, 12th in algebra, and 16th in geometry. *See* BEYOND RHETORIC, *supra* note 82, at 179. In international competitions, the top 1% of American high school seniors ranked last. *See id.* Fewer than half of American 17 year-olds possess the skills and basic knowledge necessary for college and many entry level jobs. *See id.*

357. *See* STATISTICAL ABSTRACT, *supra* note 9, at 74 tbl.91; *see also* BEYOND RHETORIC, *supra* note 82, at 4 (noting that 500,000 babies are born each year to teenage mothers, many of whom have not completed their education and face a bleak economic future); Zwingle, *supra* note 7, at 48 (noting that the United States has the highest teenage birth rate in the industrial world).

358. *See* Planned Parenthood Federation of America, Inc., *Pregnancy and Childbearing Among U.S. Teens* (visited October 4, 1998) <http://www.plannedparenthood.org/library/TEEN-PREGNANCY/childbearing.htm> (stating that while "[m]ore teenage mothers are now graduating from high school than ever before, . . . only half of the women who have their first child at age 17 or younger will have graduated from high school by age 30").

359. This may depend on the extent of Congressional purse strings and taxing power post-*Lopez*. *See* Lynn A. Baker, *Conditional Federal Spending After* Lopez, 95 COLUM. L. REV. 1911 (1995) (noting that *U.S. v. Lopez*, a case in which the Supreme Court held a federal law exceeded Congress's Commerce Clause power, may imply such limitations on conditional spending). The current Supreme Court's revival of federalism may have ripple effects on federal tax policy that at present are difficult to predict. *See* Printz v. United States, 117 S. Ct. 2365 (1997); City of Boerne v. Flores, 117 S. Ct. 2157 (1997); Seminole Tribe v. Florida, 517 U.S. 44 (1996); United States v. Lopez, 514 U.S. 549 (1995); New York v. United States, 505 U.S. 144 (1992).

360. Providing tax incentives for education has received increased attention. Included in the Taxpayer Relief Act of 1997 were a number tax incentives promoting higher education. *See* I.R.C. § 221 (West Supp. 1998) (providing above the line deduction for interest paid on higher education loans); *id.* § 530 (West Supp. 1998) (creating tax-exempt education IRAs).

361. Currently, expenses eligible for the child care credit must be "employment-related expenses." *Id.* § 21(a)(1) (West Supp. 1998). These expenses can include expenses relating to the care of a dependent, but "only if such expenses are incurred to

population policy, but we could tailor the parameters of any education subsidy to yield the optimal return from a population policy perspective. For example, educational subsidies might cease at the point at which the correlation between education and birth reduction ceases.

Other factors can contribute to a decline in birth rates. Family planning programs that traditionally provide birth control to women also improve basic health and nutritional conditions and health services.[362] In conjunction with traditional family planning programs, a refundable tax credit for birth control expenditures might also provide an incentive to have smaller families. The credit might be available for qualifying expenses on behalf of the taxpayer, the taxpayer's spouse, and any of the taxpayer's dependents. All birth control expenses, or some percentage thereof, would qualify. Types of permissible expenses could be broad (that is, including abortions) or narrow (that is, including only preventative expenses), depending on the political climate. Such a credit could include a recapture provision for those who have "excess" children. Congress might, for example, tailor such a provision to require full recapture of any credits in the year of birth of the "excess" child. Such a credit would simultaneously send an important message and save long-term costs associated with unwanted (and even wanted, but excess) children. In addition, the refundable aspect of the proposed credit guarantees that low-income taxpayers have financial assistance in achieving their desired family size. Furthermore, we could provide tax incentives to companies that advance contraceptive research.[363] For example,

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enable the taxpayer to be gainfully employed." I.R.C. § 21(b)(2) (West Supp. 1998). Therefore, child care expenses incurred while in school would not qualify.

362. *See* EHRLICH ET AL., *supra* note 1, at 69. Family planning programs not only help "reduce births but are also a good investment." Tamar Lewin, *Public Aid for Birth Control Found to Save Money*, N.Y. TIMES, Feb. 26, 1990, at B9. For example, a study in 1990 concluded that "taxpayers save $4.40 for every public dollar spent to provide birth control to women who might otherwise not have access to contraceptives." *Id.* Preventable pregnancies annually result in approximately half a million abortions and an equal number of unwanted births. *See id.* In turn, the parents of these unwanted babies often rely on government spending for prenatal and obstetric care, pediatric care for the baby's first two years, welfare payments, food stamps, and other support programs. *See id.* The study discussed in Lewin's article estimated that, in fiscal year 1987, the "$412 million in public funds spent on family planning services saved taxpayers $1.8 billion in short-term costs." *Id.*

363. Contraceptive technology and research in the United States have all but stopped over the last twenty years. The primary reasons involve difficulty in getting new drugs approved and product liability exposure. This is unfortunate, because simpler, safer, and more effective birth control technologies could go a long way in preventing unwanted births—particularly in the United States, where a significant number of births are

Professor Nina Crimm has advocated a tax proposal designed to funnel money into drug research, particularly research that will enhance the innovation of new and safer conventional drugs, while also reducing the incidence of products liability claims and litigation involving conventional drugs.[364]

Deferred incentive schemes also might promote welfare while lowering birth rates. Deferred incentive schemes could encourage savings much like our current deferred savings plans such as 401(k)plans. Congress could implement such a program either through the Social Security system, or by allowing preferred tax treatment to companies implementing such a plan, or both. It could design such a plan to reward parents with small families upon retirement. For example, if Congress administered the plan through Social Security,[365] benefits for those who had two or fewer children would be higher than for those who had large families. If Congress implemented the plan through the private sector, it could give tax breaks to employers who offered a variety of incentives, such as bonuses and time off, for successfully avoiding pregnancy.

An example of such a plan is the "No-Birth Bonus System," used in three tea estates in southern India.[366] Women of childbearing age agreed to have no more than three children and to space their second and third children three years apart.[367] The employer agreed to credit five rupees a month to an account for each of these participants. If a woman became pregnant, she would forfeit a substantial portion of

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unwanted. *See* EHRLICH ET AL., *supra* note 1, at 56-58.

364. *See* Nina J. Crimm, *A Tax Proposal to Promote Pharmacologic Research, to Encourage Conventional Prescription Drug Innovation and Improvement, and to Reduce Product Liability Claims*, 29 WAKE FOREST L. REV. 1007 (1994).

365. *See* JACOBSEN, *supra* note 244, at 18 (suggesting that any deferred payment program capable of reducing fertility rates must be a national program such as social security).

366. *See id.* at 15-16. Many are familiar with China's one-child family policy that also contains financial incentives. For example, parents of one child receive pensions that are 5% higher than parents with two or more children. *See id.* at 28. Childless couples receive 10% more than parents with two or more children. *See id.* China also uses compulsory measures to enforce its one-child policy. The Chinese, particularly in rural areas, have resisted these aspects of China's program. Furthermore, because the Chinese have a strong preference for boys, incidence of female infanticide has risen. Compulsory programs run a high risk of failure. Jacobsen states: "The lesson from China ... is to make [population reduction] efforts now, before compulsion seems the only course to take." *Id.* at 30.

367. *See id.* These programs began in 1971. Birth rates on the estates offering the No-Birth Bonus fell dramatically in the 1970s, compared with India as a whole and with other estates without the scheme. The birth rate in India fell from 38 per 1000 people in 1969 to 35 per 1000 in 1977, while the birth rate on the tea estates with the No-Birth Bonus fell from 40 per 1000 to below 25 per 1000 during the same time period. *See id.* at 16-17.

her account to the company to cover the costs of maternity and child care.[368] A participant who successfully completed the program would accumulate enough to buy a plot of land upon retirement.[369]

In the United States, Congress could implement such a plan through increased employer contributions to 401(k) plans or other savings plans for those who agree to limit their family size to two children. Forfeiture would occur upon the birth of a third child. Because savings rates in the United States are very low, Congress is looking for incentives to encourage savings.[370] Furthermore, providing citizens with security in their older years is helpful in reducing the number of births as, historically, parents have depended upon their children for care in their old age.[371] Private plans are advantageous because they only cost the federal government the value of the tax incentive provided to participating companies. Yet the participating companies, by operating in a decentralized manner, can generally run the plans efficiently.[372] The disadvantages of privately run plans are similar to the disadvantages of existing deferred savings plans—for example, portability for employees who change jobs, and the fact that such plans can only encourage savings and lower birth rates among participants.[373]

2. More Reform: Tax Incentives and Penalties

Policymakers could adopt a price-based or market approach to discourage large families. For example, Congress could implement an income tax surcharge proportional to the number of children in the household.[374] The result would be that larger families would have a larger tax obligation, rather than a smaller one, as under the current tax system. Such a policy would not dictate the size of any given household, but it could encourage each household, when making the decision whether to have another child, to consider not only the increase in their personal expenses (as reflected in higher taxes) but

368. *See id.* at 16.

369. *See id.*

370. *See, e.g.*, I.R.C. § 408A (West Supp. 1998) (establishing a new tax preferred retirement savings account, known as the "Roth IRA" beginning in 1998); *see also* Alliance USA, *USA Tax System: Description and Explanation of the Unlimited Savings Allowance [USA] Income Tax System, reprinted in* 66 TAX NOTES 1481 (1995) (describing a tax reform proposal designed to increase savings in the United States through the unlimited deferral of taxes imposed on individual savings and the immediate expensing of new business investments).

371. *See* EHRLICH ET AL., *supra* note 1, at 100.

372. *See* JACOBSEN, *supra* note 244, at 16.

373. *See id.* at 17.

374. *See* Ehrlich et al., *supra* note 26, at 31.

also the societal costs of a growing population. A variation of the surcharge would impose one tax rate on families with two or fewer children and a different, higher rate upon larger families.[375] Another option would be to grant a tax credit only to those who have no more than two children. Those with three or more would not qualify.

Ehrlich suggests that the tax laws could be better used to penalize over-reproducers.[376] The penalty could be graduated so the rich, whose impact on the environment is heavy, paid the most. Tax penalties on the poor would be augmented by programs to protect their children from undue hardship. He believes penalties would nonetheless be required to reinforce a new message from Congress that having large families is un-American.[377]

Disincentives can get results. Singapore has a comprehensive disincentive program and has seen a significant reduction (below replacement level) in fertility over a ten year period.[378] Births beyond the second child affect housing, education, income tax, maternity leave, and fees in government maternity hospitals.[379] In 1970, births beyond the second child constituted half of all births, but by the early 1980s, such births had dropped to approximately 20%.[380] Disincentives can be economical because they deprive people of things that would otherwise cost the government money. In an analysis of Singapore's disincentives, survey results show that these disincentives "act less as actual barriers to childbearing than as 'education.' These policies reinforce the Singapore government's seriousness about its citizens having small families because of the economic and environmental constraints on population growth."[381]

Using the tax system—even if the financial impact on a given family is small—accomplishes two very important functions. First, there is a public relations and educational value: Every taxpayer who fills out a tax return becomes aware of the government's small-family policy. Second, it establishes the principle of using the tax laws for population control, thereby serving as a precedent should more severe steps be necessary in the future.[382] As Senator Packwood

375. *See* Rabin, *supra* note 11, at 1370-71. Rabin analyzes a tax surcharge for possible constitutional infirmities. He concludes that a surtax on children would be constitutional. *See id.* at 1386-90.

376. *See* EHRLICH ET AL., *supra* note 1, at 94, 136.

377. *See id.*

378. *See* JACOBSEN, *supra* note 244, at 23.

379. *See id.* at 21.

380. *See id.* at 23.

381. *Id.*

382. *See* Rabin, *supra* note 11, at 1371.

concluded in 1972, the critical importance of using tax policy to influence reproductive behavior lies in the message it sends to Americans: The U.S. government is making a positive commitment to resolving overpopulation problems.[383]

Standing alone, the specific tax proposals discussed regarding family responsibilities cannot solve overpopulation problems. A complete solution must address aspects of overpopulation, other than fertility, such as resources and consumption. Less invasive policies affecting families and children might be preferable, but only in exchange for changes elsewhere. People must be advised not only that overpopulation is a problem, but also that we can ameliorate the problem of numbers, in the short term, by reducing the impact of those numbers.[384] Then, if necessary, stronger "small family" measures could be implemented. I propose that the initial restructuring of individual tax provisions should convey the government's commitment to deal with the problem of overpopulation, without drastic effects on a family's finances. Changes of this type, along with proposals to reduce consumption and develop sustainable agriculture, should result in significant reduction of overpopulation problems.

Some might view these proposals as an affront to families and family values. To do so ignores how, in the long run, these proposals will protect American families and the comfortable lifestyles they currently enjoy. Choosing whether to have children is far easier than deciding which children will eat in a world where many will not. These proposals thus do not focus on short-term gains (the folly of much current legislation), but on long-term solutions for future generations who will live in the world we leave them.

Now that the first component of carrying capacity—population size and its relation to tax policy—has been addressed, Parts V and VI of this Article examine the second and third components of carrying capacity: our resource base and our consumption of those resources. A more thorough description of these aspects provides a glimpse of the complexity and enormity of the problems involved and demonstrates how each component works in tandem with the others.

383. *See* Packwood, *supra* note 254, at 16.

384. *See supra* Part II (discussing the impact of overpopulation).

V. THE PLOW: THE U.S. AGRICULTURAL SYSTEM NEEDS REFORM IN ORDER TO MEET FUTURE POPULATION FOOD DEMANDS

A. Is the Plow Broken?

Our global population of approximately six billion people currently consumes 40% of primary plant production (the energy green plants make available by converting air, water, and sunlight to energy).[385] Plant production measures the Earth's most elemental resources. The United Nations, the World Bank, and other population experts expect world population to increase to eight to ten billion during the next generation.[386] With a doubling of population and a decline in the amount of arable land, it follows that humanity likely shall exhaust its supply of the most critical resources within a generation.[387] Efforts in the United States to expand the food industry to meet these increases in demand will only exacerbate dangerously increasing demand for foreign energy sources.

Leading agricultural researchers warn that "unless we focus more attention and money on agricultural research and conservation, the tragic famine in Somalia will seem 'infinitesimal,' compared with the massive food shortage the world will face shortly after the turn of this century."[388] Adding insult to injury, scientists estimate that the rate of human-induced species extinction is now one million times faster than the rate of evolution of new species.[389] Furthermore, agricultural production contributes significantly to our rapidly

385. *See* EHRLICH ET AL., *supra* note 1, at 170; Smith, *supra* note 144, at 262 n.6; Peter Vitousek et al., *Human Appropriation of the Products of Photosynthesis*, BIOSCIENCE, June 1986, at 368.

386. *See* Smith, *supra* note 144, at 262 n.6 (citing CLEMENT A. TISDELL, ECONOMICS OF ENVIRONMENTAL CONSERVATION 213-14 (1991)); Zwingle, *supra* note 7, at 38.

387. To illustrate, the United States uses about 17% of its energy for food production, processing, distribution, and preparation. *See* EHRLICH ET AL., *supra* note 1, at 147, 170; Smith, *supra* note 144, at 262-63 n.6; Vitousek et al., *supra* note 385, at 368 (discussing how quickly we are using plant energy).

388. Donna Walters, *Massive Famine Predicted: Farm Researchers Urge Increased Crop Yields*, NEWS & OBSERVER (Raleigh, N.C.), Jan. 30, 1993, at A1; *see also* Paul R. Ehrlich et al., *Food Security, Population, and Environment, reprinted in* 1 THE CARRYING CAPACITY BRIEFING BOOK, *supra* note 103, at V-84 (citing the vast number of research studies that chronicle the limits to increased agricultural production).

389. *See* EHRLICH ET AL., *supra* note 1, at 194-95; Dana Clark & David Downes, *What Price Biodiversity? Economic Incentives and Biodiversity Conservation in the United States*, 11 J. ENVTL. L. & LIT. 9, 9 (1996). Clark and Downes observe "The present extinction rate is the highest since the mass extinction of the dinosaurs millions of years ago. Most scientists agree that the rapid loss of biodiversity threatens to destabilize local, regional and global ecosystems." *Id.* at 12.

deteriorating atmospheric quality.[390] Many believe that problems such as food shortages, species extinction, and the deteriorating environment are or could soon become completely irreversible at least in time to save humanity.[391] These problems have important underlying social causes, including the lack of or failed urban development strategies, land distribution inequities, inaccessibility of farm inputs and credits, unemployment, and unavoidable food distribution problems.[392] For example, developed countries, which constitute 20% of the population, consume more than 80% of the world's resources.[393] Alleviation of even the social aspects of these problems could dramatically improve the overall outlook for their solution in the foreseeable future.

Population growth may be the root cause of various environmental losses that most people generally attribute to the agricultural enterprise.[394] For example, 50% of Florida's native forests already have been eliminated due to population increases, and the state's population continues to increase at a rate of 4% per year.[395] Biologists estimate that this liquidation continues at the rate of 1% per year due to population increases.[396] For instance, "Florida has plenty of wildlife—'weed' species that live in proximity to humans—but has lost most of its native fauna."[397] Thus, Florida is but one of an ever-growing number of examples of the stork overtaking the plow.

B. The Plow is Breaking: More About the Problem

No discussion of overpopulation is complete without addressing food scarcity. One of the biggest challenges facing the twenty-first century will be how to feed everyone. While the Green Revolution[398] met the food demands of the world's growing population from 1950 through 1980 or so, evidence suggests and scientists warn that food

390. *See* Neil D. Hamilton, *Sustainable Agriculture: The Role of the Attorney*, 20 Envtl. L. Rep. (Envtl. L. Inst.) 10,021, 10,029 (Jan. 1990).

391. *See World Scientists Warning to Humanity*, *supra* note 2.

392. *See* EHRLICH ET AL., *supra* note 1, at 168-69.

393. *See* Smith, *supra* note 144, at 268 (citing Thomas M. Landry, *Connecting Poverty and Sustainability*, 21 B.C. ENVTL. AFF. L. REV. 277 (1994)).

394. *See* Clark & Downes, *supra* note 389, at 12-13.

395. *See* ABERNETHY, *supra* note 25, at 8.

396. *See id.*

397. *Id.*

398. The "Green Revolution" refers to the time period when underdeveloped countries were introduced to mechanized production techniques, high-yield grain varieties, and the use of fertilizers and pesticides. *See* EHRLICH ET AL., *supra* note 1, at 139.

production is leveling off and will decline in many areas of the world, including the United States.[399] The Green Revolution took existing croplands, applied new technologies (or inputs), and vastly increased food output. These inputs included extensive uses of fertilizers, pesticides and herbicides, high-yield plant varieties,[400] and the shift from small farms growing a variety of crops to large monoculture farming operations.[401] Yet while the Green Revolution prevented many of the predicted disasters of a growing world population,[402] population continues to increase at unprecedented rates. Moreover, society must confront the fallout from these green technologies.[403] Most of the world's arable land is currently under cultivation, and declines in fish stocks are critical.[404] As the population continues to increase, expansion of food supplies to meet growing demands will likely prove to be very difficult.[405] Even if world population is

399. *See id.*; *see also* Ehrlich et al., *supra* note 388, at V-84 (citing the vast number of research studies that chronicle the limits to increased agricultural production).

400. High-yield agriculture utilizes plant genetics for selective breeding of crop varieties enhancing the good characteristics (such as nutrient-rich seeds in grains) while eliminating undesirable characteristics (such as toxins or poor storage quality). The genetic diversity of crop species is critical to the selection process. But current agricultural practices are threatening the genetic diversity of crops. First, as farmers have chosen to use a selective number of genetically similar varieties, we have lost traditional crop species. Additionally, destruction of natural habitats eliminates wild crop relatives, a gene pool that could be critical to maintaining productivity. *See* EHRLICH ET AL., *supra* note 1, at 183; Clark & Downes, *supra* note 389, at 9. *See generally* CARY FOWLER & PAT MOONEY, SHATTERING: FOOD, POLITICS, AND THE LOSS OF GENETIC DIVERSITY (1990) (discussing the damaging effects of the loss of genetic diversity in the world's agricultural supply); ERICH HOYT, CONSERVING THE WILD RELATIVES OF CROPS 7-8, 44 (1988) (stating that gene flow from wild plants to crops helps keep crops healthy, but conservation of these "wild relatives" is imperative).

401. Green Revolution technologies derive from "conventional agriculture," which uses highly mechanized and chemically intensive farming techniques. *See* Curtis E. Beus & Riley E. Dunlap, *Conventional Versus Alternative Agriculture: The Paradigmatic Roots of the Debate*, 55 RURAL SOC. 590, 594 (1990).

402. *See* EHRLICH ET AL., *supra* note 1, at 139.

403. The enormous impact of the agricultural enterprise on the environment includes: annual tillage of millions of acres, the largest consumptive use of water, a major source of fuel and energy use, and the largest source of nonpoint water pollution. *See* Hamilton, *supra* note 390, at 10,029.

404. *See* Brown, *supra* note 18, at 180-82.

405. *See* EHRLICH ET AL., *supra* note 1, at 171. Ehrlich explains:

> The principal environmental constraints to increasing food production are: losses of farmland to human settlement and degradation; limits to freshwater supplies for irrigation; declining genetic diversity of crops and their wild relatives; diminishing marginal effectiveness of fertilizers; pesticide problems; increased ultraviolet-B radiation; toxic air pollution; climate change and sea-level rise; biodiversity loss and a general decline in the free ecosystem services supplied to agriculture by natural ecosystems.

Id.

contained below ten billion, by the year 2040, food production must triple.[406] Favorable prospects for achieving such a goal are questionable.[407] Global grain production per person has slipped downward since 1985.[408] Unfortunately, farmers exploited the most readily available opportunities for expanding world food production during the heroic expansion of the last forty years. As a result, little fertile land remains; oceanic and inland fisheries have peaked, with many currently in decline;[409] and range lands are extensively overgrazed.[410] The last attempt to expand the world's cultivated lands, which followed a doubling of grain prices in 1972, ended in a massive retrenchment.[411]

The United States is not exempt from these trends. The American Farmland Trust recently named twelve regions as highly threatened by population growth and urbanization.[412] Although these regions together constitute only 5% of U.S. farmland, they provide 17% of total U.S. agricultural sales, 67% of domestic fruit production, 55% of vegetable production, and 24% of dairy

406. *See id.* at 162. Lester R. Brown, head of Worldwatch Institute, concludes: "Although much of humanity aspires to the United States' diet, population growth has foreclosed that option." Brown, *supra* note 18, at 190.

407. *See* Ehrlich et al., *supra* note 388, at V-84 (citing the vast number of research studies that chronicle the limits to increased agricultural production).

408. *See* Brown, *supra* note 18, at 177. *See generally* EHRLICH ET AL., *supra* note 1, at 163 (discussing the drop in grain production due to losses in arable land); FOREIGN AGRIC. SERV., U.S. DEP'T OF AGRIC., WORLD AGRICULTURAL PRODUCTION (1994) (noting worldwide agricultural production statistics).

409. The United Nations Food and Agriculture Organization has concluded that all major fishing areas have reached or exceeded their estimated maximum sustainable yields, and about half these fishing areas are in major decline. *See* UNITED NATIONS FOOD AND AGRIC. ORG., CIRCULAR 853, MARINE FISHERIES AND THE LAW OF THE SEA: A DECADE OF CHANGE (1993). Paul Ehrlich points out that "[n]owhere is the confrontation between human numbers and the planet's food supply more evident than in the area of oceanic fisheries.... It is high time to modernize the harvesting of aquatic organisms." EHRLICH ET AL., *supra* note 1, at 164, 166.

410. *See* Brown, *supra* note 18, at 180-82.

411. *See id.* at 182. Farmers responded to high grain prices by expanding the world's grain area from 664 million to 735 million hectares between 1972 and 1981, nearly an 11% gain. *See id.* Much of this expansion took place in the former Soviet Union and the United States on land that was highly erodible and incapable of sustaining cultivation. *See id.* After peaking in 1977, both the former Soviet Union and the United States's harvested grain area has declined. *See id.*

412. These regions included the Central Valley and coastal regions of California, south Florida, the mid-Atlantic coast/Chesapeake Bay area, and the Chicago-Milwaukee-Madison metro area. *See Farmland: Group Ids 12 Most Threatened Farm Areas*, Greenwire, July 14, 1993, *available in* LEXIS, News Library, Wires File; *see also* EHRLICH ET AL., *supra* note 1, at 172-74 (discussing loss of farmland as leading to famine and continuing conflicts over arable land).

products.[413] These twelve regions yield nearly six times more than less endangered areas do.[414]

Agricultural challenges facing the United States include developing sustainable agricultural practices, resolving conflicts over water and land use, dealing with environmental degradation resulting from current agricultural practices, and meeting the food demands of the twenty-first century.[415] Conventional agricultural practices fail to consider societal and individual costs, including the contamination of groundwater from pesticides and nitrogen fertilizers, soil erosion from unsound cropping practices, economic vulnerability from relying on a single crop, and dependence on agrichemicals.[416] Yet, clearly, the means society uses to feed the existing population should not reduce the capacity to provide for future generations.

Tax policies in the United States have contributed to existing problems; as such, revised tax policies may help to undo and to provide solutions to these problems. In this Part, I describe in more detail the environmental costs of conventional agriculture in the United States.[417] Next, I examine how U.S. tax policies have contributed to these problems.[418] Finally, I suggest reforms in tax policy that would neutralize or discourage the detrimental environmental impact of conventional agriculture and encourage development of sustainable agriculture capable of meeting future food demands.[419]

1. Agriculture's Impact on the Environment

In the United States, three million acres of agricultural land is lost per year due to erosion, uncontrolled irrigation practices, and urban encroachment onto prime agricultural land.[420] We lose our

413. *See* EHRLICH ET AL., *supra* note 1, at 172.

414. *See id.*

415. As so aptly put by Paul Ehrlich:

> [I]ntensifying the agricultural systems and harvesting the riches of the sea have brought humanity a long way, but it has been a long way up a cliff face that we must continue climbing. Whether humanity will get safely over the teetering top and down the other side to a sustainable position remains to be seen.

Id. at 139.

416. *See* Hamilton, *supra* note 390, at 10,027. *See generally* Clark & Downes, *supra* note 389, at 39-40 (discussing negative ramifications of agriculture industry, including soil and water quality and the degradation of the natural habitat).

417. *See infra* notes 420-68 and accompanying text.

418. *See infra* notes 469-92 and accompanying text.

419. *See infra* notes 493-576 and accompanying text.

420. *See* ABERNETHY, *supra* note 25, at 176.

best agricultural soils to urban development.[421] Furthermore, topsoil loss from farms still in production presents another threat.[422] For example, Iowa has lost 50% of its topsoil to wind and water erosion during the last 150 years.[423] United States aquifers are also in trouble. The drawdown on our aquifers has already led to abandonment of more than 300,000 formerly irrigated acres in Arizona alone.[424]

Restoring the productivity of degraded lands is crucial.[425] It is possible to restore degraded lands through changes in farming and land cultivation practices that reduce soil erosion and preserve the soil's biologically diverse germplasm base.[426] Restoration is the one sensible way to bring substantially more land into cultivation. Supplying an expanding human population not only with food, but also with many other agricultural, forestry, industrial, and medicinal products, hinges upon increasing terrestrial productivity in general.[427]

Agricultural activity itself contributes significantly to environmental degradation. However, this degradation cannot be reversed easily. In 1992, the U.S. National Academy of Sciences and the Royal Society of London warned that we could no longer count on advances in science and technology to avoid irreversible environmental degradation and halt continued poverty for much of humanity.[428] Furthermore, "[n]o technological 'silver bullet' exists

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421. *See id.*

422. Dean Smith observes that "[s]oils are complex, living systems. All life depends on the health of the soil, and the health of the soil depends on the return of spent life. A culture that wastes organic matter does not adequately replenish the soil. It breaks the life cycle at the point of regeneration." Dean Smith, *Soil Depletion in the United States: The Relationship Between the Loss of the American Farmer's Independence and the Depletion of the Soil*, 22 ENVTL. L. 1539, 1561 (1992); *see also* ABERNETHY, *supra* note 25, at 177 (noting that an average of five tons of top soil per acre per year is lost on much agricultural land); Carpenter, *supra* note 14, at 203-06 (estimating that 6.8 to 8 tons of top soil per acre is lost each year).

423. *See* ABERNETHY, *supra* note 25, at 177.

424. *See id.* at 247. The net drain on the Ogallala aquifer, which lies under the American Great Plains, is about two trillion gallons per year. *See generally* MARC REISNER, CADILLAC DESERT: THE AMERICAN WEST AND ITS DISAPPEARING WATER (1986) (discussing the American West's insatiable demand for water and the diminishing supply).

425. World population already occupies or uses 90% of the land surface that is not desert or under permanent ice cover. The remaining natural habitat is mostly marginal. *See* EHRLICH ET AL., *supra* note 1, at 171. Furthermore, the United States will lose large areas of farmland as our growing population demands housing, schools, and shopping centers. *See* Brown, *supra* note 18, at 189.

426. Conventional farming techniques are largely responsible for soil depletion. Cultivating with heavy machinery and chemical inputs are extremely destructive to the biological makeup of the soil. *See* Smith, *supra* note 422, at 1561.

427. *See* EHRLICH ET AL., *supra* note 1, at 208; Brown, *supra* note 18, at 195.

428. *See* ROYAL SOC'Y OF LONDON & U.S. NAT'L ACADEMY OF SCIENCES,

that can provide the doubling or tripling of food production" the world shall need in the next half century.[429] Caught in the middle is the agricultural enterprise, which is both dependent upon and destructive to the environment.[430]

For instance, the Green Revolution spurred large-scale industry to manufacture synthetic fertilizers.[431] The use of these fertilizers, along with a boom in irrigation systems and the increased use of pesticides, have contributed significantly to food production increases during the past forty years; however, these practices have significant side effects.[432] In fact, according to the Environmental Defense Fund as well as the Environmental Protection Agency, non-point source pollution from agricultural run-off is the biggest contributor to water pollution.[433] Pesticides and fertilizers (agrichemicals) cause surface and underground water pollution and can damage other natural ecosystems by interfering with natural nutrient cycles.[434] Growing evidence also suggests that exposure to agrichemicals poses serious

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POPULATION GROWTH, RESOURCE CONSUMPTION, AND A SUSTAINABLE WORLD (1992).

429. EHRLICH ET AL., *supra* note 1, at 226. For example, at the end of World War II, Illinois farms averaged 50 bushels of corn per acre. Twenty years later, these farms produce 95 bushels per acre. This increase, however, required a 40-fold increase in the application of energy-intensive fertilizer products. *See* WES JACKSON, NEW ROOTS FOR AGRICULTURE 24 (1985); *see also* Brown, *supra* note 18, at 186 (discussing the inadequacies of petroleum-based fertilizers when used in soils that been over-farmed); Smith, *supra* note 422, at 1562 n.157 (explaining why the large increases in agricultural production in the preceding decades cannot continue at such a rapid pace in the future).

430. *See* EHRLICH ET AL., *supra* note 1, at 168. *See generally* Jim Chen, *Get Green or Get Out: Decoupling Environmental from Economic Objectives in Agricultural Regulation*, 48 OKLA. L. REV. 333, 337 (1995) (describing farmers' exemptions from many environmental laws, born out of perceived necessity).

431. *See* EHRLICH ET AL., *supra* note 1, at 151.

432. *See id.*; *see also* N. William Hines, *The Land Ethic and American Agriculture*, 27 LOY. L.A. L. REV. 841, 845-46 (1994) (noting that these side effects of farming include soil erosion and water pollution). In addition, because most pesticides are derived from petroleum and virtually all nitrogen fertilizers come from fossil fuels, they (and conventional agriculture) are extremely sensitive to changes in energy prices. Thus, reductions in their use may be a good investment, simply in terms of reducing our dependence on foreign oil. *See* Carpenter, *supra* note 14, at 208.

433. *See* ENVIRONMENTAL DEFENSE FUND, PLOWING NEW GROUND: USING ECONOMIC INCENTIVES TO CONTROL WATER POLLUTION FROM AGRICULTURE, ES-1 (1994); Clark & Downes, *supra* note 389, at 40. *See generally* COMMITTEE ON THE ROLE OF ALTERNATIVE FARMING METHODS IN U.S. AGRIC., NATIONAL RESEARCH COUNCIL, ALTERNATIVE AGRICULTURE 7-16 (1989) [hereinafter ALTERNATIVE AGRICULTURE] (detailing how alternative farming has degraded water quality). Nonpoint-source pollution is diffused pollution resulting from water runoff from urban areas, agriculture, and the like. *See* ENVIRONMENTAL DEFENSE FUND, *supra*, at ES-1.

434. *See* EHRLICH ET AL., *supra* note 1, at 184; WORLD RESOURCES INST., WORLD RESOURCES 1992-93, at 159, 168-69 (1992).

health risks to humans.[435] Failure to include these negative side effects in the price of agrichemicals leads to overuse.[436] To make matters worse, only half the insecticides manufactured ever reach a crop, and less than 1% reaches an insect.[437]

Though scientists currently can only speculate about the absolute risk agrichemicals pose to humans, we can already estimate, in dollars and cents the harm they pose to insects.[438] Because chemicals kill insects indiscriminately, they kill desirable, as well as undesirable, insects.[439] Pollution and development have so decimated insects that pollinate crops, particularly bees, that the insects are not performing the jobs they once did.[440] Farmers now must spend nearly $100 million a year to pollinate their crops.[441] In fact, economists estimate that the cumulative value of the ecosystem's services, such as insect pollination, averages $33 trillion annually.[442] Given that the annual value of human-made goods and services is only $18 trillion,[443] protecting these "free" services *must* be a priority. Furthermore, as the supply of ecosystem services declines, the cost of replacements will increase.

Fifty percent of the U.S. population depends on groundwater for its drinking water;[444] this percentage is higher in the grain-belt

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435. *See* WORLD HEALTH ORGANIZATION, *supra* note 14, at 38.

436. *See* Stan G. Daberkow & Katherine H. Reichelderfer, *Low-Input Agriculture: Trends, Goals, and Prospects for Input Use*, 70 AM. J. AGRIC. ECON. 1159, 1160 (1988).

437. *See* COUNCIL ON ENVTL. QUALITY, ENVIRONMENTAL TRENDS 92 (1981); WORLD RESOURCES INST., WORLD RESOURCES 1994-95 114 (1994) [hereinafter WORLD RESOURCES 1994-95]; George R. Hallberg, *Agricultural Chemicals in Ground Water: Extent and Implications*, 2 AM. J. ALTERNATIVE AGRIC. 3, 9 (1987); Speth, *supra* note 185, at 1429 n.5 (citing COUNCIL ON ENVTL. QUALITY, ENVTL. TRENDS 92 (1981)).

438. *See* Sharon Begley, *Butterflies Aren't Free*, NEWSWEEK, May 26, 1997, at 73; Robert Costanza et al., *The Value of the World's Ecosystem Services and Natural Capital*, 387 NATURE 253, 253 (May 1997).

439. *See* Begley, *supra* note 438, at 73; *see also* Ehrlich et al., *supra* note 388, at V-97 ("For example, the broadcast use of pesticides 'promotes' previously innocuous species to pest status by decimating the predators that once controlled their populations.").

440. *See* Begley, *supra* note 438, at 73; Robert Costanza & Carl Folke, *Valuing Ecosystem Services with Efficiency, Fairness, and Sustainability as Goals*, *in* NATURE'S SERVICES, *supra* note 5, at 49, 49-68; Lawrence H. Goulder & Donald Kennedy, *Valuing Ecosystem Services: Philosophical Bases and Empirical Methods*, *in* NATURE'S SERVICES, *supra* note 5, at 23, 23-47.

441. *See* Begley, *supra* note 438, at 73. For example, one beekeeper in California rents his 2500 hives for $40 to $50 per colony to pollinate almond orchards. *See id.*

442. *See id.*; Costanza & Folke, *supra* note 440, at 253.

443. *See* Begley, *supra* note 438, at 73.

444. *See* D.D. Francis, *Control Mechanisms to Reduce Fertilizer Nitrogen Movement into Groundwater*, 47 J. SOIL & WATER CONSERVATION 444, 444 (1992); Hallberg, *supra* note 439, at 3.

states.[445] The increase in groundwater contamination is, therefore, a cause of great concern. Fertilizers, the most extensive source of nitrogen, contribute to the accumulation of nitrate in groundwater.[446] Nitrogen leaches into ground water because the nitrogen farmers apply to crops exceeds the nitrogen the plants utilize.[447] For example, studies indicate that in Nebraska, since the mid-1960s, nitrogen applied to crop land has exceeded actual crop requirements by 20% to 60% per year.[448] In water, nitrogen is converted to nitrites, which can be extremely toxic, especially to children.[449] An infant can die from nitrate concentrations only four and a half times higher than the EPA's standard for nitrates in drinking water.[450] Though the risks of nitrate exposure are not entirely clear,[451] the National Research Council has recommended reducing exposure to nitrate and nitrite compounds.[452] Unfortunately, researchers do not know the full extent of nitrogen pollution in drinking water. One study estimates that at least 63% of all rural Americans drink tainted water.[453] Moreover, we cannot eliminate nitrate leaching losses merely by restricting or eliminating nitrogen fertilizer use. Residual nitrogen on farm land continues to be released when plots are cultivated and the nitrogen is not used by plants.[454] Furthermore, a report by the National Academy of Sciences, dating back to 1972, determined that the nitrate problem is not just a fertilizer-use problem but is an

445. *See* Hallberg, *supra* note 437, at 3.

446. *See id.* at 4.

447. *See id.* at 8.

448. *See id.* at 5.

449. *See* Hamilton, *supra* note 390, at 10,030.

450. *See* Carpenter, *supra* note 14, at 202.

451. While scientists do not yet understand the causal relationship between nitrates and cancer, they do know that nitrates interact with the widely used pesticide Atrazine to increase the risk of cancer. *See* Carpenter, *supra* note 14, at 202; Thomas W. Culliney et al., *Pesticides and Natural Toxicants in Foods*, 41 AGRIC. ECOSYSTEMS & ENV'T 297, 306 (1992).

452. *See* Carpenter, *supra* note 14, at 202 (citing Katherine L. Clancy, *The Role of Sustainable Agriculture in Improving the Safety and Quality of the Food Supply*, 1 AM. J. ALTERNATIVE AGRIC. 11, 14 (1986)).

453. *See* JUDITH D. SOULE & JOHN K. PIPER, FARMING IN NATURE'S IMAGE: AN ECOLOGICAL APPROACH TO AGRICULTURE 36 (1992) (citing JAMES W. MOORE, BALANCING THE NEEDS OF WATER USE (1989)).

454. Soils are now "loaded with . . . excess nitrogen, which can slowly leach into deep aquifers, even for years after fertilizer application ceases." *Id.* at 34. In addition, it will be 40 years before we even see the full extent of nitrogen contamination. Moreover, groundwater clean up is currently "technically and economically impractical." *Id.*; Carpenter, *supra* note 14, at 203 (citing ALTERNATIVE AGRICULTURE, *supra* note 433, at 107-08).

inevitable byproduct of population growth and human activity.[455]

Like fertilizers, pesticides present serious health risks to humans. The EPA considers at least 62% of all pesticides to be carcinogenic or potentially carcinogenic.[456] About 35% to 40% of all the foods we purchase contain detectable levels of pesticides.[457] In fact, Americans consume small amounts of pesticides daily in our food and water.[458] While scientists do not yet fully understand the health risks from exposure to pesticides, those risks could be significant. Regulatory shortcomings in monitoring and setting tolerance levels of pesticides may also increase the risks to human health.[459] Unfortunately, even if agricultural chemical use stopped today, the effects of these chemicals would remain with us for decades.[460]

2. The Environment's Impact on Agriculture

Nonagricultural sources also threaten agricultural production. For example, ground-level ozone in the lower atmosphere caused an estimated 5% to 10% loss in U.S. crops in the 1980s.[461] The United States, together with China and Europe, produces about 60% of the

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455. *See* COMMITTEE ON NITRATE ACCUMULATION, NATIONAL ACADEMY OF SCIENCES, ACCUMULATION OF NITRATE 27-28 (1972); Francis, *supra* note 444, at 448. Nitrogen is a byproduct of human and animal waste. Thus, as human activity increases, levels of nitrogen attributable to human activity increase. *See* WORLD RESOURCES 1994-95, *supra* note 437, at 34. The growth of New York City illustrates how population growth affects pollutant load. From 1880 to 1980, metropolitan New York City grew from approximately 3 million to 15.2 million. *See id.* During this same period, "[e]stimated waterborne discharge of organic carbon, nitrogen, and phosphorous from human waste rose in direct proportion to population growth." *Id.*

456. *See* Carpenter, *supra* note 14, at 193; Culliney et al., *supra* note 451, at 310.

457. *See* Carpenter, *supra* note 14, at 195 (citing Culliney et al., *supra* note 451, at 305).

458. *See id.*; David Pimentel et al., *Environmental and Social Costs of Pesticides: A Preliminary Assessment*, 34 OIKOS 126, 127 (1980). In 1986, a study concluded that "at least" 17 pesticides had been found in groundwater in 23 states as a result of routine agricultural practices. *See* Hallberg, *supra* note 437, at 8.

459. *See* Carpenter, *supra* note 14, at 198. The National Research Council has concluded that, while pesticide residues in the average diet may not make a major contribution to the overall risk of cancer for humans, the risk may not be insignificant and in most cases can be substantially reduced. *See* ALTERNATIVE AGRICULTURE, *supra* note 433, at 126. The pesticide industry, however, adamantly opposes limiting the risks posed by these products. In 1994, threatened by legislation to restrict the use of some 70 carcinogenic pesticides, the pesticide industry contributed millions to Congress and successfully blocked the legislation. *See* KELSEY WIRTH & FRANK SCHIMA, THE PESTICIDE PACS: CAMPAIGN CONTRIBUTIONS AND PESTICIDE POLICY 21-22 (1994).

460. *See* Carpenter, *supra* note 14, at 200.

461. *See* EHRLICH ET AL., *supra* note 1, at 190; *see also* JAMES J. MACKENZIE & MOHAMED T. EL-ASHRY, ILL WINDS: AIR POLLUTION'S TOLL ON FORESTS AND CROPS 25-30 (1989) (discussing the damaging effect of air pollution on agricultural yield).

world's food crop production and exports. These same regions also produce most of the world's nitrogen-oxides, a precursor to ground-level ozone.[462] Some scientists estimate that by 2025, 30% to 75% of the world's cereal crops will be exposed to damaging levels of ozone, leading to substantial agricultural losses due to air pollution.[463]

Even more threatening than ozone depletion are possible shifts in climate zones due to the flow of greenhouse gases into the atmosphere. Scientists believe that climate zones could shift as much as fifty times faster than at any time since the dawn of agriculture.[464] If so, agricultural systems will be forced to adapt to rapidly changing conditions.[465] Unprecedented disruption to food production could occur. Some even predict the drying of the central parts of the northern continents.[466] For example, Iowa's present climate could move north to Canada, which lacks the fertile soil base to replace Iowa's agriculture.[467] Attempts to contain greenhouse gases will be

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462. *See* Saleem, *supra* note 126, at 39 (stating that the industrialized nations, including the United States, emit at least two-thirds of all greenhouse gases).

463. *See* W.L. Chameides et al., *Growth of Continental-Scale Metro-Agro-Plexes, Regional Ozone Pollution, and World Food Production*, 264 SCIENCE 74, 76 (1994).

464. *See* EHRLICH ET AL., *supra* note 1, at 192; *see also* INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE: THE IPCC SCIENTIFIC ASSESSMENT 1-4 (J. Houghton et al. eds., 1990) (explaining the damaging effects of methane emissions [hereinafter CLIMATE CHANGE]; STEPHEN H. SCHNEIDER, GLOBAL WARMING: ARE WE ENTERING THE GREENHOUSE CENTURY? 78-119 (1989) (explaining how predictions about climate change are made).

465. *See* Georgie Anne Geyer, *Turning up the Heat on Environment*, CITIZEN (Tucson, Ariz.), May 27, 1996, at 8A. Geyer observes:

> 1995 registered the warmest average global temperature in 130 years of record-keeping. But now, leading analytical reports are showing that the 10 warmest years in those 13 decades have all occurred in the 1980s and '90s. Moreover, within those 10 years, the three warmest years of all were in the 1990s! "As temperatures were climbing,"
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> ....
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> As Worldwatch President Lester Brown reported "crop-withering heat waves were shrinking the 1995 world grain harvest, making it the smallest since 1988. This, combined with the soaring worldwide demand for food, dropped carry-over stocks of grain for 1996 to 48 days of consumption, the lowest level ever."
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> ....
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> ... [The result is] ever more intense and violent storms have followed, sending insurance claims for weather-related damages soaring.... [Payouts for damages] could literally bankrupt the industry, [forcing this industry to become concerned with environmental problems].

Id.

466. *See* CLIMATE CHANGE, *supra* note 464; EHRLICH ET AL., *supra* note 1, at 192.

467. *See* EHRLICH ET AL., *supra* note 1, at 192. A U.S. crop shortfall poses a high risk to more than 100 grain importing countries because world grain exports are more concentrated than oil exports. *See* Brown, *supra* note 18, at 190.

very difficult because their emission relates so closely to human population size through the burning of fossil fuels, deforestation, and agriculture.[468]

C. *Tax Policy and Conventional Agriculture*

> What separates contemporary civilizations from those which have collapsed in the past, due to soil and water crises, is that today we understand our predicament and know that our development path is not sustainable. It remains to be seen whether we are going to apply this knowledge effectively.[469]

Although the problems the United States faces in meeting future food demands are complex, the government could use tax policies both to reverse damage already done and to move U.S. agriculture towards a more sustainable future. Tax policies already influence agricultural practices, albeit in a negative fashion.[470] For example, tax policy has contributed to the large, chemically-dependent monoculture enterprise that U.S. agriculture is today.[471] Policymakers need to reform current tax policies to eliminate incentives that no longer make sense. Furthermore, tax policy can be instrumental in encouraging technological advances and development of sustainable agriculture in the United States.[472]

Historically, the tax code has encouraged capital investment. Investment tax credits, use of the cash method of accounting, and accelerated depreciation have been instrumental in pushing farm operations toward mechanization and away from labor.[473] As a result, farmers have favored more capital-intensive conventional

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468. *See* EHRLICH ET AL., *supra* note 1, at 193.

469. Rathindra N. Roy, *Trees: Appropriate Tools for Water and Soil Management, in* THE GREEN REVOLUTION REVISITED: CRITIQUE AND ALTERNATIVES 124 (Bernhard Glaeser ed., 1987); *see also* EHRLICH ET AL., *supra* note 1, at 180 (noting that land degradation contributed to the fall of many civilizations in the past).

470. *See* ALTERNATIVE AGRICULTURE, *supra* note 433, at 76-77.

471. *See infra* notes 473-92 and accompanying text.

472. *See, e.g.*, I.R.C. § 170(h) (West Supp. 1998) (allowing a charitable contribution deduction for contributions of land dedicated to a conservation purpose, such as preserving a wildlife habitat); *id.* § 175(a) (1994) (allowing farmers to deduct expenses they incur for soil or water conservation or prevention of erosion).

473. *See* Michael LeBlanc & James Hrubovcak, *The Effects of Tax Policy on Aggregate Agricultural Investment*, 68 AM. J. AGRIC. ECON. 767, 776 (1986). Nearly 20% of the net investment in agricultural equipment during the period 1956 through 1978 may be attributed to tax policy. *See id.* at 767; *see also* Gregory D. Hanson & Diane R. Bertelsen, *Tax Reform Impacts on Agricultural Production and Investment Decisions*, 69 AM. J. AGRIC. ECON. 1013, 1014 (1987) (asserting that most economists agree that tax preferences profoundly affect agricultural investment).

production over more labor-intensive alternative agricultural systems.[474] Conventional farmers rely heavily on purchased inputs for production.[475] This reliance is not surprising. Over the last forty years, farm wages rose at a much higher rate than the price of agrichemicals, making pesticides and fertilizers cheap substitutes for labor.[476] The result is that today's farmers have become dependent upon chemical pesticides, fertilizers, federal subsidies, and other inputs in order to survive.[477]

According to an analysis of pre-1981 tax preferences benefiting the agricultural industry, tax policy had a greater impact on the farm sector than did price and income support payments.[478] The study, relying on 1977 data, provided a historical analysis of the preferential tax treatment agriculture received during the 1970s.[479] Its scope included not only income taxes, but also other taxes, such as social security taxes, property taxes, excise taxes, and sales taxes, which

474. Farming has shifted from small-scale, self-sufficient, diverse, labor-intensive enterprises to large-scale, absentee-owner, highly specialized, capital-intensive enterprises. Much debate centers on whether the United States should return to the small-scale farm. *See* WENDELL BERRY, THE UNSETTLING OF AMERICA 33, 210-17 (1977); BARRY COMMONER, THE POVERTY OF POWER, 159-75 (1976); Amory B. Lovins et al., *Energy and Agriculture, in* MEETING THE EXPECTATIONS OF THE LAND 68-86 (Wes Jackson, et al. eds., 1984); Smith, *supra* note 422, at 1539, 1562-63. Large-scale operations are often justified based on their cost efficiency, including lower after-tax costs. One commentator argues, however, that if we measure efficiency by yield per unit of energy, then small, diversified, labor-intensive farms are the most efficient. *See* Smith, *supra* note 422, at 1567. Ignoring the environmental costs of large-scale operations, this commentator argues that large farm operations displace rural communities, leading to homelessness, unemployment, urban crowding, and deterioration of the family. *See id.* A study of two California communities of comparable size and physical endowments illustrates the point. One community consisted of small-scale, owner-operated farms; the other consisted of large-scale, absentee owned farms. The small-farm community supported nearly twice as many businesses, two-thirds more retail trade, three times more household supplies and building equipment expenditures, 20% more people per dollar of agricultural crop sales, and twice as many civic organizations and churches. The small-scale community also supported four elementary schools and a high school, while the large-scale community supported only one elementary school. The small-scale community had three parks and two newspapers, while the large-scale community had only one corporate-owned playground and one newspaper. *See id.*

475. *See* Carpenter, *supra* note 14, at 190 (citing ALTERNATIVE AGRICULTURE, *supra* note 433, at 85).

476. *See* Daberkow & Reichelderfer, *supra* note 436, at 1160.

477. *See* JACK DOYLE, ALTERED HARVEST 116 (1985) ("[A]bout 70 percent of all the farm ingredients ... used in agriculture come from the 'nonfarm sector' of the economy.").

478. *See* Thomas W. Hertel & Marinos E. Tsigas, *Tax Policy and U.S. Agriculture: A General Equilibrium Analysis*, 70 AM. J. AGRIC. ECON. 289, 301 (1988).

479. *See id.*

differentially affected the farm and farm products.[480] The income tax provisions that the study considered included the capital gains preference, deductions for development expenditures, and use of the cash method of accounting.[481] The results revealed that tax rates on food and agriculture were consistently below comparable levels for the non-agricultural economy.[482] As a result of preferential tax treatment, agriculture attracted additional resources. The final tally indicated that in 1977 the tax expenditure associated with farm and food tax preferences was between $5.6 and $6.6 billion, far exceeding agricultural price and income support payments of $3.8 billion.[483] Considering that most of the price and income support payments were to keep land out of production, the tax policies were nonsensical. While the Tax Reform Act of 1986[484] eliminated part of the differential capital tax treatment,[485] the other tax preferences remain.[486] For example, Congress continues to allow special capital gains treatment for the sale of timber, crops, and livestock.[487] Ordinarily, such sales would constitute sales of inventory subject to tax at ordinary rates.[488] Thus, what arguably should be ordinary income is taxed at lower rates than the income of other competing businesses. Furthermore, the expenses a farmer generates associated with these preferred activities are deductible as ordinary business expenses,[489] thereby increasing the tax-rate distortion.

Unlike most businesses, farmers may still use the cash method of accounting,[490] which is easily manipulated. The taxpayer recognizes

480. *See id.* at 289.

481. *See id.*

482. *See id.* at 301.

483. *See id.*

484. Tax Reform Act of 1986, Pub. L. No. 99-514, 100 Stat. 2085.

485. *See* I.R.C. § 38 (West Supp. 1998) (repealing the 10% investment tax credit); *id.* § 168 (increasing the depreciable lives for property); *id.* § 464 (limiting deductions for certain types of farming). For most machinery purchases, depreciation deductions still likely exceed economic costs in the early years of the machine life, and farmers can still immediately expense some capital purchases. *See id.* §§ 168, 263A, 447 (West Supp. 1998). Interest expense for financed capital purchases are still deductible. *See id.* § 163 (West Supp. 1998). Finally, continued use of cash accounting conventions for most agricultural producers ensures that tax management will still be important in agriculture. *See* Hanson & Bertelsen, *supra* note 473, at 1014; I.R.C. § 447 (West Supp. 1998).

486. These preferences include cash method accounting and special deductions for farm expenses. *See, e.g.*, I.R.C. § 180 (1994) (allowing a deduction for costs that would otherwise be capitalized of "fertilizers, lime, ground limestone, marl, or other materials to enrich, neutralize, or condition land used in farming").

487. *See id.* §§ 631(a), 1231(b)(2) (West Supp. 1998).

488. *See id.* § 1231(b)(2)-(4) (West Supp. 1998).

489. *See id.* § 162 (West Supp. 1998); Treas. Reg. § 1.162-12 (1972).

490. *See* I.R.C. § 448(b) (1994). The Tax Reform Act of 1986 virtually eliminated use

income only upon actual or constructive receipt of cash. Similarly, the taxpayer deducts expenses upon payment, rather than upon economic accrual. Because most taxpayers can control receipt and payment, the cash method invites inappropriate mismatching of income and expenses. Its use enables large farm operations, in particular, to operate at a significant tax advantage over small farms.[491] Thus, the tax system has played a major role in determining the size and composition of U.S. agriculture.[492]

1. A New Plow: Alternative Agriculture

Most of the science today points to the necessity of developing alternative agricultural systems and research efforts to maintain the agricultural gains of the Green Revolution.[493] Alternative agricultural systems avoid using synthetic pesticides and inorganic fertilizers. Such systems utilize the benefits derived from nature's pest-control and nutrient-cycling services.[494] The emphasis is on

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of the cash method of accounting for all but farmers and small businesses. *See id.* Section 448(b) generally restricts the cash method of accounting to businesses with gross receipts of $5 million or less. *See id.* But farmers with receipts of up to $25 million can use it. *See id.* § 447(d) (West Supp. 1998). Congress excepted farmers from accrual accounting on grounds of simplicity. According to the Joint Committee on Taxation, "Congress believed that farming businesses . . . should be able to continue to use the cash method in order to avoid the complexities required to account for growing crops and livestock under other acceptable methods of accounting." JOINT COMM. ON TAXATION, GENERAL EXPLANATION OF THE TAX REFORM ACT OF 1986, at 475 (1987).

491. Agriculture Department studies show that the cash method of accounting makes farming more profitable to farmers in higher tax brackets, making it harder for smaller farmers to compete. *See* FRIENDS OF THE EARTH, DIRTY LITTLE SECRETS 17 (1995).

492. *See generally* ALTERNATIVE AGRICULTURE, *supra* note 433, at 6 (stating that a wide range of federal policies, including tax policies, have significantly influenced farmers' choices of agricultural practices.) These "policies work against environmentally benign practices and the adoption of alternative agricultural systems." *Id.*

493. *See* EHRLICH ET AL., *supra* note 1, at 161, 204.

494. The effectiveness of pesticides in actually reducing losses to pests is controversial. *See* ALTERNATIVE AGRICULTURE, *supra* note 433, at 175-76; EHRLICH ET AL., *supra* note 1, at 213. I use the term alternative agriculture interchangeably with sustainable agriculture and low-input systems. Sustainable agriculture is a system that, " 'over the long term, 1) enhances environmental quality and the resource base on which agriculture depends, 2) provides for basic human food and fiber needs, 3) is economically viable, and 4) enhances environmental quality of life for farmers and society as a whole.' " Hamilton, *supra* note 390, at 10,022 (quoting a definition developed at the annual meeting of the American Society of Agronomy). Low-input systems are "typified by enterprise, spatial and temporal diversity, and an implied substitution of land, labor, management, and information for agrichemicals." Daberkow & Reichelderfer, *supra* note 436, at 1159. These systems use methods such as crop rotation to improve soil nutrition and reduce pest populations. *See id.* Agrichemical use generally declines as more emphasis is put on owner-produced inputs. *See id.* In the long run, the decline in chemical use should not result in lowered revenues from the enterprise. *See id.*

sustainable management of water, soil, and other resources by tying their use to local conditions.[495] The goal of alternative agriculture is to reduce reliance on purchased inputs, improve the economic return of agriculture, and minimize environmental degradation.[496] Alternative agriculture would ensure long-term productivity, viability, and sustainability.[497]

An example of alternative agriculture is organic farming.[498] Organic farming is, in fact, a sophisticated alternative agricultural system that eschews use of synthetic fertilizers and other non-organic means of encouraging plant and livestock growth.[499] Data exist to conclude that organic farming can compete economically with conventional farming.[500] Organic farming provides substantial benefits to society, such as pollution reduction; flood reduction; energy, soil, nutrient, fish, and wildlife conservation; federal grain price support reductions; and a reliable supply of food for the future.[501] In fact, considering only the decreased risk of carcinogenic pesticides exposure, the number of those buying organic products to guarantee an extra measure of health safety is increasing.[502]

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495. *See* EHRLICH ET AL., *supra* note 1, at 213.

496. *See* Hamilton, *supra* note 390, at 10,021.

497. *See id.*

498. While organic farming carries a pejorative image of hippies raising blueberries, it is merely one type of alternative agriculture. Alternative agriculture is much broader in sweep and intent and does not advocate eliminating chemical use altogether. *See* Hamilton, *supra* note 390, at 10,024. However, it is very informative that this study indicates that even this most extreme form of alternative agriculture is economically competitive without tax policy distortions.

499. *See* Terry Cacek & Linda L. Langner, *The Economic Implications of Organic Farming*, 1 AM. J. ALTERNATIVE AGRIC. 25, 25 (1986). According to Cacek and Langner:

> Organic farming is a production system which avoids or largely excludes the use of synthetically compounded fertilizers, pesticides, growth regulators, and livestock feed additives. To the maximum extent feasible, organic farming systems rely upon crop rotations, crop residues, animal manures, legumes, green manures, off-farm organic wastes, mechanical cultivation, mineral-bearing rocks, and aspects of biological pest control to maintain soil productivity and tilth, to supply plant nutrients, and to control insects, weeds, and other pests.

Id.

500. *See id.* at 28. One study from Pennsylvania found that if farmers were forced to reduce erosion to less than five tons per acre, completely organic practices would be *more* profitable than conventional practices. *See* Carpenter, *supra* note 14, at 212 (quoting Pierre Crosson & Janet Ekey Ostrov, *Sorting Out the Environmental Benefits of Alternative Agriculture*, 45 J. SOIL & WATER CONSERVATION 34, 35 (1990); Jean L. Domanico et al., *Income Effects of Limiting Soil Erosion Under Organic, Conventional, and No-Till Systems in Eastern Pennsylvania*, 1 AM. J. ALTERNATIVE AGRIC. 75, 80-81 (1986)).

501. *See* Cacek & Langner, *supra* note 499, at 28.

502. A study by the National Resource Council found that 30% of pesticides, 50% of

Unfortunately, current U.S. tax law favors conventional farmers over organic farmers. Investment-stimulating provisions, such as investment credits, accelerated depreciation, the cash method of accounting, and interest deductions, are of less utility to the organic farmer than the conventional farmer.[503] Organic farmers tend to be less capital intensive,[504] and therefore less likely to benefit from provisions of this type. Furthermore, these provisions encourage substitution of capital for labor, and thereby generally favor the more capital-intensive conventional farmers, placing more labor-intensive alternative farmers at a competitive disadvantage.[505] Because of the necessity to develop alternative farming methods, it makes little sense for the federal government to subsidize conventional farming through current tax policy.[506] While alternative farming should at least be on equal footing with conventional farming, ideally tax incentives should encourage alternative farming.

2. A Better Plow: Research Efforts

In addition to the development of alternative farm practices, scientific research has shifted towards efforts to maintain the agricultural gains of the Green Revolution.[507] Researchers are now attempting to breed pest-resistant crop strains,[508] improve livestock

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herbicides, and 90% of fungicides applied to farm products contain chemicals that cause tumors in laboratory animals. *See* ALTERNATIVE AGRICULTURE, *supra* note 433, at 126; *see also* U.S. DEP'T OF AGRIC., REPORT AND RECOMMENDATIONS ON ORGANIC FARMING (1980) (describing the growth of organic farming due to food and safety concerns about pesticide use).

503. *See* I.R.C. §§ 447, 168, 163 (West Supp. 1998).

504. *See* Cacek & Langner, *supra* note 499, at 27. Organic farming does not preclude the use of confinement feeding systems, irrigation systems, and other investments traditionally used by conventional farmers that offer tax benefits. However, the reluctance of organic farmers to use prophylactic antibiotics decreases the feasibility of confinement feeding systems, for example. Additionally, organic farmers have less need for irrigation because they use more crop rotations and because of higher soil permeability. *See id.*

505. *See* Carpenter, *supra* note 14, at 238-39; Hanson & Bertelsen, *supra* note 473, at 1014.

506. *See* Carpenter, *supra* note 14, at 220-21. Estimating the environmental costs of conventional farming is very difficult. Carpenter estimates that the off-farm costs to society from pesticides and soil erosion amount to at least $3 billion annually. *See id.* This figure does not include an estimate for damage to fish and wildlife. *See id.*

507. *See, e.g.*, Karen Schmidt, *Genetic Engineering Yields First Pest-Resistant Seeds*, 265 SCIENCE 739 (1994). One commentator suggests that current yields of crops grown by alternative means would be more comparable to yields of conventional agriculture if researchers had focused on developing methods using organic sources. *See* Carpenter, *supra* note 14, at 240-41 (citing Crosson & Ostrov, *supra* note 500, at 35).

508. For example, United States and Australian scientists have recently shown that "biotechnology can combat pests in the storage bin as well as in the field." Schmidt, *supra*

breeds, and preserve the store of genetic variability of crops and wild crop relatives that is essential to high-yield agriculture.[509] Such research, however, is still in its infancy. In organic farm research, efforts to increase yields by improving soil organic levels and soil tilth, along with crop rotations, are promising.[510] In fact, agricultural researchers Terry Cacek and Linda Langner write, "the economic benefits to farmers from an incremental investment in organic research may be greater than from a corresponding investment in chemically-oriented research."[511] Unfortunately, the development of new yield-raising technologies has slowed.[512]

The tax system can assist in this regard by providing research incentives. Currently, research and experiment costs are deductible under Code section 174.[513] However, this provision does not distinguish between research efforts that have environmentally beneficial results and those efforts that do not.[514] Tax incentives should favor research efforts to develop sustainable technology and preserve ecosystem services. Data is now available on the value of ecosystem services.[515] Offering incentives to preserve these services will be cheaper than the cost of replacement, if replacements are even possible.[516]

3. More New and Improved Plows: Tax Incentives and Penalties

Congress understands the need to redirect farm policy. Since the early 1980s, Congressional hearings have shown interest in the need

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note 507, at 739. These scientists have "created a strain of garden pea that resists attack by two weevil species that damage stored crops." *Id.* This achievement "marks the first time that seeds have been genetically engineered for pest resistance." *Id.*

509. *See* EHRLICH ET AL., *supra* note 1, at 151; *see generally* Joel I. Cohen et al., *Ex-Situ Conservation of Plant Genetic Resources: Global Development and Environmental Concerns*, 253 SCIENCE 866, 866-71 (1991) (describing the process of conserving plant genetic resources).

510. *See* Carpenter, *supra* note 14, at 241.

511. Cacek & Langner, *supra* note 499, at 28.

512. *See* Brown, *supra* note 18, at 186.

513. *See* I.R.C. § 174(a)(1) (West Supp. 1998).

514. *See id.* Section 174(a)(1) states: "A taxpayer may treat research or experimental expenditures which are paid or incurred by him during the taxable year in connection with his trade or business as expenses which are not chargeable to capital account. The expenditures so treated shall be allowed as a deduction." *Id.*

515. *See supra* notes 438-43 and accompanying text (describing the effects of chemicals on insects). Economists estimate that the dollar value of the world's ecosystem services averages $33 trillion per year. *See* Costanza et al., *supra* note 440, at 253.

516. *See* Dasgupta, *supra* note 27, at 1883-84. *See generally* NATURE'S SERVICES, *supra* note 5, at 423-24 (describing various methods for measuring the costs of ecosystem substitutions).

to integrate alternative agriculture into national farm policy.[517] When evaluating legal reform, however, Congress has overlooked the historical impact of current tax policies on agriculture.[518] Tax policy needs to be integrated with and complementary to national farm policy.

One of the most common suggestions for the use of tax policy is to enact taxes or surcharges on environmental "bads."[519] Because farm chemicals cause significant environmental damage, some advocates have proposed a tax on fertilizers and pesticides.[520] For example, the World Resource Institute ("WRI") believes that environmental taxes can strengthen pesticide regulations and water quality programs for non-point sources of pollution.[521] The WRI therefore proposes a multi-rate tax on pesticides that would take into account their differential risks.[522]

Imposing higher taxes on chemicals that pose higher risks would encourage adoption of safer substitutes.[523] Additionally, the revenue from such a tax might go towards clean-up efforts and educating farmers in the use of Integrated Pest Management.[524] Before

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517. *See* Hamilton, *supra* note 390, at 10,024. *See generally Agriculture, Rural Development, and Related Agencies Appropriations for Fiscal Year* 1989: *Hearings before the Subcomm. on Agric., Rural Dev., and Related Agencies of the Senate Comm. on Appropriations*, 100th Cong. (1988) (discussing national forum policy including the need to move agriculture to a sustainable market-oriented basis); ALTERNATIVE AGRICULTURE, *supra* note 433, at 1 (arguing that forms of alternative agriculture should be more widely adopted).

518. For example, one proposal considered by Congress, the Farm Conservation and Water Protection Act, contained a "variety of initiatives designed to promote sustainable agriculture and to integrate it into national policy." Hamilton, *supra* note 390, at 10,025 (citing S. 970, 101st Cong. 1st Sess. (1989)). Initiatives included:

> the use of small grains and legumes in commodity programs, multiyear set-asides, research and demonstration grants on low-input practices, the development of technical guides on low-input production, ... well testing and groundwater protection efforts, and the creation of an Organic Food Commission to develop a national program to certify organic food.

Id.

519. *See supra* notes 175-78 and accompanying text (describing difficulties with environmental taxes).

520. *See* REPETTO ET AL., *supra* note 171, at 80-81.

521. *See id.* at 80; *see also supra* Part III.A. (discussing environmental taxes).

522. *See* REPETTO ET AL., *supra* note 171, at 80.

523. *See id.* at 81.

524. Integrated Pest Management is the use of pest control strategies, such as emphasizing the natural enemies of pests and pathogens, breeding crop plants and livestock for resistance to pests or pathogens, or increasing agroecosystems diversity to reduce pest or pathogen numbers, in a way that not only reduces pest populations but also is sustainable and non-polluting. *See* Jules Pretty et al., *Regenerating Agriculture: The Agroecology of Low-External Input and Community-Based Development, in* MAKING DEVELOPMENT SUSTAINABLE: REDEFINING INSTITUTIONS, POLICY, AND ECONOMICS

imposing such taxes, however, effective and practical substitutes must be developed. Pesticides have contributed significantly to the productivity of U.S. agriculture. A sudden disincentive on pesticide use would severely impact productivity.[525]

The WRI also advocates a tax on fertilizers to discourage their use.[526] As discussed above, use of fertilizers significantly contributes to nitrogen contamination of groundwater.[527] The WRI contends that such a "stick" would supplement the "carrots" the government already offers to farmers to participate in non-point source pollution-control programs.[528] Because many farmers overuse fertilizers, studies indicate that the response to such a tax would be significant.[529] Other studies suggest, however, "that fertilizer demand is not highly responsive to fertilizer prices, at least in the short run."[530] If fertilizer demand is inelastic, any fertilizer tax would need to be high, in order to discourage use as well as induce innovation.[531]

Regardless of the elasticity of fertilizer demand, some tax that seeks to reduce nitrogen pollution seems appropriate.[532] A basic ad valorem tax would be easy to implement and enforce.[533] In addition

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91, 100 (Johan Holmberg ed., 1992); *see also* WORLD HEALTH ORGANIZATION, *supra* note 14, at 92 (defining Integrated Pest Management).

525. *See* Hamilton, *supra* note 390, at 10,024.

526. *See* REPETTO ET AL., *supra* note 171, at 81.

527. *See supra* Part V.B.1. (discussing the need to reform the U.S. agricultural system to meet future food demands).

528. *See* REPETTO ET AL., *supra* note 171, at 81.

529. *See id.*; Huang & LeBlanc, *supra* note 170, at 437.

530. David G. Abler & James S. Shortle, *The Economic Performance of Alternative Agricultural Nonpoint Pollution Controls*, 48 OKLA. L. REV. 427, 444 (1995); *see also* Daberkow & Reichelderfer, *supra* note 436, at 1164 (noting inelasticity of fertilizer demand possibly due to a lack of substitutes).

531. *See* Daberkow & Reichelderfer, *supra* note 436, at 1164. These authors suggest that price unresponsiveness may be due to lack of available substitutes or that substitution with other inputs is low. *See id.* Thus, they conclude that a significant increase in prices would be necessary either to induce innovation or to reduce profitability of conventional agrichemical inputs. *See id.*

532. Daberkow and Reichelderfer have argued, however, that such a tax is inconsistent with the profit and commodity price maintenance goals of low-input agriculture, because taxation would increase production costs and impose "upward pressure on commodity prices." *Id.* This conclusion is debatable. Theoretically, such a tax would also decrease agrichemical use, cause a substitution of alternative practices, and, ultimately, reduce farm costs. *See* Hamilton, *supra* note 390, at 10,023. Therefore, whether such a tax would inevitably increase farm costs, lowering farm profits, is not clear. *See generally* Rehbinder, *supra* note 175, at 74 (discussing German industry complaints about taxation on top of regulation).

533. In general, such a tax could merely be added to any sales tax already assessed by the state, then remitted to the federal government periodically. *See* Francis, *supra* note 444, at 445 ("The major advantage of a tax would be the ease and low cost of implementing, enforcing, and administering controls.").

to reducing the use of fertilizers, the government could channel the revenue from such a tax toward funding education programs on sustainable agricultural practices,[534] developing research programs for improving the efficiency of nitrogen fertilizer use,[535] and finding substitute fertilizers with fewer environmental side effects.

Alternatively, a residual nitrogen tax would tax nitrogen *pollution*, as opposed to taxing nitrogen fertilizer *use*. An ad valorem fertilizer tax cannot discriminate between polluting and non-polluting farms. A residual nitrogen tax, in contrast, would tax only *excess* nitrogen use.[536] Such a tax would penalize farmers for applying nitrogen in excess of a crop's nitrogen uptake.[537] The tax would operate initially by taxing, via an ad valorem tax, all purchases of nitrogen fertilizer. After harvest, the farmer would receive a refund for nitrogen removed from the field in the form of crops.[538] If a farmer over-fertilized (that is, the crops did not utilize all the fertilizer applied), the farmer would end up paying a net tax.[539] If the crop utilized any residual nitrogen already in the ground, the farmer would, in effect, receive a subsidy for reducing soil nitrogen.[540] Because the tax would apply to farmers on the basis of their environmental performance, they would have an incentive to adopt new technologies that improved their performance.

A simpler, but less precise alternative, is a sliding-scale nitrogen fertilizer tax, implemented through rebates. For example, the government could impose a substantial tax on all nitrogen fertilizers. A farmer then could apply for a rebate if the fertilizer purchase did not exceed a given amount, based on crop acreage.[541] Congress could

534. Using revenue from a tax on nitrogen fertilizers and a registration fee on pesticides, Iowa has created the Leopold Center for Sustainable Agriculture. *See* Hamilton, *supra* note 390, at 10,026. The Leopold Center has become a leader in sustainable agriculture research, providing millions of dollars in funding for projects devoted to research and education. *See id.* at 10,026.

535. *See* Francis, *supra* note 444, at 445.

536. *See* Abler & Shortle, *supra* note 530, at 445.

537. *See* Huang & LeBlanc, *supra* note 170, at 428. A simple ad valorem tax would tax nitrogen used and nitrogen wasted. Pollution occurs when nitrogen left in the soil leaches into the water. A more efficient tax would tax a farmer only on nitrogen left in the ground. *See id.* at 428-29.

538. *See id.* at 429. Given current information and technology, farmers can estimate the amount of nitrogen in harvested crops. Once estimated, farmers can determine the amount of excess nitrogen applied to the crops. *See id.* at 429 n.3.

539. A tax on excess nitrogen use would be more costly to administer than an ad valorem tax. *See id.* at 438. One study suggests, however, that farmers would pay less tax with an excess nitrogen tax. *See id.* at 440.

540. *See id.* at 429.

541. *See* Francis, *supra* note 444, at 446.

fine-tune this tax/rebate approach to local conditions by making the amount of the rebate dependent on such factors as dry-land or irrigated crops, soil type, and past yields.[542] Basing the tax on individual usage and local conditions would not only reduce excess use of nitrogen, but also encourage innovation.

In addition to reducing overall nitrogen use, Congress should try to minimize leaching of nitrogen already in the ground. By encouraging farmers to use Best Management Practices ("BMPs"),[543] overall nitrogen fertilizer use would decrease, and leaching of accumulated nitrogen would decline.[544] Best Management Practices would obviously include reduction of nitrogen use, which would in turn help farmers to avoid any tax on nitrogen or fertilizer. The tax system could offer additional incentives to adopt BMPs through use of tax credits for adoption and preferential treatment of the costs of educating farmers about BMPs.[545]

Land use also promises to be a big part of both agricultural resource and consumption problems in the coming decades.[546] The tax system also needs to more effectively address land use issues than it currently does. Because U.S. agricultural land is finite, policymakers should seriously consider restricting future development that would take prime agricultural land out of production.[547] The issue of preserving farm land already has become

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542. *See id.*

543. Best Management Practices require farmers to use the best practices available to handle their plant nutrient requirements. *See* Hamilton, *supra* note 390, at 10,031. Best Management Practices are defined as follows:

> "[G]enerally recognized farmer management practices designed to reduce or prevent contamination of ground water and surface water, erosion, and runoff from cropland, including the use of conversion tillage, no-till, ridge planting, strip tillage, contour farming, strip cropping, crop rotation, irrigation water management, judicious fertilizer application, slow-release fertilizers, soil and tissue testing, and vegetative buffer strips."

Id. (quoting S. 779, 101st Cong., *reprinted in* 135 CONG. REC. 6561 (1989)).

544. *See generally* Terrence J. Centner et al., *Employing Best Management Practices To Reduce Agricultural Water Pollution: Economics, Regulatory Institutions, and Policy Concerns*, 45 DRAKE L. REV. 125 (1997) (discussing concerns associated with implementing BMPs).

545. For example, the cost of adopting BMPs would probably already be deductible as business expenses under section 162, but these costs, or a portion thereof, might also be eligible for a general business tax credit, operating like the former investment tax credit. *See* I.R.C. § 38 (West Supp. 1998). The former investment tax credit was repealed in 1984. *See* Deficit Reduction Act of 1984, Pub. L. No. 98-369, § 474(m)(1), 98 Stat. 830, 833.

546. *See* ABERNETHY, *supra* note 25, at 176-77; Postel, *supra* note 50, at 8-12; *infra* Part VI.B (discussing land use and consumption).

547. *See* EHRLICH ET AL., *supra* note 1, at 266; Terence J. Centner, *Preserving Rural-*

very significant, especially in the northeastern United States, where the supply of agricultural land is naturally limited and the demand by encroaching urban populations is great.[548] One consequence of such urban sprawl is nuisance actions against farmers.[549] To the extent farmers are unsuccessful in defending these suits, they may lose valuable farmland to residential use,[550] which may jeopardize future food production.[551] Furthermore, the economic diversity of the farm declines if livestock production, often the aim of nuisance actions, must cease. Limiting a farmer's ability to use animal manures as a source of plant fertilizer limits his ability to rebuild the soil.[552] Almost all states have restricted the right to bring nuisance actions against farmers.[553] However, as urban demand for land increases,[554] conflicts over land use are likely to persist and intensify.

Policies that assist rural preservation and promote the rural environment are vital. Population pressure will continue. Available arable land is already scarce. Land use issues therefore will grow as conflicting needs increase. The tax code illustrates our lack of national consensus on land use issues. While a number of provisions provide favorable tax treatment for preservation of land,[555] a far greater number of tax provisions encourage urban development.[556] Despite a smattering of state and local land use policies designed to protect agricultural areas,[557] land preservation efforts in the United

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Urban Fringe Areas and Enhancing the Rural Environment: Looking at Selected German Institutional Responses, 11 ARIZ. J. INT'L & COMP. L. 27, 30 (1994).

548. *See* Hamilton, *supra* note 390, at 10,028.

549. *See id.*

550. *See id.*

551. *See* Centner, *supra* note 547, at 27 n.2 (citing James B. Wadley, *The Emerging "Social Function" Context for Land Use Planning in the United States: A Comparative Introduction to Recurring Issues*, 28 WASHBURN L.J. 22, 23 (1988)).

552. *See* Hamilton, *supra* note 390, at 10,028.

553. *See id. See generally* Centner, *supra* note 547, at 28 n.6 (discussing the effects of right-to-farm laws).

554. *See* EHRLICH ET AL., *supra* note 1, at 172. The American Farmland Trust recently named 12 regions as highly threatened by population growth and urbanization. *See id.* Although these regions collectively represent only 5% of U.S. farmland, they account for 17% of total U.S. agricultural sales, 67% of domestic fruit production, 55% of vegetable production, and 24% of dairy products. *See id.*

555. *See, e.g.*, I.R.C. § 170(h) (West Supp. 1998) (allowing a charitable contribution deduction for contributions of land dedicated to a conservation purpose, such as preserving a wildlife habitat), *id.* § 175(a) (1994 and West Supp. 1998) (allowing farmers to deduct expenses they incur for soil or water conservation or prevention of erosion).

556. *See infra* Part VI (discussing the impact of tax policies on consumption patterns in the United States).

557. *See* Centner, *supra* note 547, at 28 n.7 (citing Myrl L. Duncan, *Agriculture as a Resource: Statewide Land Use Programs for the Preservation of Farmland*, 14 ECOLOGY

States lag behind those of the European Community.[558] In 1996, the House Ways and Means Subcommittee on Oversight held a hearing to discuss tax provisions that impact land use.[559] These hearings may signal congressional interest in formulating more consistent and environmentally sound national land use goals.

Congress might consider the land use policies of other nations in formulating a coherent domestic policy. For example, in Germany the tax laws serve as an integral piece of an overall plan for preserving rural-urban fringe areas.[560] In fact, one analysis concludes that these laws may be responsible for nearly one-half of a farm's profit and income potential.[561] Unlike U.S. tax policy, the German tax incentives seek preservation, not exploitation.[562]

Finally, in addition to analysis of agricultural practices and the food supply, many believe that a change in food demands is necessary.[563] Some have suggested that overdeveloped nations should make efforts to shift toward a more vegetarian-based diet.[564]

L.Q. 401, 404 (1987)) (noting that four states have adopted state-wide land use programs to assist in preserving farmland). Washington state has also implemented land use statutes designed to aid in preservation. *See* WASH. REV. CODE ANN. § 36.70A (West 1991). The legislative finding of the statute states that "uncoordinated and unplanned growth, together with a lack of common goals expressing the public's interest in the conservation and the wise use of our lands, pose a threat to the environment, sustainable economic development, and the health, safety, and high quality of life enjoyed by residents of this state." *Id.* § 36.70A.010. The statute lists as planning goals, preventing urban sprawl and providing multiple transportation alternatives. *See id.* 36.70A.020; *see also* Clifford Larsen, *What Should Be The Leading Principles of Land Use Planning? A German Perspective*, 29 VAND. J. TRANSNAT'L L. 967, 969 (1996) (noting the unique land use statutes of certain U.S. jurisdictions).

558. *See* Centner, *supra* note 547, at 29.

559. *See Tax Policy: Ways and Means Oversight Subcommittee Examines Tax Code Impact on Land Use*, Daily Tax Rep. (BNA) No. 137, at D-17 (July 17, 1996), *available in* WESTLAW, BNA-DTR database.

560. *See* Centner, *supra* note 547, at 32. Farmers in private possession of land are taxed on the value of assets and allowed a deduction for borrowed capital. As a result, agricultural property tends to be undervalued, thus reducing the tax liability on these properties. *See* Beatrice Knerr, *The Impact of Transfers to Agriculture Through the German Tax System*, 18 EUR. REV. AGRIC. ECON. 193, 196-99 (1991).

561. *See* Centner, *supra* note 547, at 32; Knerr, *supra* note 560, at 202.

562. *See* Centner, *supra* note 547, at 32. The Federal Act on Land Use Planning, the *Raumordnungsgesetz*, in Germany requires maintenance of rustic agriculture. *See id.* (citing German statutes). When reviewing projects affecting rural areas, governments must consider preservation of rural agriculture. This requirement "restricts governmental approval of plans involving the conversion of agricultural land to non-agricultural uses, encourages a sufficient rural population density, ... and protects and conserves natural resources." *Id.*

563. *See* DURNING, *supra* note 22, at 65-69; EHRLICH ET AL., *supra* note 1, at 267 (arguing that rich nations should help poor nations shift to a diet of vegetarianism).

564. *See* DURNING, *supra* note 22, at 65-69; EHRLICH ET AL., *supra* note 1, at 267. I

This change would reduce the demand for meat and decrease intensive grain feeding of animals.[565] Individuals in the United States consume some 800 kilograms of grain a year, as compared to 200 kilograms in low-income countries.[566] The bulk of U.S. grain consumption is indirect, in the form of beef, mutton, pork, poultry, milk, cheese, yogurt, ice cream, and eggs.[567] Worldwide use of grain for feed climbed from 289 million tons in 1960 to 650 million tons in 1986, accounting for 40% of total grain use.[568] While grain use for feed has since dropped to about 37% of world grain use,[569] future food demands will force this percentage down even further. For health reasons alone, reducing consumption of livestock would be beneficial.[570]

Current tax policy provides livestock breeders and dairy farmers several special incentives. For example, cash-method farmers can deduct expenses incurred in raising livestock or in growing crops that take two years or less to grow.[571] Under normal tax accounting rules, this type of expense goes into inventory and becomes deductible only upon sale of the product.[572] In addition, as mentioned above, the sale of livestock receives capital gains treatment.[573] Thus, farmers get the best of both worlds: immediate expensing and favorable tax rates upon sale. Because the environmental impact of these activities is controversial, as is the high consumption rate of livestock and dairy products, tax policy should not provide these incentives. In fact, we might go even further and implement a tax on consumption of livestock products.[574]

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explore consumer demands *infra* in greater depth in Part VI, which discusses the impact of tax policies on consumption patterns in the United States.

565. *See* EHRLICH ET AL., *supra* note 1, at 265-68. Ehrlich believes that meeting the needs of the poor, while satisfying the likely demand of rich and middle-income groups for meat and other luxury products, would require a tripling of output by 2050. *See id.* at 203.

566. *See* Brown, *supra* note 18, at 191.

567. *See id.*

568. *See id.* at 192.

569. *See id.*

570. Paul Ehrlich suggests that "if people were willing to be near-vegetarians and share food equally," everyone would be well fed. EHRLICH ET AL., *supra* note 1, at 227; *see also* DURNING, *supra* note 22, at 65-69 (discussing certain effects of global food consumption pattern).

571. *See* I.R.C. § 263A(d)(1)(A)(i) (West Supp. 1998); Temp. Treas. Reg. § 1.263A-4T (1998). While accrual-method farmers may also expense these costs, the results are less dramatic.

572. *See* I.R.C. § 263A(a) (West Supp. 1998).

573. *See id.* § 1231(b)(3) (West Supp. 1998).

574. *See, e.g.*, Brown, *supra* note 18, at 192 (noting that governments in affluent societies could lower consumption to improve health by taxing consumption of livestock

Conventional agricultural practices, along with chemical use, seriously harm our environment.[575] Furthermore, agricultural production already shows signs that it has peaked.[576] Yet our growing population will need more production, with fewer environmental externalities. Tax policy will influence the outcome. Whether that influence will be beneficial or detrimental remains to be seen. I maintain that the use of penalty taxes and tax incentives, such as those discussed above, can be powerful tools for bringing sustainable agriculture into the twenty-first century.

VI. THE STORK WITH A WEIGHT PROBLEM: OVERCONSUMPTIVE LIFESTYLES EXACERBATE OVERPOPULATION

> Our use of the air, water and land to dispose of the waste products of our consumption-oriented society has backfired. These contaminated resources, the backbone of life on the planet, have signaled their frustration with us by striking back at our health and welfare. We have finally conquered Mother Nature, but at a huge cost to our social welfare. The system has failed.[577]

A. Consumption Patterns and Overpopulation

Historically, the United States has been the land of plenty. However, as our numbers have increased, and as we have come to recognize that many of our technologies are destructive and prolific generators of waste, many people have come to realize that the land of plenty may now be a misnomer.[578] Ultimately, resource use and waste production are the crux of environmental degradation.[579] For this reason, looking only at reproductive rates or agricultural production does not complete the picture of overpopulation; we must also account for consumption. Addressing this aspect of

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products).

575. Lester Brown reminds us: "A systemic response to the deteriorating food situation depends heavily on slowing population growth, halting the degradation of the natural systems that support agriculture, and boosting investments in agriculture." *Id.* at 195.

576. *See id.* (noting that grain production per person has fallen since 1984).

577. *See* Karp, *supra* note 132, at 241.

578. *See* Strong, *supra* note 154, at 121 ("There is irrefutable evidence that the industrialized world cannot continue its historical patterns of production and consumption.") *See generally* Lincoln H. Day, *Departing from Resource-Intensive Lifestyles: Problems and Possibilities in Industrialized Societies*, 13 POPULATION & ENV'T: J. INTERDISC. STUD. 313 (1992) (discussing obstacles to convincing humans to engage in less environmentally unsound behavior).

579. *See* DURNING, *supra* note 22, at 24, 89-101.

overpopulation requires reexamining our destructive technologies and our lifestyles that perpetuate the technology and the destruction.

Over the past four decades, economic policies have dominated the expansion of the global economy. The next forty years will see the interaction of environmental limits and population growth.[580] Particularly in the United States, where individual resource consumption exceeds virtually every other society in the world, an analysis of overpopulation must consider the impact that our consumption has on the environment.[581] Conceivably, over-consumptive lifestyles of U.S. citizens threaten the viability of the entire planet, even though the United States is only a quarter-billion strong.[582] For example, when we compare the environmental impact of the energy consumption of an American family to that of an African family, the African family would need to have more than ninety children to equal the impact of an American family with only two.[583]

Based on current estimates of U.S. carrying capacity,[584] reductions in the U.S. population cannot occur quickly enough to forestall disaster unless there are fundamental changes in the nation's consumption practices.[585] In the short run, reducing consumption in the United States may be significantly more important in determining our future than population reduction. Furthermore, because of the interrelationship between the population size and its impact, if Americans want more choice as to population size, we must limit our consumption. The Earth and its resources are finite.[586] Consequently, we can either choose to have more people with less consumption or fewer people with more consumption. Natural forces will make this choice if we do not.[587] Unfortunately, the evidence

580. *See* Brown, *supra* note 18, at 178.

581. Many would say that part of the moral obligation of rich countries should be to reduce their impacts by cutting their wasteful per capita consumption. *See, e.g.*, EHRLICH ET AL., *supra* note 1, at 120; *see also* DURNING, *supra* note 22, at 49-61 (discussing the environmental consequences of an over-consuming society); Jacobsen, *supra* note 38, at 256 (achieving a sustainable quality of life involves both controlling population growth and lowering resource use).

582. *See* EHRLICH ET AL., *supra* note 1, at 71.

583. *See* Jacobsen, *supra* note 38, at 270; James Salzman, *Sustainable Consumption and the Law*, 27 ENVTL. L. 1243, 1250 (1997).

584. Recall that carrying capacity involves both the number of individuals in a given area and the impact those individuals have on their resources. *See supra* Part II.A.

585. *See* Jacobsen, *supra* note 38, at 260, 263.

586. Although some people believe that the Earth is not finite and that technology can forever create solutions and resources, this position is not supported by the vast majority of the scientific community. *See supra* text accompanying notes 90-92.

587. Viruses (such as AIDS), starvation, climate changes, and conflicts over resources

suggests that perhaps the United States has already exceeded its carrying capacity.[588] Thus, at this point, it appears that we must reduce both our population and our consumption.

Given the American preference for a comfortable lifestyle, our first reaction might be to reduce population to the point at which maintenance of a comfortable lifestyle is sustainable. Unfortunately, even if our birth rate were zero, our population would continue to grow well into the next century.[589] The point at which population reduction would occur in sufficient time to avoid nature's remedy has likely passed. The other factor influencing impact, consumption, is probably the only manipulable factor left. Immediate and drastic changes in consumption could help release pressure on the Earth's ecosystem. By reducing all types of consumption, and particularly environmentally destructive consumption, we could buy time to reduce our numbers. This collision between population and consumption suggests that there will be at least some time period in which current lifestyles must decline.[590] The length of that time period will ultimately depend on the rate of reductions of both population and consumption.

A vast amount of today's consumption is wasteful and reflects either ignorance or arrogance towards the Earth as a limited resource.[591] The United States stands out as the world's largest single consumer and producer of waste.[592] For example, logging practices have destroyed a significant part of America's forest cover, replacing only a small percentage of it with biologically inferior tree farms.[593] Similarly, overgrazing of cattle and sheep in the western United States has produced one of the largest desertified areas on the planet.[594] The role of the United States as a world leader, and the

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are just a few ways that natural forces could curtail our population. *See* ABERNETHY, *supra* note 25, at 24-27; EHRLICH ET AL. *supra* note 1, at 30, 192.

588. *See supra* Part II.A (discussing carrying capacity).

589. *See* Jacobsen, *supra* note 38, at 260; *see also supra* text accompanying notes 38-40 (discussing population increases in the United States).

590. *See* ABERNETHY, *supra* note 25, at 253-55; EHRLICH ET AL., *supra* note 1, at 28.

591. *See* Latin, *supra* note 180, at 190-222 (suggesting that consumers cannot consume in environmentally conscious ways because they lack the relevant information, which the free market system does not provide).

592. *See* PCSD REPORT, *supra* note 11, at Introduction 5.

593. The Pacific Northwest has lost about 95% of its ancient forest cover, and the East Coast has lost 99% of its original forests. *See* Clark & Downes, *supra* note 389, at 12; *see also* Ehrlich & Ehrlich, *supra* note 36, at 127-28 (discussing destruction of America's forest cover).

594. *See* Ehrlich & Ehrlich, *supra* note 36, at 127-28. The overgrazing occurred not because we need the meat, but because of the political power of western ranchers. *See id.*

quest of those in poor countries to enjoy the American way of life, make it imperative that Americans begin a campaign now, in which we not only change our own lifestyles, but also send the message to the rest of the world that overconsumptive, environmentally-destructive lifestyles are a thing of the past.[595]

Tax policies dealing with these problems should play an integral role. The President's Council on Sustainable Development concluded that ideally the tax system should promote economic growth and jobs in a socially equitable manner, while discouraging pollution.[596] Furthermore, effective use of the tax system could be a powerful tool in meeting the challenges of creating a sustainable future.[597]

Before looking at the tax system, however, I describe the problems of consumption. Consumption consists of two general and overlapping problems.[598] First, our level of consumption is higher than ever before.[599] Today's lifestyles dictate that we engage in excess consumption. Two cars,[600] two (or more) television sets,[601] long commutes to work,[602] and "shop 'til you drop" are the norm.[603] As our population grows, our high levels of consumption begin to overtake our resource base, and a negative environmental impact

595. *See* Karp, *supra* note 132, at 254, 264 (explaining that the United States needs to adopt a new vision of sustainable development, with the federal, state, and local governments taking the lead and setting positive examples).

596. *See* THE PRESIDENT'S COUNCIL ON SUSTAINABLE DEV., SUSTAINABLE AMERICA: A NEW CONSENSUS FOR THE FUTURE, ch. 2, at 19 (visited Aug. 26, 1998) <http://www.whitehouse.gov/PCSD/Publications/TF_Reports/amer-chap2.html> [hereinafter SUSTAINABLE AMERICA].

597. *See id.*

598. The Council on Sustainable Development states that unsustainable trends in resource use and pollution are the result of both levels and characteristics (patterns) of production and consumption. *See id.* at 4.

599. Total waste in the United States has gone from 88 million tons in 1960 to approximately 209 million tons in 1994. *See* STATISTICAL ABSTRACT, *supra* note 9, at 237 tbl.1021. Per capita waste has gone from 2.7 pounds per day in 1960, to 4.4 pounds per day in 1994. *See id.*

600. As of 1990, more than 70% of American households had two or more vehicles. More than 25% of households had three or more vehicles. *See id.* at 633 tbl.876.

601. As of 1994, Americans averaged over 2.2 television sets per household and more than five radios per household. *See id.* at 561 tbl.876.

602. *See id.* at 625 tbl.1007. In 1990, workers traveled 22.4 minutes on average to get to their jobs. *See id.*

603. In 1980, total retail sales per capita were $4213. *See id.* at 765 tbl.1257. By 1995, retail sales per capita had risen to $8909, more than doubling the 1980 figure in 15 years. *See id.* at 765 tbl.1257. In addition, in 1969, the average American made 213 shopping trips, which averaged about 4.4 miles. *See id.* at 626 tbl.1008. In 1990, however, the average American made 345 shopping trips, which averaged 5.1 miles. *See id.* at 626 tbl.1008.

occurs.[604] For example, the use of wood—not harmful per se—becomes harmful when we harvest forests to the point at which we severely damage the natural ecosystem.[605] Similarly, when nontoxic garbage grows to such an extent that we cannot afford to put it anywhere, it becomes problematic.[606] As already discussed, we exceed our carrying capacity when consumption threatens the viability of our resource base.[607] Our consumption levels seem to have reached that point.

Second, Americans engage in environmentally destructive consumption. A destructive environmental impact occurs when our use of a material, even in small amounts, is toxic or has other harmful environmental consequences.[608] Examples include dioxins and chlorofluorocarbons.[609] Two of our most environmentally destructive consumption activities are the use of nonrenewable fossil fuels and the creation of toxic by-products.[610] Energy consumption in the United States may well be the factor determining whether the United States has exceeded its carrying capacity;[611] therefore, energy tax policy deserves special attention.

The consensus is that energy demand will continue to rise. Studies indicate that world demand will increase in the range of 34% to 44% by 2010 and 54% to 98% by 2020.[612] While most of this demand is centered in developing parts of the world, America's dependence on foreign oil ensures that we, too, shall feel the effect of increased worldwide demand.[613] Moreover, in the absence of specific policies to alter market incentives, most new energy production is

604. A negative environmental impact occurs when "the scale of an activity severely disrupts or overuses the natural systems from which it derives or in which it occurs, though it is not inherently toxic." PCSD REPORT, *supra* note 11, at Introduction 2.

605. *See id.*

606. *See id.* Abernethy notes that dumping fees in the United States have skyrocketed, from $5 or $10 a ton to an average of over $150 a ton. *See* ABERNETHY, *supra* note 25, at 247. Problems relating to waste disposal include whether to incinerate or not, how to recycle, and how to make money from waste disposal. *See id.* In another example, one Nashville landfill stayed in use for two years after reaching capacity. *See id.* at 280. While the community had seen promised relief, nobody else in the surrounding area wanted a landfill. *See id.* The fact that it was densely residential compounded this problem by making it difficult to find a suitable location for the landfill. *See id.*

607. *See supra* Part II.

608. *See* PCSD REPORT, *supra* note 11, at Introduction 2.

609. *See id.*

610. *See* ABERNETHY, *supra* note 25, at 254-55.

611. *See supra* notes 52-57 and accompanying text.

612. *See* WORLD RESOURCES INST., WORLD RESOURCES 1996-97, at xiii (1996) [hereinafter WORLD RESOURCES 1996-97].

613. *See id.* at 274-77.

likely to come from fossil fuels.[614] Renewable energy sources, such as solar power, wind and farm-grown energy crops will ostensibly provide only 2 to 4% of global energy supplies in the near future.[615]

In addition to the stress such energy demands will place on U.S. lifestyles, these trends will cause increased air pollution and emissions of greenhouse gases globally, as well as regionally.[616] Emissions of carbon dioxide from industrial activity increased 38% between 1970 and 1990 and are predicted to rise an additional 30% to 40% by 2010.[617]

Energy strategies and practices worldwide must change significantly, if only to stabilize greenhouse gas emissions. Such reductions, however, can occur only through more efficient use of existing energy supplies and movement to non-fossil energy sources.[618] WRI advocates "[p]olicies that encourage more efficient use of energy."[619] It recommends taxing energy-based pollution or providing market incentives for the development of renewable energy sources.[620] WRI notes that policies "that facilitate use of the best available technologies for energy consumption and production are well known, if not always easy to implement. Given the growing scientific consensus on global climate change, . . . these policies deserve far greater attention."[621]

B. The Stork on a High-Fat Diet: Tax Policy and Consumption

U.S. tax policy not only fails to discourage overconsumptive lifestyles, it *encourages* them. The tax system reflects a vision in which "progress" and "expanding the economy" are the mantras.[622]

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614. *See id.* at xiii.

615. *See id.*

616. "The average American uses 27 times as much energy as the average Indian. This means that 33 million Americans—the population of California and Florida—are responsible for the same carbon dioxide emissions as all of the 850 million residents of India." NATURAL RESOURCES DEFENSE COUNCIL, POPULATION AND PLANET EARTH: EARTH ACTION GUIDE (1995) (organizational brochure).

617. *See* WORLD RESOURCES 1996-97, *supra* note 612, at xiii.

618. *See id.* at xiv.

619. *Id.* at xiv.

620. *See id.*

621. *Id.*

622. *See* Karp, *supra* note 132, at 245-46. Karp laments the effects that "progress" has had on society, requiring today's generation to surpass the wealth and comfort of previous generations. Our economy provides us with the jobs needed to attain wealth, to purchase goods, to reach greater levels of happiness. *See id.* Karp states: "It is a wonder world. Buy it, use it, throw it away.... We see the earth as a storehouse of resources made available to us for our exploitation and consumption, not as a place we share as a species in communion with other species." *Id.*

Our current tax policies, whether by design or by default, encourage these values and, as a result, encourage wasteful, destructive consumption. President Clinton's Task Force on Population and Consumption concluded: "At the moment, federal and state tax codes encourage a number of environmentally damaging activities and discourage beneficial ones."[623] The tax system encourages consumption notably through fossil fuel incentives, the interest deduction, accelerated depreciation and depletion deductions, and a lack of incentives or rewards for savings and conservation.[624] The United States remains stubbornly behind the times in using taxes to reduce wasteful consumption.[625] For example, most of Europe imposes heavy taxes on fuel consumption.[626] France and Germany tax water pollution.[627] Germany and other countries require manufacturers and retailers to take back packaging materials.[628] In 1991, Sweden significantly reformed its tax system, and environmental taxes were a major component of the reform package.[629] It is time for the United States to consider using taxes to solve the carrying capacity dilemma.

Tax policy should subsidize neither wasteful consumption[630] nor environmentally harmful consumption. Instead, the federal tax burden must shift toward consumption, particularly consumption of natural resources, virgin materials, and goods and services that pose environmental risks.[631] Furthermore, tax subsidies for inefficient and

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623. PCSD REPORT, *supra* note 11, at Executive Summary 2.

624. *See infra* notes 706-53 and accompanying text.

625. *See* Frank Muller & J. Andrew Hoerner, *Greening State Energy Taxes: Carbon Taxes for Revenue and the Environment*, 12 PACE ENVTL. L. REV. 5, 11 (1994).

626. *See* Charles Komanoff, *Pollution Taxes for Roadway Transportation*, 12 PACE ENVTL. L. REV. 121, 142 (1994).

627. *See* COMPLEMENTARY POLICIES, *supra* note 178, at 87 (discussing France's policy); Stavins & Whitehead, *supra* note 144, at 40 (stating that Germany imposes effluent charges).

628. *See* Jonathan Schneeweiss, *Proper Packaging Planning: Do We Need A Federal Law?*, 15 VA. ENVTL. L.J. 443, 462 (1996) (citing Stephanie A. Goldfire, *Using Economic Incentives to Promote Environmentally Sound Business Practices: A Look at Germany's Experience with Its Regulation on the Avoidance of Packaging Waste*, 7 GEO. INT'L ENVTL L. REV. 309, 325-26 (1994)); Weinberg, *supra* note 189, at 1148 (citing *Packing Waste: Environment Ministers Reach Consensus on Waste Preparation*, EUR. ENV'T, July 6, 1993, at 413).

629. *See* COMPLEMENTARY POLICIES, *supra* note 178, at 90-91.

630. *See* Latin, *supra* note 180, at 189 n.19 (describing optimal consumption as "environmental consumption," which includes "satisfactions derived from aesthetic and recreational experiences, from avoidance of pollution and its effects, from preservation of endangered species or undeveloped land, and from many other aspirations linked to environmental circumstances.").

631. *See* PCSD REPORT, *supra* note 11, at Executive Summary 3.

environmentally harmful activities should end.[632] Tax policy should, of course, be neutral, or even favorable, toward consumption of basic necessities, such as food, clothing, and shelter.[633] Consumption of items beyond basic needs, such as use or ownership of luxury goods, or production of environmentally destructive goods, such as non-reusable packaging, could be subject to tax penalties. For example, our tax system already limits depreciation deductions for luxury automobiles, although concern for limiting deductions for personal consumption, and not the environment, precipitated enactment of the limitation.[634] Another example might involve beef consumption. One might view eating beef as environmentally bad, because runoff from feedlots pollute nonrenewable water resources while cattle consume large quantities of grain that could go to feed humans.[635] However, eating beef is "bad" only to the extent we consume very large quantities without somehow accounting for or preventing the environmental harm beef production causes. Therefore, a tax penalty that took into account the environmentally destructive externalities of excess beef consumption might be appropriate. Such a tax could be either an excise tax on beef sales or a higher tax rate on the income of beef producers.[636]

Identifying all harmful forms of consumption and their relationship, if any, to existing Code provisions will require more analysis than is appropriate here. Nonetheless, if Congress not only eliminated tax provisions that encourage consumption but also added provisions that encourage conservation,[637] tax laws would make a significant contribution in the battle against overpopulation. Taxing activities that are harmful to the environment would internalize environmental costs and help to correct existing fiscal imbalances.[638] Taxing, and thus increasing prices on "environmental bads," would also empower producers and consumers to make better choices.[639]

Consumption of goods that promote or increase conservation or

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632. *See id.*

633. The analysis is actually not quite so simple. For example, I argue that our current tax provisions favoring housing are not environmentally sound. *See infra* text accompanying notes 676-93.

634. *See* I.R.C. § 280F(a) (West Supp. 1998) (providing detailed rules and significant limitations on deducting automobile expenses when automobile use consists of both business and personal use).

635. *See supra* text accompanying notes 563-74.

636. One downside of such a tax, however, would be its regressivity. Regressivity, as well as other implications, will have to be considered when formulating any new policy.

637. *See* Weinberg, *supra* note 189, at 1148 (discussing Germany's policies briefly).

638. *See* Gispert, *supra* note 184, at 310.

639. *See* Karp, *supra* note 132, at 267.

improve the environment should receive beneficial tax treatment. The following example, based on 1991 data, illustrates behavior that policymakers could easily affect through the tax system:

> "An 18-watt compact fluorescent can replace a 75-watt incandescent bulb, producing the same amount of light but using only 24% of the energy. If each of the 92 million households in America were to replace three incandescent bulbs with compact fluorescent, the United States would save 157 billion kilowatt hours (KWHs) of electricity over the seven-year lifetime of the bulbs. This annual energy savings of 22 billion KWHs—the result of doing no more than changing light bulbs—is equal to approximately 1% of the total annual electricity budget for the whole country!
>
> During that same seven-year period, however, the United States would add at least 20 million people to its population (assuming current rates of population growth), all of whom will consume energy. If these individuals were to install compact fluorescents in their households, they would use, on average, a cumulative 193 billion KWHs of electricity over the seven years. *The net result: an increase in consumption of 36 billion KWHs over the lifetime of the bulbs.*"[640]

Tax policies that discourage reproduction and encourage conservation could reverse this depressing conclusion. Tax policy must be an integral feature in the evolution of the concept of sustainability. Professor Herman Daly defines a sustainable economy as one in which (1) the rate of use of renewable resources does not exceed their rate of regeneration; (2) the rate of use of nonrenewable resources does not exceed the rate of development of sustainable renewable substitutes; and (3) the rate of pollution emission does not exceed the assimilative capacity of the environment.[641]

These principles suggest that immediate local incentives are inconsistent with the long-term best interests of both the individual and society and with the maintenance of Earth's carrying capacity. The substantial hidden subsidies promoting the use of fossil fuels are a good example. The use of these fuels has grave effects not only on the biophysical environment, but on the social environment as well

640. ABERNETHY, *supra* note 25, at 301-02 (quoting POPULATION-ENVIRONMENT BALANCE, CONSERVATION AND POPULATION, BALANCE REPORT No. 70 (August 1991)).

641. *See* Lindsey Grant, *Sustainability Part I: On the Edge of an Oxymoron*, NPG FORUM, Mar. 1997, at 5, 6.

by promoting dependence on the automobile.[642] In the face of such perverse incentives, individuals and businesses find it almost impossible to take the long-term view. Guarding against short-term solutions should be an important function of government.[643] Ideally, Americans might strive to redevelop the United States into a society built around people rather than automobiles, so that virtually everyone could eventually walk or bicycle to work.[644]

Some argue that unlimited growth (that is, economic growth) is good for the environment.[645] This argument relies on empirical data suggesting that as per capita income rises, environmental degradation increases up to a point, after which environmental quality improves.[646] Therefore, tax provisions that stimulate the economy, and thus growth, ultimately benefit the environment. These data, however, do not reveal the entire picture. While economic growth may bring improvements in some environmental indicators, the empirical findings *do not* indicate that economic growth is sufficient to induce environmental improvement in general, that one may safely ignore the environmental effects of growth, or that the Earth's resource base is capable of supporting indefinite economic growth.[647] When one subtracts population growth from corrected economic growth, little real progress remains.[648] Instead, "the mounting losses of forests, wetlands, soil, and groundwater—and mounting stresses on the atmosphere, oceans, and land surface—can be seen as a rising mortgage against the future."[649] Furthermore, studies show that strong environmental policy actually produces more new jobs than it

642. *See* ALAN THEIN DURNING, THE CAR AND THE CITY 22 (1996). For example, the convenience of the automobile has caused people to spread out, simultaneously insuring our dependence on the automobile. The American Association of Retired Persons, criticizing low density urban plans, notes that older persons, whose ability or desire to drive is diminished, must rely on automobiles to carry out basic tasks such as grocery shopping or visiting the doctor. *See id.* at 27. Durning states: "When everyone is driving, there is little chance of striking up casual conversations.... There is less space where community might blossom: the walkable public realm is swallowed by cars and structures oriented toward them." *Id.* at 28.

643. *See* EHRLICH ET AL., *supra* note 1, at 258.

644. *See id.* at 243. Of course, some mode of transport that does not use nonrenewable resources, solar powered vehicles, for example, would be available for those unable to walk or bicycle.

645. *See* SIMON, *supra* note 85, at 241 (stating that as GNP grows, so does pollution, but that along with increased pollution "comes a greater demand for cleanup, plus an increased capacity to pay for it").

646. *See* Kenneth Arrow et al., *Economic Growth, Carrying Capacity, and the Environment*, 268 SCIENCE 520, 520 (1995).

647. *See id.*

648. *See* EHRLICH ET AL., *supra* note 1, at 241.

649. *Id.*

destroys.[650] We must, therefore, reexamine our current practice of using tax policy mainly to stimulate economic growth.[651]

I introduce in this Part some of the most egregious ways in which tax policy impacts consumption. I will discuss existing tax provisions that most obviously promote consumption of scarce resources, such as energy tax provisions, but I also will highlight tax provisions that less obviously undermine sustainability. To be sure, more comprehensive study is necessary. My goal simply is to set forth the problem, develop a method of analysis, and offer a few potential solutions.

If one tried to identify a single aspect of American society that has most influenced consumption, urban sprawl would be at the top of many lists.[652] Urban sprawl has several defining characteristics. It consists of low-density population, generally less than twelve people per acre.[653] Also, "shops, dwellings, offices, and industries are kept separate, as are different types of each."[654] For example, single family dwellings are kept separate from apartments.[655] Finally, street patterns branch out; small streets branch into larger streets, which then feed into freeways.[656] Sprawl is " 'low-density development on the edges of cities and towns that is "poorly planned, land-consumptive, automobile-dependent [and] designed without regard to its surroundings." ' "[657] As this definition suggests, sprawl creates problems. Among them are ecosystem declines due to loss of wetlands, environmentally sensitive lands, and air and water quality

650. *See* Karp, *supra* note 132, at 268 (citing Peter B. Erdmann et al., *The Shape of the EC and Sustainable Development: An Interview with Carlo Ripa di Meana*, 27 COLUM. J. WORLD BUS., Fall/Winter 1992, at 106, 109).

651. *See* Richard Ruggles, *Accounting For Saving and Capital Formation in the United States, 1947-1991*, J. ECON. PERSP., Spring 1993, at 3, 12-16. Professor Ruggles points out that, while economic theory views capital as a tangible good yielding a flow of future services and constitutes a factor of production, many tangible goods, such as shopping malls, housing, and consumer durables, primarily yield a flow of consumption. This type of consumption may not have much impact on productivity and sustained economic growth. In contrast, many other types of expenditures, such as research and development, education, and improvement of the environment, may contribute significantly to future productivity increases. *See id.* at 14.

652. *See* DURNING, *supra* note 642, at 22-29.

653. *See id.* at 22.

654. *Id.*

655. *See id.*

656. *See id.*

657. Robert H. Freilich & Bruce G. Peshoff, *The Social Costs of Sprawl*, 29 URB. L. 183, 185 (1997) (quoting LINCOLN INST. OF LAND POLICY, ALTERNATIVES TO SPRAWL 4 (1995) (quoting Richard Moe, Speech at "Alternatives to Sprawl" Conference Sponsored by the Brookings Institution, The Lincoln Institute of Land Policy, and the National Trust for Historic Preservation (Mar. 22, 1995))).

deterioration;[658] automobile dependency, causing fossil fuel consumption; devastating agricultural land conversion;[659] and housing inefficiencies.[660]

As people spread out, providing necessary water, energy, and land is costly. In addition, sprawl is the primary cause of prime agricultural land being taken out of productivity; as much as 1.5% of these lands are lost each year.[661] Paving over only 15% of a watershed's surface area—a percentage that can occur at very low population densities—can sufficiently interrupt water flows to damage a stream's ecosystem.[662] Water consumption increases because people have bigger lawns. Energy consumption increases. Heating and cooling separate houses is less efficient than apartments and clustered buildings. If the density level is about twelve houses per acre, it costs on average $23,000 to build wider and longer roads, to install more stormwater drains, and to extend sewer pipes, electric and water lines, and television cables out to new homes built on the outskirts of existing neighborhoods.[663] When the density drops to three houses per acre, the cost rises to about $35,000, and for communities in the countryside beyond the suburbs, the cost approaches $50,000 per household.[664]

Last, but not least, sprawl requires everyone to own a car.[665] The more sprawl, the more expensive the costs of transportation, both in time and money. Owning a car costs, on average, about $300 per month.[666] Middle-income Americans have to work twenty-seven hours per month to pay for the thirty-two hours per month that they spend in their cars.[667] Communities respond with more parking spaces, each space costing about $15,000 to build.[668] Dependence on the car makes us dependent on foreign sources for our fuel supply,

658. *See id.* at 184.

659. *See supra* notes 394-96 and accompanying text.

660. *See* DURNING, *supra* note 642, at 23; Freilich & Peshoff, *supra* note 657, at 184-85.

661. *See* Freilich & Peshoff, *supra* note 657, at 193.

662. *See* DURNING, *supra* note 642, at 26. For example, we rarely find coho salmon when impervious cover exceeds 15%. *See id.*

663. *See id.* at 22.

664. *See id.*

665. In this short summary on urban sprawl, I have left out many concerns, not the least of which are the dangers and antisocial effects of sprawl. *See id.* at 24-25; Freilich & Peshoff, *supra* note 657, 189-93; *see also* Dunkiel, *supra* note 181, at 16 (discussing the effects of the Internal Revenue Code on the environment).

666. *See* DURNING, *supra* note 642, at 22.

667. *See id.* Durning also points out that the average driving speed is about 17 m.p.h., as compared to 13 m.p.h. for bicyclists. *See id.*

668. *See id.* at 23.

jeopardizing national security.[669] We also pay a high price in lives lost on the roads.[670] Environmental pollution, energy consumption, decreases in economic productivity, and a decline in the quality of life are huge costs to pay for the transportation that sprawl requires.[671] As one commentator stated: "No car, no matter how smart or fuel-efficient, can eliminate land-gobbling sprawl—one of the most devastating consequences of ever-increasing reliance on motor vehicles, and one of its strongest reinforcing factors."[672]

For better or worse, federal tax policy has played a significant role in the development and support of sprawl and, thus, in promoting high consumption levels in the United States. The home mortgage interest deduction, the property tax deduction, and the exclusion from gross income of employer-provided parking contribute to sprawl.[673] Furthermore, a significant number of special tax incentives subsidize automobile usage and energy costs.[674] In combination with tax policies favoring large families and unsustainable farming practices,[675] current tax policies undermine American's ability to live within our carrying capacity.

The home mortgage interest deduction constitutes a huge indirect subsidy to sprawl. Section 163(h) of the tax code allows a taxpayer to deduct interest on indebtedness incurred to buy a qualified residence.[676] A qualified residence includes the taxpayer's principal residence *and* one other residence.[677] Thus, the home mortgage interest deduction reduces the cost, not only of one home,

669. *See id.* at 24-25.

670. Suburbanites travel three times as far and twice as fast as city dwellers, thus increasing the risk of an injury-causing car crash. *See id.* at 24. While vehicle miles driven are significantly higher on urban roads (1451 billion) than on rural roads (909 billion), the death rate is much lower on urban roads (1.08 per 100 million vehicle miles traveled) than on rural roads (2.26 per 100 million miles). *See* STATISTICAL ABSTRACT, *supra* note 9, at 630 tbl.1013.

671. *See* Freilich & Peshoff, *supra* note 657, at 193.

672. Marcia D. Lowe, *Reinventing Transport*, *in* STATE OF THE WORLD 1994, *supra* note 18, at 81.

673. *See* I.R.C. § 163(h) (West Supp. 1998) (home mortgage interest); *id.* § 164 (property taxes); *id.* § 132(f) (employer-provided parking).

674. *See id.* § 617 (deduction of mining and exploration costs); *id.* § 263(c) (deduction of intangible drilling and development costs for oil and gas wells); *id.* § 43 (enhanced oil recovery credit); *id.* § 193 (deduction of tertiary injectants).

675. *See infra* Parts IV & V.

676. *See* I.R.C. § 163(h) (West Supp. 1998). The taxpayer's interest deduction is limited to the interest on indebtedness on a home purchase of up to $1 million. *See id.* § 163(h)(3)(B)(ii) (West Supp. 1998). Furthermore, a taxpayer can deduct interest on additional home loans (home equity indebtedness) of up to $100,000. *See id.* § 163(h)(3)(C) (West Supp. 1998).

677. *See id.* § 163(h)(4) (West Supp. 1998).

but of two.

As a taxpayer's income increases, she needs a higher mortgage with higher interest payments to deduct against the higher income. The more expensive her home, the more she can reduce taxable income through higher interest deductions. Thus, as income increases, tax policy encourages us to buy bigger homes, and sprawl results. Former section 1034, which allowed taxpayers to rollover the gain on the sale of a principal residence, compounded this effect.[678] When a taxpayer sells her home, generally, any gain on that sale is taxable. Under section 1034, if she reinvested the proceeds from the sale in another home of equal or greater value, however, none of the gain was immediately taxable.[679] As a result, when families moved, they felt compelled to reinvest in a more expensive home, typically in a suburban area.[680] In fact, if a taxpayer purchased a less expensive residence, she faced a penalty of sorts: She had to pay tax on any portion of the gain she did not reinvest.[681] Section 1034 was replaced in 1997 by a provision allowing gain on the sale of a home to be completely exempt from taxation in virtually all instances.[682] It is unclear how this change will impact home consumption patterns in the future.

In terms of consumption, allowing taxpayers to deduct interest on second homes is even more egregious.[683] Generally, only wealthy taxpayers can afford second homes. Such homes are often recreational housing, and thus, "more homes, roads, and related amenities are built in pristine or environmentally sensitive areas."[684] Environmentalists believe that the home mortgage interest deduction

678. *See id.* § 1034 (repealed 1997). Section 1034 was repealed by the Taxpayer Relief Act of 1997 and replaced with amended § 121, which allows complete forgiveness of any tax on gain on the sale of a principal residence of up to $500,000 for married taxpayers. *See id.* § 121 (West Supp. 1998).

679. *See id.* § 1034 (repealed 1997). The gain on the sale of the old home reduces the basis of the new home. *See id.* § 1034(e) (repealed 1997). Thus, sale of the new home causes recognition of the previously unrecognized gain as well as any gain on the new house. This requires that the next home be even more expensive to continue the deferral.

680. *See* Freilich & Peshoff, *supra* note 657, at 187-88.

681. *See* I.R.C. § 1034 (repealed 1997).

682. *See id.* § 121 (West Supp, 1998) (allowing gain to be excluded from taxation in amounts of $250,000 for single persons and $500,000 for most married persons).

683. *See id.* § 163(h) (West Supp. 1998); *see also* Gil Thurm, *Washington Tax Watch*, 13 J. REAL EST. TAX'N 106, 106-07 (1985) (explaining the rationale for the Reagan Administration's proposal to limit the deduction an individual can claim for personal interest including a second home).

684. Dunkiel, *supra* note 181, at 16; *see also* Clark & Downes, *supra* note 389, at 9, 32-33 (suggesting that Congress eliminate the home mortgage interest deduction for second homes).

constitutes "a major impediment to the protection of threatened and endangered species."[685] The home mortgage interest deduction will cost the government $254 billion in revenues between 1994 and 1998, making it the largest development subsidy in the United States.[686] Given the damage this subsidy causes, both by encouraging large amounts of consumption, as well as environmentally destructive consumption, it is time to rethink our policy goals in general and the structure of this deduction in particular.[687]

The property tax deduction aggravates the impact of the home mortgage interest deduction. Like home mortgage interest, a home owner's real property taxes are deductible from taxable income.[688] Together, the home mortgage interest deduction and the property tax deduction significantly reduce the cost of home ownership.[689] For example, if a taxpayer is in a 50% tax bracket, these tax deductions effectively subsidize one-half of the taxpayer's mortgage interest and property tax payments.[690] If the taxpayer is in the 20% tax bracket, the tax subsidy amounts to 20%.[691] To the extent these deductions facilitate home ownership, they also facilitate sprawl, which, in turn, facilitates car usage, and thus fossil fuel consumption, and onward down the spiral of over-consumption. Of course, home ownership is not inherently evil, but the current federal tax incentives that

685. Dunkiel, *supra* note 181, at 16; *see also* Clark & Downes, *supra* note 389, at 32-33 (arguing that second homes are particularly damaging to the environment because they are usually built in pristine, natural areas); Oliver A. Houck, *Reflections on the Endangered Species Act*, 25 ENVTL. L. 689, 696-97 (1995) (suggesting that no interest deduction be allowed for homes built in sensitive areas).

686. *See* STAFF OF JOINT COMM. ON TAXATION, 103D CONG., ESTIMATES OF FEDERAL TAX EXPENDITURES FOR FISCAL YEARS 1994-1998, at 13 tbl.1 (Comm. Print 1993).

687. For example, Congress might structure the deduction so that buyers of an existing structure would receive a higher benefit if they buy and locate closer to the city center. Several initiatives, such as the Brownfield Initiative and the rehabilitation tax credit, make such an effort, although primarily for businesses. *See, e.g.*, I.R.C. § 47 (West Supp. 1998) (establishing a tax credit for rehabilitating buildings placed in service before 1936 or in a certified historic structure). Congress could also provide these types of incentives to individuals. Furthermore, Congress could deny the interest deduction on new homes built in areas that had been "important to the conservation of biodiversity." Clark & Downes, *supra* note 389, at 33. Finally, Congress could deny the interest deduction for homes built in flood plains or storm-prone coastal areas that will later need taxpayer funded disaster relief. *See id.*

688. *See* I.R.C. § 164(a)(2) (West Supp. 1998).

689. For purposes of this Article, I shall ignore considerations of imputed income and the tax disadvantages renters suffer. Both of these disparities further encourage home ownership.

690. *See* Stephen R. Munzer, A *Theory of Retroactive Legislation*, 61 TEX. L. REV. 425, 453 (1982).

691. *See id.* at 453-54.

encourage home ownership do so with little vision. To the extent home ownership is desirable,[692] the home mortgage interest deduction together with the property tax deduction encourage housing consumption very inefficiently.[693] Congress should, therefore, either repeal the home mortgage interest deduction and the property tax deduction or redesign them with carrying capacity in mind.

Finally, excluding employer-provided parking encourages commuting and thus sprawl. Code section 132(f) allows a taxpayer to exclude from gross income the value of employer-provided parking.[694] Under current law, employers can provide parking worth up to $170 per month to employees as an untaxed fringe benefit.[695] This exclusion can amount to more than $2000 in pre-tax income per employee.[696] Alas, in urban areas, space set aside for parking dominates land use.[697] Typically, in commercial development, the developer dedicates more land to parking than to the building it serves.[698] For example, in the Pacific Northwest, two and one-half parking places exist for every one car.[699] Zoning laws are the primary culprit for the glut of parking.[700] However, "free" parking does not come cheap. For instance, the price of apartments in a low-income housing project in downtown Portland, Oregon were reduced by about $10,000 because a zoning waiver excluded off-street parking for the project.[701] Thus, residents who did not need parking did not have to pay for it, while those who did absorbed the entire cost. As a result, alternative transportation and shorter commutes became more desirable. To the extent we make parking accessible and inexpensive, we encourage commuting.

Employers can also provide transit fares tax free, but only up to

692. *See* Richard Goode, *Imputed Rent of Owner-Occupied Dwellings Under the Income Tax*, 15 J. FIN. 504, 512-20 (1960) (discussing the reasons Americans favor owner-occupied housing).

693. A 1988 study of tax receipts confirmed that more than half of the tax savings resulting from the home mortgage interest deduction benefited taxpayers whose incomes were in the 92d percentile or higher. *See* Peter W. Salsich, Jr., *A Decent Home for Every American: Can the 1949 Goal Be Met?*, 71 N.C. L. REV. 1619, 1628 (1993) (citing James M. Poterba, *Taxation and Housing: Old Questions, New Answers*, AM. ECON REV., May 1992, at 231, 239).

694. *See* I.R.C. §§ 132(f)(5)(C) (West Supp. 1998).

695. *See* I.R.C. § 132(f)(2)(B) (West Supp. 1998); Rev. Proc. 96-59, 1996-2 C.B. 395.

696. *See* DURNING, *supra* note 642, at 58.

697. *See id.* at 53.

698. *See id.*

699. *See id.*

700. *See id.* at 54.

701. *See id.* at 55.

$65 per month.[702] If an employer provided a stipend for bicycling or walking, it would be taxable. Thus, the section 132(f) exclusion strongly encourages people to drive to work, exacerbating urban congestion and pollution. In fact, this tax subsidy costs taxpayers more than seventeen billion dollars annually.[703] Removing this environmentally perverse tax incentive, and replacing it with incentives for mass transit,[704] bicycling, and walking would be a step in the right direction.[705]

Parking is only a small part of the automobile and commuting dilemma. Incentives to drive cars stem in large part from subsidies provided to the extractive industries. Mining and the oil and gas industries receive significant tax subsidies.[706] Mining is very destructive to the environment in that it irreparably destroys landscapes, along with the habitats of many plants and animals.[707] Businesses have mined more than two million acres of land for coal alone during the past twenty-five years, yet only about half of that acreage has been restored to meet even the bare minimum of environmental standards.[708] Furthermore, mining activities can threaten human health more directly through runoff of dangerous levels of lead, mercury, iron, and other contaminated sediment into the water supply. In fact, more than 550,000 abandoned mines exist in the United States.[709] Moreover, some of these sites, which are on

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702. *See* I.R.C. § 132(f)(2)(B) (West Supp. 1998); Rev. Proc. 96-59, 1996-2 C.B. 395.

703. *See* Clark & Downes, *supra* note 389, at 38.

704. For example, the Commute Trip Reduction Law, enacted in Washington state, requires large employers to establish plans to reduce the number of workers driving alone to work. *See* DURNING, *supra* note 642, at 57. As a result, Microsoft workers can coordinate rides on-line from their desks, and Nordstom's employees are guaranteed a ride home if they commute to work without a car and have a family emergency while at work. *See id.* Washington's Commute Trip Reduction Law is credited for having taken 120,000 cars off the road every weekday in its first two years of operation. *See id.*

705. Historically, the exclusion applied only if the parking was provided in addition to and not in lieu of cash. If the employer offered the employee a choice of cash, the employee was taxed on the value of the parking. *See* I.R.C. § 132(f)(4) (West Supp. 1998). The Taxpayer Relief Act of 1997 repealed this requirement. *See* Taxpayer Relief Act of 1997, Pub. L. 105-34, 111 Stat. 94 (1997) (codified as amended I.R.C. § 132(f)(4) (West Supp. 1998)). Thus, if an employer offers either parking or cash, only those taking cash will be taxed. Congress believes this will promote sound energy policy by increasing the numbers who opt to take cash and ride mass transit. *See* I.R.C. § 132(f)(4) (West Supp. 1998); S. REP. NO. 105-33, at 198 (1997).

706. *See, e.g.*, I.R.C. §§ 43, 613, 613A, 617 (West Supp. 1998) (establishing the credit for enhanced oil recovery, the deduction for percentage depletion, and the deduction and recapture of mining exploration expenditures).

707. *See* Clark & Downes, *supra* note 389, at 30.

708. *See* FRIENDS OF THE EARTH, *supra* note 491, at 8.

709. *See* Dunkiel, *supra* note 181, at 18 (citing MAJORITY STAFF OF THE SUBCOMM.

the Superfund National Priority List, will cost billions of dollars to clean up.[710]

Despite the high health and environmental costs mining poses, the mining industry continues to receive a number of special tax incentives. First, certain costs of exploration and development of mineral resources are immediately deductible, rather than deductible over the productive life of the mine.[711] Generally, when a business invests in assets that have a useful life greater than one year, it must capitalize the costs and recover them over that useful life.[712] Immediate expensing substantially reduces the cost of investing in mining operations.[713] In recent years, mining businesses have deducted more than $160 million in mining and exploration expenses annually.[714] Costs qualifying for expensing include site location, analysis of the extent and quality of mineral deposits, and construction of shafts and tunnels.[715] In addition, current taxes on gains from the sale of coal and iron ore are at capital gains rates, even if the ore constitutes inventory.[716] Under traditional tax principles, the law taxes gains from sales of inventory at ordinary income rates.[717] Thus, the mining industry has a competitive advantage over other businesses, such as alternative fuel companies.

Another tax incentive provided for mining activities is the percentage depletion deduction.[718] In general, the deduction for depletion depends on the assumption that, as minerals are extracted

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ON OVERSIGHT AND INVESTIGATIONS, COMM. ON NATURAL RESOURCES, 103D CONG., TAKING FROM THE TAXPAYER: PUBLIC SUBSIDIES FOR NATURAL RESOURCE DEVELOPMENT 19 (Comm. Print 1994)).

710. *See id.* In 1992, the EPA estimated that it would cost more than $7 billion to clean up approximately 17 sites. *See id.* at 30 n.8.

711. *See* I.R.C. § 617(a) (West Supp. 1998).

712. *See id.* §§ 167, 263 (West Supp. 1998).

713. *See* FRIENDS OF THE EARTH, *supra* note 491, at 8 (noting that the effective tax rates for the mineral industry are well below those of other industries).

714. *See* Dunkiel, *supra* note 181, at 17 (citing CONGRESSIONAL BUDGET OFFICE, REDUCING THE DEFICIT: SPENDING AND REVENUE OPTIONS (1995) (discussing revenue benefit of "repeal[ing] tax preferences for extractive industries"); OFFICE OF MANAGEMENT AND BUDGET, ANALYTICAL PERSPECTIVES: BUDGET OF THE UNITED STATES GOVERNMENT, FISCAL YEAR 1996, at 40 tbl.5-1, 43 tbl.5-2 (1995)).

715. *See* I.R.C. § 617(a) (West Supp. 1998); Treas. Reg. § 1.617-1 (1997). Expensing is available for exploring for most minerals, including coal, uranium, lead, gold, copper, and asbestos. Exploring for oil and gas does not, however, qualify. *See* I.R.C. §§ 613, 617(a) (West Supp. 1998).

716. *See* I.R.C. §§ 631, 1231(b)(2) (West Supp. 1998).

717. *See* Calvin H. Johnson, *Seventeen Culls from Capital Gains*, 48 TAX NOTES 1285, 1297 (1990).

718. *See* I.R.C. § 613 (West Supp. 1998).

from a mine, the mine's remaining value declines.[719] Percentage depletion allows mining businesses to deduct annually a specified percentage of gross income as depletion, theoretically reflecting the declining value of the mine. The deduction does not depend, however, on the business's investment in the mine, as with most assets, but on gross income generated from the mining activity.[720] The percentage of gross income allowed as a depletion deduction varies, depending on the mineral.[721] For example, sulfur and uranium mine owners can deduct 22% of gross income as depletion, copper and iron ore miners may deduct 15%, while gravel and sand miners can deduct only 5%.[722] The percentage depletion deduction actually bears little, if any, relation to the actual loss in economic value of the mine, and none to the owner's investment in the mine. In many instances, through depletion deductions, the owner is able to recover costs well in excess of the original investment in the property.[723]

The percentage depletion deduction first appeared in the early 1900s when the environmental hazards of mining were still relatively unknown. Furthermore, until recently, few believed that humans would exhaust their resource base.[724] While such incentives may have made sense when originally enacted, today they do not. Researchers have yet to discover the full extent of mining's environmental degradation.[725] Yet, subsidizing mining prevents consumers from understanding the true costs of such operations. Ironically, the percentage depletion allowance is greater for more toxic minerals.[726] For instance, mercury, lead, zinc, uranium, cadmium, and asbestos are a few of the minerals that qualify for the highest percentage allowance.[727] Moreover, by subsidizing production of virgin materials, Congress depresses secondary markets for these minerals, thus hindering recycling.[728] Similarly, to the extent the government subsidizes extraction of nonrenewable resources, it discourages research and development of alternatives.

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719. *See* FRIENDS OF THE EARTH, *supra* note 491, at 7.
720. *See* I.R.C. § 613(a) (West Supp. 1998).
721. *See id.* § 613(b) (West Supp. 1998).
722. *See id.*
723. *See* FRIENDS OF THE EARTH, *supra* note 491, at 7.
724. *See* OUR COMMON FUTURE, *supra* note 155, at 1-9.
725. *See* WORLD RESOURCES 1994-95, *supra* note 437, at 9.
726. *See* I.R.C. § 613(b) (West Supp. 1998); FRIENDS OF THE EARTH, *supra* note 491, at 7.
727. *See* I.R.C. § 613(b) (West Supp. 1998); FRIENDS OF THE EARTH, *supra* note 491, at 7.
728. *See* REPETTO ET AL., *supra* note 171, at 81.

Like the mining industry, the oil and gas industry benefits from a number of tax incentives designed to increase production and, indirectly, consumption of fossil fuels. Both the production and consumption of oil and gas have detrimental environmental consequences. In addition to depleting our domestic supply of oil and gas, production activities degrade the environment, including fragile wetlands,[729] and consumption of the petroleum produced pollutes the air.

As with mining, certain oil and gas interests qualify for percentage depletion.[730] Independent oil companies can deduct 15% of gross income as depletion expense.[731] In addition, certain natural gas interests can take percentage depletion at a rate of 22% of gross income.[732] Here, too, the deduction bears little relationship to the loss in value of the well or the owner's investment in the property. Contrary to general tax accounting principles, the owner can expense more than the original investment in the property. Percentage depletion thus encourages otherwise marginal investments. In fact, when combined with other oil and gas subsidies, percentage depletion for a given well can exceed the value of all the energy that the well ever produces.[733] Additionally, under Code section 43, the costs of using a qualified enhanced oil recovery method to recover domestic oil qualify for a 15% tax credit.[734] Expenses that qualify for the credit include equipment, labor, supplies, repairs and injectants.[735] Moreover, Code section 193 allows a taxpayer to expense tertiary injectants when engaging in enhanced oil recovery.[736] Ordinarily, a taxpayer would be required to capitalize and depreciate such costs

729. *See* 2 U.S. DEP'T OF THE INTERIOR, THE IMPACT OF FEDERAL PROGRAMS ON WETLANDS: A REPORT TO CONGRESS 105, 113-14 (1994).

730. *See* I.R.C. § 613A (West Supp. 1998). According to the Office of Management and Budget, percentage depletion for the fuel and non-fuel minerals industry costs taxpayers well over $1.6 billion in revenue per year. *See* REPETTO ET AL., *supra* note 171, at 81 (citing OFFICE OF MANAGEMENT AND BUDGET, BUDGET OF THE UNITED STATES GOVERNMENT, FISCAL YEAR 1993 (1992)); Clark & Downes, *supra* note 389, at 30.

731. *See* I.R.C. § 613A(c) (West Supp. 1998). An exception applies only to independent oil companies that are not substantially involved in retail sales or refining activities. *See id.* § 613A(d)(2), (3) (West Supp. 1998).

732. *See id.* § 613A(b) (West Supp. 1998) (specifying that owners of regulated natural gas interests and natural gas sold under fixed contacts qualify).

733. *See* FRIENDS OF THE EARTH, *supra* note 491, at 10.

734. *See* I.R.C. § 43(a) (West Supp. 1998). A qualified enhanced oil recovery method "inject[s] fluids, gases, and other chemicals into the oil reservoir, and use[s] heat to extract oil that is too viscous to be extracted by conventional techniques." FRIENDS OF THE EARTH, *supra* note 491, at 11.

735. *See* I.R.C. § 43(c)(1) (West Supp. 1998).

736. *See id.* § 193(a) (West Supp. 1998).

over the life of the property.[737] Up-front expensing substantially discounts the cost of the property.[738]

Congress enacted both section 43 and section 193 to increase a dwindling supply of domestic oil.[739] U.S. oil production peaked in 1970 and has declined since.[740] The United States already has depleted its most accessible oil reserves; therefore, the cost to produce oil from its more marginal sources will be higher.[741] Unfortunately, subsidizing the cost of domestic production will neither reduce our dependence on foreign oil sources nor lead to the development of alternative technologies, given the current trends in U.S. oil consumption.[742]

Nonetheless, there is more. The deduction for intangible drilling costs provides yet another tax incentive to produce oil.[743] Section 263(c) permits taxpayers to deduct intangible drilling and development costs ("IDC") for oil, gas, and geothermal wells.[744] If a taxpayer elects not to deduct these costs immediately, the taxpayer must capitalize them and recover them either through depreciation or depletion deductions.[745] Only an operator can deduct IDC.[746] Thus, companies such as Exxon and Chevron, along with smaller oil producers, can deduct substantial portions of their investments immediately, unlike other businesses that must depreciate their investments over time. Intangible drilling costs can comprise 75% to 90% of the cost of developing a well.[747] These tax incentives offset the costs of many environmentally-damaging activities, like dredging, road construction, and pipeline construction; thus, our tax dollars

737. *See id.* §§ 167, 263 (West Supp. 1998); FRIENDS OF THE EARTH, *supra* note 491, at 11.

738. For example, a taxpayer could save between 30% to 40% in the year these costs are incurred depending on the taxpayer's marginal tax rate. The highest marginal rate for an individual is 39.6%. *See* I.R.C § 1 (West Supp. 1998). The highest marginal rate for a corporate taxpayer is 35%. *See* I.R.C. § 11 (West Supp. 1998).

739. *See* FRIENDS OF THE EARTH, *supra* note 491, at 11.

740. *See id.*; *see also* WORLD RESOURCES 1996-97, *supra* note 612, at 285 tbl.12.1 (showing a 21% decline in petroleum production between 1973-1993).

741. *See* FRIENDS OF THE EARTH, *supra* note 491, at 11.

742. More than half of the oil Americans consumed in 1995 came from imports. *See* STATISTICAL ABSTRACT, *supra* note 9, at 578 tbl.914. By the year 2015, imported oil will constitute about 65% of the oil we consume. *See id.*

743. *See* I.R.C. § 263(c) (West Supp. 1998).

744. *See id.* §§ 263(c), 613(e)(2) (West Supp. 1998).

745. *See* Treas. Reg. § 1.612-4(b) (West Supp. 1998).

746. *See id.* § 1.612-4(a) (1997). An operator is "one who holds a working or operating interest in any tract or parcel of land either as a fee owner or under a lease or any other form of contract granting working or operating rights." *Id.*

747. *See* FRIENDS OF THE EARTH, *supra* note 491, at 12.

help to support the destruction of wetlands and other habitats.[748] When combined with other tax preferences, the effective tax rate on oil and gas producers is significantly lower than other industries. In fact, the Congressional Joint Committee on Taxation estimates that the oil and gas industry effectively pays no income tax.[749]

Our dependence on foreign oil and our increasing consumption of oil should not lead us to prop up domestic oil supplies, but to develop fossil fuel alternatives and to use the supplies we have more efficiently. In fact, the technology already exists to achieve significant emissions reductions at low, or even negative, costs.[750] If the technology is available, one wonders what stands in the way of its use. It seems clear that tax policy is one impediment.

Tax policy ultimately must force private users of environmental resources to take into account the social costs of their actions.[751] As Ehrlich points out: "Speed is of the essence, since the scale of the transition is vast, and the lead time required for such tasks as reorganizing cities, redesigning transport systems and deploying new energy technologies is on the order of a half a century."[752]

Furthermore, any tax policy changes dealing with overpopulation must be sensitive to the interrelationships between the factors that determine carrying capacity. For example, the symbiotic relationship between population size and amount consumed by that population must be considered. More specifically, if people want more children, and understand that only a reduction in resource consumption would permit flexibility in determining family size, then they would have a strong incentive to reduce consumption. Tax policies discouraging consumption thus might suffer less

748. *See* 2 U.S. DEP'T OF THE INTERIOR, *supra* note 729, at 113-14.

749. *See* FRIENDS OF THE EARTH, *supra* note 491, at 12.

750. *See* Muller & Hoerner, *supra* note 625, at 14. Scientists with the National Academy of Sciences have explained that assessments examining available efficiency improvements in particular technical applications have found that technologies are available to achieve significant emissions reductions at a low and even negative cost. NATIONAL ACADEMY OF SCIENCES, POLICY IMPLICATIONS OF GREENHOUSE WARMING: MITIGATION, ADAPTATION, AND THE SCIENCE BASE 52-64 (1992) [hereinafter GREENHOUSE WARMING]. They also suggest "that the United States could reduce its greenhouse gas emissions by between 10 percent and 40 percent of the 1990 level at a very low cost." *Id.* at 64.

751. To the extent that economists redefine economic growth to measure accurately the value of environmental resources, conflicts between "growth" and the environment will decline. *See* Partha Dasgupta & K.G. Maler, *The Environment and Emerging Development Issues*, *in* PROCEEDINGS OF THE WORLD BANK CONFERENCE ON DEVELOPMENT ECONOMICS 101, 102-05 (1990).

752. EHRLICH ET AL., *supra* note 1, at 264.

resistance than ones that discourage large families.

C. *The Stork Goes to the Fat Farm: Can the Consumerist Change?*

U.S. markets, and thus economic indicators, are distorted because they do not account for the use of natural capital. As a result, tax provisions designed to affect the market are also distorted. Because the distortions go in both directions, making adjustments to take into account the economy's impact on natural capital will not be easy. This Article already has discussed many such environmental proposals.[753] Before I discuss a final set of proposals designed to reduce consumption, I must first make a point about consumption taxes in general.

This Article has focused on ways in which policymakers could design or redesign our tax policies to discourage consumption. I could have proposed replacing the income tax with a consumption tax. But I did not, for several reasons. First, in one sense, our system already taxes consumption because most taxpayers spend or consume most, if not all, of their taxable earnings.[754] In addition, the tax policies I have explored here seek to tax only certain types of consumption. Such a shift would improve the environment, encourage savings, and invite new technologies vital to sustainability.

All of the consumption tax proposals Congress recently considered would have treated all forms of consumption alike. These proposals would treat consumption patterns that pollute the air and water or deplete non-renewable resources the same as those that conserve resources, promote environmentally sound technology, and protect our natural heritage.[755] To the extent new environmental taxes are revenue-neutral, the government could use them to shift the tax burden away from labor, in turn freeing up funds needed for investment and savings. Furthermore, taxes are not the only significant variable affecting the savings rates.[756] Cultural attitudes toward consumption and savings are also important, and tax changes that signify the government's opposition to unsustainable

753. *See supra* notes 162-87 and accompanying text.

754. *See supra* notes 76-79 and accompanying text. In 1995, Americans saved only 4.5% of their disposable income. *See* STATISTICAL ABSTRACT, *supra* note 9, at 451 tbl.696.

755. *See Hearing on the Effects of Fundamental Restructure of the Tax Code on the Domestic Manufacturing Industry and on Energy and Natural Resources, Before the House Ways and Means Comm.*, 104th Cong., 2d Sess. (1996), *available in* WESTLAW, USTESTIMONY database, 1996 WL 437718 [hereinafter *Fundamental Restructure*] (statement of Brent Blackwelder, President of Friends of the Earth).

756. *See id.* at 5.

consumption could help to reform consumerist America.[757] In this subpart, I discuss tax proposals that can help discourage consumption. I consider tax proposals to reduce energy consumption and solid wastes as illustrative tax solutions.

Current tax policies provide unwarranted subsidies to the energy industry.[758] These policies promote economically inefficient and environmentally unsound development. Such inefficiency results because current accounting systems do not factor in the long-term environmental aspects of depletion.[759] In fact, these systems treat nonrenewable resource extraction and depletion as positive economic factors.[760] Furthermore, tax policies that encourage fossil fuel extraction contradict pollution laws that penalize those who then use fossil fuels. Policymakers must replace subsidies with provisions that incorporate into the economy the cost of environmental degradation that fossil fuel use causes. Neither consumer demand nor technology will change until people "feel" the costs of using fossil fuel.

One way Americans would be encouraged to reduce fossil fuel usage would be to enact a CO_2 (carbon dioxide) tax.[761] Most of the 1.5 billion tons of CO_2 the United States releases each year comes from burning fossil fuels.[762] Energy use in the United States will increase 64% by the year 2030 under current policies.[763] Stavins and Whitehead point out that "if emissions of carbon dioxide (CO_2) and other greenhouse gases ... continue to grow at current rates, many scientists believe global mean temperatures may rise by 2° to 5°F degrees over the next century," thus creating "widespread changes in precipitation patterns, storm frequency and intensity, and the ocean level."[764] In 1990, scientists warned that a 60% reduction in CO_2

757. *See* J.B. McCombs, *An Historical Review and Analysis of Early United States Tax Policy Scholarship: Definition of Income and Progressive Rates*, 64 ST. JOHN'S L. REV. 471, 518 (1990).

758. *See supra* notes 707-52 and accompanying text.

759. *See* Clark & Downes, *supra* note 389, at 29.

760. *See id.*

761. In 1991, Representative Pete Stark introduced legislation for an $18 per ton tax, phased in over more than five years. *See* H.R. 1086, 102d Cong. (1991). Similarly, in 1993, President Clinton introduced a BTU tax, which, like Stark's proposal, fell victim to an onslaught of blocking coalitions and special interests. *See* Henry Lee, *The Political Economy of Energy Taxes: An Assessment of the Opportunities and Obstacles*, 12 PACE ENVTL. L. REV. 77 (1994) (citing Brad Knickerbocker, *Green Activists Are Seeing Red on Record of 103rd Congress*, CHRISTIAN SCI. MONITOR, Oct. 3, 1994, at 6).

762. *See* REPETTO ET AL., *supra* note 171, at 53.

763. *See id.*

764. Stavins & Whitehead, *supra* note 145, at 32-33; *see also* REPETTO ET AL., *supra* note 171, at 53 (discussing effects of carbon dioxide on weather patterns, global warming, and the resulting political and economic consequences). In December 1997, President

emissions was necessary to stabilize atmospheric conditions at present-day levels.[765] Given U.S. dependence on CO_2-producing fossil fuel, a properly designed tax would enable the United States to reduce CO_2 emissions, while minimizing the economic dislocations that might accompany an increase in fuel prices.

Ideally, a CO_2 tax would tax CO_2 emissions directly, but because of the vast number of individual sources of CO_2 emissions, such a tax seems impractical.[766] Alternatively, a CO_2 tax could tax a fuel's carbon content, which is roughly proportional to the amount of CO_2 it emits upon combustion.[767] Taxing imported fuels at point of entry and taxing domestic fuels at point of production would be most effective.[768]

A CO_2 tax offers a number of advantages over alternative control strategies, even over other market-based solutions. These advantages include comprehensiveness, flexibility, and effectiveness.[769] A CO_2 tax is efficient because it encourages the greatest reductions in CO_2 emissions by businesses, which can make the reductions most cheaply.[770] Compared to conventional regulatory standards, which limit fossil fuel burning by setting different standards for each of the thousands of industrial, commercial, and residential uses of each fuel, a CO_2 tax would be far less costly to administer. Only one tax rate would be necessary for each fuel type. Furthermore, because businesses could reduce their CO_2 taxes by reducing fossil fuel consumption, the tax would encourage technological innovation.[771]

The rate at which to set a CO_2 tax is difficult to determine,

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Clinton met with other world leaders in Kyoto, Japan, to consider ways to reduce greenhouse gas emissions. President Clinton signed a treaty agreeing to reduce U.S. emissions by 7% below 1990 levels no later than 2012. Clinton promised to include, as part of a legislative package to reduce emissions, $5 billion in tax credits and research and development funds. *See As Kyoto Treaty Implementation Begins, Battle Looms on Tax Credits*, Util. Env't Rep. (McGraw-Hill), at 1, 1 (Dec. 19, 1997).

765. *See* Muller & Hoerner, *supra* note 625, at 13 (citing CLIMATE CHANGE, *supra* note 464).

766. *See* Stavins & Whitehead, *supra* note 145, at 33.

767. *See* REPETTO ET AL., *supra* note 171, at 54; Stavins & Whitehead, *supra* note 145, at 33.

768. Stavins & Whitehead, *supra* note 145, at 33; *see also* REPETTO ET AL., *supra* note 171, at 54 (discussing advantages and disadvantages of various types of carbon dioxide taxes, concluding that taxing at point of entry is most efficient).

769. *See* REPETTO ET AL., *supra* note 171, at 55-56.

770. *See* Muller & Hoerner, *supra* note 625, at 9; Stavins & Whitehead, *supra* note 145, at 33.

771. *See* Stavins & Whitehead, *supra* note 145, at 33.

although easy to adjust.[772] The tax should be set at a level that would discourage fossil fuel use to the point that national CO_2 emissions would meet a nationally set target.[773] Unfortunately, the impact of different tax rates is uncertain.[774] In 1990, the Congressional Budget Office estimated that a $100 per ton tax, phased in over ten years, would, by the year 2000, result in reductions in CO_2 emissions of between 8% and 36%.[775] However, with a $5 per ton tax, CO_2 emissions would drop only an estimated 1% to 4% over the same period. At $25 per ton, the tax might decrease emissions by 8% to 17%.[776] However, in order to decrease CO_2 emissions by 20% below 1990 levels requires a $200 to $400 per ton tax phased in over fifty years, and a $250 per ton tax to maintain those levels.[777] The "right" level of tax would also depend on how quickly the government enacted it.[778] Studies suggest that the United States could achieve substantial reductions, relatively inexpensively, over the next ten years or so.[779] However, as time passes, low-cost options will become ineffective.[780]

Congress will need to analyze the impact of implementing a CO_2 tax on the U.S. economy.[781] Because the CO_2 tax has been seriously considered before, information on its impact exists. A couple of commentators have estimated that, upon implementation of a $100-

772. *See* REPETTO ET AL., *supra* note 171, at 55-56 (contrasting a CO_2 tax with a permit system).

773. *See* Stavins & Whitehead, *supra* note 145, at 33.

774. *See id.* at 33-34; Muller & Hoerner, *supra* note 625, at 14-15.

775. *See* Stavins & Whitehead, *supra* note 145, at 33 (citing U.S. CONGRESSIONAL BUDGET OFFICE, U.S. CONGRESS, CARBON CHANGES AS A RESPONSE TO GLOBAL WARMING: THE EFFECTS OF TAXING FOSSIL FUELS (Aug. 1990)).

776. *See id.*

777. *See id.* at 33-34 (citing Alan S. Manne & Richard G. Richels, *CO_2 Emission Limits: An Economic Cost Analysis for the U.S.A.*, ENERGY J., April 1990, at 51, 70-71). In 1988, the Toronto Conference proposed lowering "current carbon dioxide emissions by roughly 20 percent within a decade and making larger reductions thereafter." REPETTO ET AL., *supra* note 171, at 54 (citing The Changing Atmosphere: Implications for Global Security, Statement from international meeting sponsored by the Government of Canada in Toronto, June 27-30, 1988).

778. *See* REPETTO ET AL., *supra* note 171, at 57.

779. *See id.*

780. *See id.* The discrepancy may be great between the tax necessary to stabilize emissions at one level in the year 2000 and the tax to stabilize emissions at another level 10 or 20 years later. *See id.* Current economic analyses suggest that reductions over the next 10 or 15 years will be relatively inexpensive, but "sustaining or extending these reductions may become harder and harder, requiring a significantly higher tax." *Id.*

781. Throughout this article, the economic impact of various proposals has largely been ignored. However, the CO_2 example describes the revenue estimating process necessary in all of these proposals.

per ton tax, the U.S. gross national product would decline by as much as 2% at the end of the phase-in period.[782] Many studies, however, suggest that the economic consequences would likely be fairly small.[783] The impact would be further reduced to the extent other countries joined.[784] Furthermore, if the tax were revenue-neutral, it is likely that the United States would see little or no decline in its GNP.[785] In fact, one report concludes that "using pollution tax revenues to lower other distortionary tax burdens can improve the nation's economic performance."[786] By reinvesting CO_2 tax revenues into the economy (for example, by lowering payroll or capital tax rates), Congress could avoid any significant loss in the GNP.[787] In addition, if Congress carefully targeted tax cuts, GNP might actually rise relative to what it would have been without the carbon tax.[788] Finally, current projections of the effects of a CO_2 tax disregard the economic improvements that would result from the environmental benefits of the tax.[789] For example, a decline in fossil fuel use is likely to result in a decline in other pollutants. Such reductions translate into economic benefits estimated to be approximately $1.5 billion per year.[790] In addition, as Americans' use of fossil fuels decreases, so does our dependence on foreign imports, thus improving both our national security and our international trade status.[791] Regardless of how the United States chooses to reduce greenhouse gases, the costs will be substantial.[792] By implementing a CO_2 tax, however, Congress makes the cost of current lifestyles clearer to consumers, who might, in turn, change both their behaviors and their attitudes.

A gasoline tax is another strategy for reducing emissions of greenhouse gases. Such a tax would reduce the demand for gasoline and, thus, total miles driven, thereby reducing highway congestion.[793] Furthermore, a gasoline tax would encourage technological

782. *See* Stavins & Whitehead, *supra* note 145, at 34.
783. *See* REPETTO ET AL., *supra* note 171, at 57-58; Lee, *supra* note 761, at 77-78.
784. *See* Stavins & Whitehead, *supra* note 145, at 34.
785. *See id.*
786. REPETTO ET AL., *supra* note 171, at 59 (citing H.R. 1086, 102d Cong. (1991)).
787. *See id.*
788. *See id.* (discussing different economic models that agree that "returning the revenues of a carbon tax to the economy through an investment tax credit has the biggest effect on GNP").
789. *See id.* at 61.
790. *See id.*
791. *See id.* (estimating the value of improved national security at about $18.1 billion—under a $40 per ton CO_2 tax).
792. *See* Stavins & Whitehead, *supra* note 145, at 34.
793. *See id.*

innovation, such as greater fuel-efficiency in cars.[794] Stavins and Whitehead point out that "a 50-cents-per-gallon gas tax could reduce gasoline consumption by 10 to 15%, reduce oil imports by 500,000 barrels per day, and generate about $40 billion per year in revenue."[795] Of course, to the extent such a tax were revenue-neutral, Congress could undo any of its "inequitable" aspects elsewhere. For example, if we were to shift the revenue from the gas tax to the Social Security Trust Fund, for the accounts of current workers, those who would be hardest hit by such a tax—working families and those who drove to their jobs—would benefit.[796] Alternatively, Congress could use the revenue to reduce employee contributions to Social Security. For example, paying the $40 billion per year revenue from a 50-cent per gallon gas tax into Social Security would reduce an employee's payroll tax contribution by about 33%.[797] For an employee earning $30,000 per year, such a reduction would increase her take home pay by $700; this increase would *more than* offset the gasoline tax, as long as she kept her mileage under 30,000 miles per year in a car getting more than twenty-five miles per gallon.[798] To alleviate its initial impact, Congress could phase in such a tax over a period of years, thereby permitting businesses and individuals to adjust their producing and consuming behavior. A gasoline tax could make a significant contribution to reducing fossil fuel dependence in the United States, while encouraging efficiency and savings.

Solid waste is another byproduct of our ever-growing levels of population and consumption.[799] Landfill space is becoming scarce, and the cost of waste disposal has skyrocketed.[800] In 1994, each U.S. citizen discarded daily about 4.4 pounds of trash.[801] Waste volume is expected to increase another 20% as we turn the century.[802] By reducing population and consumption, our waste should automatically decrease; however, per capita waste levels must also decline. Recycling is one way to reduce solid wastes, but virtually no

794. *See* Lee, *supra* note 761, at 85.

795. Stavins & Whitehead, *supra* note 145, at 34.

796. *See id.* at 35.

797. *See id.*

798. *See id.* In any event, excessive mileage in inefficient cars should not be encouraged.

799. In 1960, when our population was only 180 million, each person generated approximately 2.7 pounds of waste per day. As of 1994, with a population of 265 million, each person generates 4.4 pounds of waste per day, a world record. *See* STATISTICAL ABSTRACT, *supra* note 9, at 237 tbl.380.

800. *See* Stavins & Whitehead, *supra* note 145, at 35.

801. *See* STATISTICAL ABSTRACT, *supra* note 9, at 237 tbl.380.

802. *See* REPETTO ET AL., *supra* note 171, at 15.

incentives currently exist for households to reduce daily waste or to recycle more.[803] In fact, while it generally costs a household nothing to put out more trash, each additional ton of waste costs society more than $100.[804] We can, however, design tax incentives to encourage waste reduction efforts. For example, Congress could enact federal tax incentives in conjunction with curbside waste collection charges. Retail disposal taxes or virgin materials taxes would also contribute to waste reduction efforts.[805]

A number of local jurisdictions have already initiated programs in which waste collection fees depend on the quantity of waste generated.[806] Under such a fee structure, the end consumer learns the real costs of collection and disposal.[807] Such a system encourages residents to minimize waste through new purchasing patterns, using products or containers more than once, or composting their refuse.[808] Furthermore, some jurisdictions charge higher rates for unseparated refuse, thus providing an incentive to consumers to separate the recyclable components of their trash.[809]

The per household charge on waste disposal can depend on either volume or weight. Volume-based systems rely on per receptacle pricing.[810] These systems have several problems, including charging a customer for a full receptacle even if it is only partially full.[811] Weight-based systems avoid this problem. Under a weight-based system, collectors weigh the waste on site and either leave a bill or mail one later.[812] This approach eliminates the need to obtain receptacles, buy trash bags, or have a trash compactor. One federal tax incentive to facilitate weight-based systems would be a credit that increased as wastes decreased. Such a credit would depend on the annual weight of waste each household generated. The amount of the credit would be highest at some low-weight threshold and would decrease as household waste increased. Optimally, the threshold

803. *See id.* at 16.

804. *See id.* (noting that most households pay a flat rate for garbage collection through their property taxes).

805. *See* Stavins & Whitehead, *supra* note 145, at 36.

806. *See id.* For example, Seattle, Washington, charges customers based on the size and number of trash receptacles they use. *See id.* The program has produced impressive results. In 1979, the average family set out four 30-gallon receptacles per week; by 1989, 87% of households filled only one 32-gallon receptacle per week or less. *See id.*

807. *See id.*

808. *See id.*

809. *See id.* at 37.

810. *See* REPETTO ET AL., *supra* note 171, at 16.

811. *See* Stavins & Whitehead, *supra* note 145, at 36.

812. *See id.* at 37.

would vary with the number of persons residing in any given household. A taxpayer could determine the annual weight of his or her waste from the collection company's year-end statement.[813] Such a credit not only would encourage individual waste reduction but also would encourage municipalities to adopt weight-based waste management programs,[814] because only taxpayers in municipalities using such a system could take advantage of the credit. Citizens in cities without such a system would pressure city leaders to adopt this more cost-effective means of disposal.

Studies indicate that households respond favorably to waste-reduction incentives.[815] Results of a recent long-term study indicate that if a community instituted a $1.50 per bag waste-collection fee, it could expect to cut waste by 18%.[816] If the waste charge were accompanied by a free curbside recycling, wastes would go down by 30%.[817] Still, high consumption levels, and therefore high waste levels, are national problems, which require national attention. A federal waste reduction tax credit would not only prompt individuals to reduce wastes; it would also induce producers and retailers to reduce packaging and increase its recyclability.[818] Congress might fund the waste reduction tax credit with revenues from other pollution taxes, thus returning the benefits of conservation to the taxpayers.

A retail disposal tax provides another alternative to solid waste management.[819] Such a tax would impose a fee for disposal when a product is purchased if its disposal cost exceeds the disposal costs associated with its volume.[820] Each of these products contains ingredients that could have significant environmental consequences in landfills or incinerators.[821] While disposal costs vary from region to region, gathering the necessary information on product composition

813. Where a number of households dispose of waste in a common container, such as in apartment complexes, the apartment owner or receptacle owner would be eligible for the credit, based on a set of specially designed tables reflecting the number of households disposing of waste and some corresponding weight threshold for credit eligibility. In theory, the apartment owner would pass any saving on to the tenants.

814. The credit could also accommodate by-the-bag systems, with the credit amount highest at some low-bag threshold.

815. *See* REPETTO ET AL., *supra* note 171, at 17-18.

816. *See* REPETTO ET AL., *supra* note 171, at 18.

817. *See id.*

818. *Cf. id.* at 16 (discussing an analogous effect of a per bag system).

819. *See* Stavins & Whitehead, *supra* note 145, at 37.

820. Such products include "batteries, inks, paints, and paint solvents, and household pesticides." *Id.*

821. *See id.*

should be undertaken at a national level.[822] Stavins and Whitehead express concern over whether a politically feasible tax might be too small to influence buying behavior.[823] Nonetheless, such a tax would make consumers aware of the environmental costs of their purchases. The resulting revenue not only could defray administrative costs but also could fund research efforts for developing alternative energy sources.

A third tax alternative for solid waste management is a tax on the use of virgin materials.[824] By incorporating into the price of virgin materials their disposal costs, policymakers encourage manufacturers to use recycled materials, which already reflect the cost of disposal. In addition, such a tax provides a more cost effective way to encourage recycling as well as the use of recycled materials.[825] Like the retail disposal tax, Congress would impose the virgin materials tax on the materials that contribute the most to solid waste problems, such as newly mined lead.[826]

These proposals illustrate a few alternatives in which taxes are used to discourage consumption. By eliminating existing tax provisions that encourage consumption and enacting taxes and tax incentives designed to change destructive consumption patterns, the tax system can contribute significantly to solving the carrying capacity dilemma.

VII. THE STORK AND THE PLOW BECOME FRIENDS: A COMPREHENSIVE TAX POLICY STRATEGY FOR DEALING WITH THE PROBLEMS OF OVERPOPULATION

Overpopulation and its attendant consequences must be faced. World population continues to grow at unprecedented rates destroying our habitat—Earth. Nature requires a balance among living organisms, resources, and the consumption of those resources by the organisms. Scientists tell us that this balance has been shaken by the human presence. Carrying capacity analysis suggests that the United States is perilously close to disaster. However, the United States holds the key to the human future. America sets the pace for the world. The United States must insist on population stabilization, sustainable agricultural practices, and changes in consumption.

822. *See id.* at 38.
823. *See id.* at 37-38.
824. *See id.* at 38.
825. *See id.*
826. *See id.*

Americans must redevelop our infrastructure and lifestyles. Most saliently, we must redesign around people, rather than automobiles. This restructuring would provide healthier, less stressful lives for all Americans.

Current tax policy contributes to the problems of overpopulation by encouraging Americans to have children and to consume *now*. Yet our supply of natural resources is dwindling and cannot support our population and our consumptive lifestyles forever. This Article has explored ways in which current tax policies exacerbate overpopulation problems, as well as tax policies designed to alleviate such problems. By looking at tax policy through the lens of carrying capacity, I have analyzed problems of population growth, current agricultural practices, and consumption. Current tax policies influence reproductive behavior by providing subsidies for families with children. Because these tax subsidies are not tied to amounts spent on children or limited to a specified number of children, they potentially encourage large families. These tax provision need to be reexamined with population stabilization in mind and redesigned or eliminated accordingly. Furthermore, Congress should consider new tax policies that provide incentives for keeping families small. Current tax policies also influence agriculture and thus our food supply. Tax policies have historically moved our agricultural system toward a capital intensive, chemically-dependent, monoculture enterprise. Scientists warn that current agricultural practices are unsustainable in the long run. Tax policies that have driven agriculture must be analyzed with a view toward sustainability and, when appropriate, revised or eliminated. Likewise, Congress should consider new tax incentives designed to encourage sustainable agricultural practices and technologies. Finally, current tax policies have encouraged Americans' consumptive lifestyles. Our consumption practices must be scaled back in order to alleviate pressure on our ecosystem. Tax provisions that exacerbate consumption should be revised or eliminated while tax provisions that encourage conservation are needed.

Of course, the tax laws alone cannot solve all overpopulation problems directly. Policymakers therefore must find ways to use the tax law to encourage other forces in society to work for environmental improvement. The very overweight stork is about to step on the fragile, old plow. I believe the IRS can help to avoid this impending disaster.