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Sustainable Consumption, Energy Policy, and Individual Well-Being

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Sustainable Consumption, Energy Policy, and Individual Well-Being

*Daniel A. Farber**

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I. INTRODUCTION

The United States is an exceptional place in many ways, not least in its consumption. The United States consumes a disproportionate share of the world's energy and resources, with a correspondingly large environmental footprint. At present, although we have been successful in creating economic wealth, well-being has lagged behind.¹ Could the United States shift to a more sustainable path? Would that require an unacceptable sacrifice of social welfare? This Article argues that a shift really is possible, and that many of the steps to sustainability would actually make people better off even apart from their environmental benefits.

At present, we are not on a sustainable pathway. U.S. consumption looms large globally. With less than one-twentieth of the world's population, the United States consumes four times its share of resources, including roughly a fifth of the world's fossil fuels, a fifth of the copper, and a quarter of the aluminum.² During the twentieth

1. According to the economist Jeffrey Sachs:

[T]he United States[] has achieved striking economic and technological progress over the past half century without gains in the self-reported happiness of the citizenry. Instead, uncertainties and anxieties are high, social and economic inequalities have widened considerably, social trust is in decline, and confidence in government is at an all-time low. Perhaps for these reasons, life satisfaction has remained nearly constant during decades of rising Gross National Product (GNP) per capita.

Jeffrey Sachs, *Introduction to WORLD HAPPINESS REPORT 2* (John Helliwell et al. eds., 2012), available at <http://www.earth.columbia.edu/sitefiles/file/Sachs%20Writing/2012/World%20Happiness%20Report.pdf>.

2. Dave Tilford, *Why Consumption Matters*, SIERRA CLUB (2000), http://www.sierraclub.org/sustainable_consumption/tilford.asp; see ENERGY AND CLIMATE CHANGE COMMITTEE, CONSUMPTION-BASED EMISSIONS REPORTING, 2010–12, H.C. 1646, at 3–4 (U.K.), available at <http://www.publications.parliament.uk/pa/cm201012/cmselect/cmenergy/1646/1646.pdf> (providing additional information on sustainable consumption and explaining the contribution of consumption by developed nations to greenhouse gas emissions); ORG. FOR ECON. CO-OPERATION & DEV., PROMOTING SUSTAINABLE CONSUMPTION: GOOD PRACTICES IN OECD COUNTRIES (2008), available at <http://www.oecd.org/dataoecd/1/59/40317373.pdf> (highlighting OECD government initiatives and policies promoting sustainable consumption); ECON. FOR EQUITY & ENV'T NETWORK, <http://www.e3network.org/> (last visited Sept. 7, 2012) (providing information on a national network of sustainable energy economists); *Sustainable Consumption*, UN ENV'T PROGRAMME, <http://www.unep.org/themes/consumption/index.asp> (last visited Sept. 7,

century, the U.S. population tripled, while U.S. use of raw materials multiplied seventeen times.³ Or to put it differently, the average person's use of raw materials quadrupled.

The United States is also responsible for a disproportionate amount of greenhouse gases, in part because of its resource use. Resource production entails heavy energy use and accompanying CO₂ emissions—for instance, three tons of carbon dioxide are emitted for every ton of copper produced⁴ and up to fifteen are emitted for every ton of aluminum⁵ Altogether, the United States produces almost a quarter of global carbon dioxide.⁶ Finally, the United States “imported” additional carbon tonnage in the form of emissions connected with the production of goods in China and elsewhere. According to one estimate, this embedded carbon amounted to over 500 million tons of carbon dioxide in 2008.⁷ Thus, current U.S. consumption of resources and energy is hazardous to the planet.

This Article explores the opportunities for making forward strides on energy sustainability on the consumption side.⁸ In a free

2012) (outlining sustainable consumption initiatives); *Sustainable Consumption*, WORLD ECON. F., <http://www.weforum.org/en/initiatives/DrivingSustainableConsumption/index.htm> (last visited Sept. 7, 2012) (detailing one sustainable consumption initiative); SUSTAINABLE CONSUMPTION INST., U. MANCHESTER, <http://www.sci.manchester.ac.uk/> (last visited Sept. 7, 2012) (presenting research on sustainable consumption issues); WORLD BUS. COUNCIL ON SUSTAINABLE DEV., <http://www.wbcd.org/> (last visited Sept. 7, 2012) (presenting sustainable business initiatives).

3. Tilford, *supra* note 2.

4. Wilhelm Kuckshinrichs et al., *CO₂ Emissions of Global Metal-Industries: The Case of Copper*, 84 APPLIED ENERGY 842, 850 (2007), available at <http://www.sciencedirect.com/science/article/pii/S0306261907000177>.

5. See *Aluminium Smelting Greenhouse Performance*, AUSTL. ALUMINIUM COUNCIL, LTD., <http://aluminium.org.au/climate-change/smelting-greenhouse-performance> (last visited Aug. 28, 2012) (discussing extent of aluminum smelting effects on greenhouse gas emissions and showing that the amount of energy use varies depending on the source of electricity used).

6. Tilford, *supra* note 2.

7. Glen P. Peters et al., *Growth in Emission Transfers via International Trade from 1990 to 2008*, 108 PROC. NAT'L ACAD. SCI. 8903, 8906 fig.4 (2011) (as shown by black line indicating net imports in the USA graph); see ENERGY AND CLIMATE CHANGE COMMITTEE, *supra* note 2, at 5–7 (discussing whether nations should be held responsible for this “imported” carbon).

8. U.N. ENV'T PROGRAMME, PLANNING FOR CHANGE: GUIDELINES FOR NATIONAL PROGRAMMES ON SUSTAINABLE CONSUMPTION AND PRODUCTION (2008), available at http://www.unep.org/pdf/UNEP_Planning_for_change_2008.pdf (providing guidelines to advise governments and other interested parties on sustainable consumption and production programs under the Marrakech Process, including nine case studies from among the thirty countries already identified to have programs in place); see Hope M. Babcock, *Assuming Personal Responsibility for Improving the Environment: Moving Toward a New Environmental Norm*, 33 HARV. ENVTL. L. REV. 117, 117 (2009) (focusing on changing the goods and services used by consumers to improve sustainability); Katrina Fischer Kuh, *Capturing Individual Harms*, 35 HARV. ENVTL. L. REV. 155, 155 (2011) (looking at environmentally significant individual harms

society, it is preferable to change individual lifestyles by creating sustainable infrastructure, informing individuals, and providing incentives, not by coercing individuals into choices that society prefers them to make. Changes in legal rules can reduce barriers to sustainable consumption and give more people the opportunity for sustainable, satisfying lives. Sustainable consumption and green communities are large-scale goals that will not be easy to achieve. But they are not utopian, and lawmakers can take significant steps in the near term.⁹ Indeed, recent evidence suggests that even before the financial crisis, some developed countries may have reached “peak stuff”—that is, that per capita use of energy and resources may have stabilized or even begun to decline.¹⁰

Part II lays the conceptual groundwork. It begins by analyzing the concept of sustainable consumption. Part II then turns to recent research on subjective well-being by psychologists and economists. That research suggests that increased income and the associated consumption are only loosely connected with subjective well-being (either in terms of general mood or sense of satisfaction with one's life). Factors such as interpersonal relationships are more important sources of satisfaction, while other nonfinancial factors such as commuting are important negatives. These findings create room for decoupling increased consumption from improved individual welfare, at least for those living outside of poverty.

Parts III and IV discuss specific interventions at the individual and community levels, respectively, beginning with changes in consumer energy use to reduce carbon emissions.¹¹ A range of individual actions, while seemingly minor, could dramatically reduce

from an environmental federalism perspective); James Salzman, *Sustainable Consumption and the Law*, 27 ENVTL. L. 1243, 1250, 1255–56 (1997) (presenting an ecological model of how populations affect the environment and advocating for sustainable consumption laws); Ken Belson, *Meccas of Shopping Try Hand at Being Misers of Energy*, N.Y. TIMES (Apr. 10, 2012), http://www.nytimes.com/2012/04/11/business/energy-environment/retailers-seek-to-conserve-energy-to-cut-costs.html?_r=1&pagewanted=all (explaining that sustainability improvements are also possible in the ways that consumers shop for and obtain products).

9. A useful discussion of these issues can be found in JASON J. CZARNEZKI, *EVERYDAY ENVIRONMENTALISM: LAW, NATURE & INDIVIDUAL BEHAVIOR* (2011).

10. See Chris Goodall, *Peak Stuff: Did the UK Reach a Maximum Use of Material Resources in the Early Part of the Last Decade?* (Oct. 13, 2011) (research paper), available at http://www.carboncommentary.com/wp-content/uploads/2011/10/Peak_Stuff_17.10.11.pdf (presenting evidence of recently reduced consumption in the United Kingdom).

11. The focus in this Article is on noneconomic interventions, but this should not be taken to discount the usefulness of traditional economic incentives—for instance, in the form of changes in energy pricing. The literature in environmental economics dealing with economic incentives is enormous, so for present purposes it seems more fruitful to focus on alternative approaches.

personal energy consumption. To name just a few, individuals could reduce idling of cars, carpool more frequently, select more energy-efficient cars and appliances, reduce indoor winter temperatures by a few degrees, and install better furnaces.¹² In addition, changes in urban planning could reduce dependence on automobiles and SUVs, and changes in diet could reduce the energy load associated with agriculture.

Controlling carbon emissions will involve multiple strategies, including greater use of renewable energy and improved energy efficiency by businesses.¹³ But another part of the equation is consumption: direct use of energy and use of energy-intensive goods and services. As shown below, energy consumption by individuals can be reduced through a spectrum of policies including conventional energy-efficiency measures,¹⁴ changes in individual behavior, modifications in urban planning, better water use, and even improved diet. Policies to promote these changes are primarily justified because of their environmental or health effects, but their positive effects on well-being are a welcome bonus and should give these changes greater societal appeal and staying power.

II. RETHINKING CONSUMPTION

There is little question that consumption patterns need to change if the United States is going to achieve some form of sustainability. Fourteen million trees are cut down every year simply to make mail-order catalogs.¹⁵ The ecological footprint that goes with this consumption is huge. So is the amount of waste: "Ninety nine percent of material used in production of or contained within goods in

12. Michael P. Vandenbergh & Anne C. Steinemann, *The Carbon-Neutral Individual*, 82 N.Y.U. L. REV. 1673, 1700 (2007). Vandenbergh has been in the forefront of work in the legal academy on individual behavior as it relates to consumption. This Article extends that work by considering changes in consumption goods and services from the supply side and changes in consumption through community rather than individual efforts.

13. See Michael B. Gerrard, *Introduction and Overview of THE LAW OF CLEAN ENERGY: EFFICIENCY AND RENEWABLES* 1–2 (Michael B. Gerrard ed., 2011) (stating that use of renewable energy and increased energy efficiency will be crucial in combating climate future change).

14. See John C. Dernbach & Marianne Tyrrell, *Federal Energy Efficiency and Conservation Laws*, in *THE LAW OF CLEAN ENERGY: EFFICIENCY AND RENEWABLES*, *supra* note 13, at 25 (describing energy-efficiency and energy-conservation policies); Alexandra B. Klass & John K. Harting, *State and Municipal Energy Efficiency Laws*, in *THE LAW OF CLEAN ENERGY: EFFICIENCY AND RENEWABLES*, *supra* note 13, at 57 (presenting an overview of state and local energy-conservation efforts).

15. Tilford, *supra* note 2.

the United States becomes waste within six weeks of sale.”¹⁶ In short, consumers in the United States are responsible for prodigious amounts of energy and resource use.

Given this high level of consumption currently, it seems clear that the United States cannot continue to follow the same growth trend over the course of this century as the past century. Recall that the past century saw a seventeen-fold increase in the use of raw materials.¹⁷ In the absence of a compensating increase in efficiency of resource use, the expansion of the current levels would be breathtaking.¹⁸ A little arithmetic demonstrates that by 2100 the United States alone would annually consume three times the current global consumption of fossil fuels, produce three times the current global level of carbon dioxide, consume three times the current global consumption of copper, and so forth.

This is obviously not feasible in a world of impending climate change where other economies are also growing rapidly.¹⁹ No doubt market incentives will lead to production technologies and products that are less resource intensive, particularly if environmental costs are internalized into product costs. But it would require considerable optimism to think that those improvements would suffice without changes in consumption patterns. Staving off the projected seventeen-fold increase in resource use and greenhouse gases would require tremendous technological progress and enormous increases in renewables and efficiency simply to keep the U.S. ecological footprint where it is today—and today’s footprint is not sustainable.²⁰ Thus, even remarkable technological changes to reduce dependence on fossil fuels and other nonrenewable resources may not be enough by themselves to support continued growth in consumption. Going forward, then, developed countries like the United States certainly

16. *Id.*

17. *Id.*

18. See *supra* text accompanying notes 2–4 for discussion of current energy and resource usage. This point is beginning to receive attention in the media. See Thomas L. Friedman, Op-Ed., *Take the Subway*, N.Y. TIMES (Mar. 3, 2012), <http://www.nytimes.com/2012/03/04/opinion/sunday/friedman-take-the-subway.html> (stating that increasing scarcity and pollution “will force us to decouple consumption from economic growth”).

19. See Catherine Wolfram et al., *How Will Energy Demand Develop in the Developing World?*, J. ECON. PERSP., Winter 2012, at 119 (discussing increased energy growth and suggesting that energy demand in the developing world will be exceed predicted levels).

20. The trajectory of U.S. consumption needs to be put in the context of projected massive economic growth in China and India, which are expected to be respectively the first and third largest economies in the world by 2050. See LAURENCE C. SMITH, *THE WORLD IN 2050: FOUR FORCES SHAPING CIVILIZATION’S NORTHERN FUTURE* 41 (2010) (predicting future environmental and political trends based on existing consumption patterns).

need far more renewables and greater efficiency, but they probably also need a decrease in the total amount of resource and energy consumption, including a shift from material consumption to other forms of personal fulfillment.

Given that historic U.S. consumption trends probably cannot be sustained even with rapid technological progress, we must begin to search for new ways, less demanding of resources and energy, for Americans to enjoy a high quality of life. If we measure quality of life solely in terms of material consumption, sustainability will be a quixotic quest. Instead, sustainable consumption has to become part of the strategy. This will require either lowering levels of consumption, purchasing goods and services that are less energy and resource intensive, or shifting to nonmarket sources of fulfillment.

The policies needed for a low-carbon world would be difficult to sustain politically if they translated into a bleak, grim existence. Fortunately, research by psychologists and economists indicates that many of these policies can pay a bonus in terms of improvements in individual well-being and happiness, quite apart from their contributions to mitigating climate change or other environmental problems. This happiness dividend may also assist to strengthen long-term buy in to sustainability policies.²¹

Reducing consumption should be acceptable if the trade-off takes the form of improvements in key components of happiness such as time with friends and family or improved health.²² As some leading economists have said, it is a mistake to focus too narrowly on material goods as a measure of social welfare:

To focus specifically on the enhancement of inanimate objects of convenience (for example in the GNP or GDP which have been the focus of a myriad of economic studies of progress), could be ultimately justified – to the extent it could be – only through what these objects do to the human lives they can directly or indirectly influence.²³

21. Admittedly, there is a bit of a temporal mismatch. The pursuit of “happiness”—in the sense of maximizing individual well-being at any *given* time—and sustainability as a quest for well-being over an *extended* period of time—may not always go hand in hand. Maximizing well-being over the short-run may not provide the greatest long-term assurance of well-being. Thus, temporal trade-offs and short-term sacrifices may be necessary. But, as discussed in the text, the conflict between sustainability and present well-being is less severe than some may assume.

22. Although it is not a focus of this Article, the most obvious contribution of environmental law to individual well-being probably takes the form of improved health due to reductions in pollutants and toxic substances.

23. JOSEPH E. STIGLITZ ET AL., REPORT BY THE COMMISSION ON THE MEASUREMENT OF ECONOMIC PERFORMANCE AND SOCIAL PROGRESS 8 (2009), *available at* http://www.stiglitz-senfitoussi.fr/documents/rapport_anglais.pdf. To the same effect, see TIM JACKSON, PROSPERITY WITHOUT GROWTH? THE TRANSITION TO A SUSTAINABLE ECONOMY 5 (2009), *available at*

This shift away from counting welfare purely in terms of increased consumption also raises questions about reliance on cost-benefit analysis as a decisionmaking tool.

This Section will lay the conceptual groundwork for consumption policy. Part A begins by exploring the concepts of consumption, sustainability, and their offspring, sustainable consumption. These concepts may seem simple but they are not self-explanatory. Part B then surveys the psychological and economic literature about well-being in relation to wealth and economic growth. As Part B shows, the capacity for increased consumption does not translate into an equally increased sense of happiness or satisfaction. Part C considers the implications of this research for public policies relating to consumption and economic growth. In particular, this research raises questions about the weight we should place on cost-benefit analysis.

A. Unpacking the Concept of Sustainable Consumption

In the interest of clarity, the analysis must begin with a closer look at sustainable consumption, and its constituent parts, consumption and sustainability. These concepts require some unpacking to be analytically useful. This Part will begin by discussing the concept of consumption, then move to the sustainability dimension of consumption.

1. Consumption

The term *consumption* is not self-explanatory, although some of the meaning is obvious (e.g., shopping at the mall). Revisiting the concept is worthwhile, not just for the purpose of definitional nicety, but also because consumption turns out to serve many purposes and to have multiple meanings. Consumption does not merely meet physical needs such as food, transportation, and shelter but also serves a variety of psychological and social functions. Understanding these functions raises the possibility that we could unbundle them and pursue some of them separately rather than under the guise of higher incomes and consumption.

"If consumption is self-evidently a major driver of environmental change, consumption itself is not self-evident."²⁴

http://www.sd-commission.org.uk/data/files/publications/prosperity_without_growth_report.pdf, which suggests that material wealth does not lead to happiness.

24. THOMAS PRINCEN ET AL., CONFRONTING CONSUMPTION, at ix (2002).

Anthropologist Richard Wilk argues that the term *consumption* is used in essentially metaphorical ways.²⁵ Consumption is not just about individual decisions regarding goods and services, it entails “a stream of choices and decisions winding its way through the various stages of extraction, manufacture, and final use, embedded at every step in social relations of power and authority.”²⁶ Gill Seyfang describes consumption as “the completion of economic circuits and the satisfaction of wants; it is the creation and maintenance of identity and lifestyles”²⁷ These varied motivations are reflected in advertising, which sometimes provides information about product characteristics and prices but may also appeal to other consumer motivations.

Consumption has been studied by a variety of disciplines, each bringing to bear its own questions, assumptions, and methods. These differences are neatly described by Heap and Kent: “Economists see consumption in terms of the generation of utility, anthropologists and sociologists in terms of social meanings, and scientists in terms of the human transformation of materials and energy.”²⁸

In concrete terms, a high-end laptop is just a tool for performing certain tasks such as playing movies for the owner’s enjoyment. But it can also be seen as symbolizing the owner’s technological prowess, as more broadly representing our society’s adherence to technological progress, or as advertising the user’s economic status. Tim Kasser has argued that while material goods can satisfy utilitarian needs, they are less able to satisfy social and psychological needs.²⁹ For example, the laptop can only symbolize technological abilities and knowledge for a limited time (until a better model comes along), and it only advertises the economic status of the owner to the relatively limited group who know about computer quality and pricing.

25. Richard Wilk, *Consumption Embedded in Culture and Language: Implications for Finding Sustainability*, SUSTAINABILITY: SCI. PRAC. & POL’Y, Fall 2010, at 38, 38.

26. PRINCEN ET AL., *supra* note 24, at 12.

27. GILL SEYFANG, *THE NEW ECONOMICS OF SUSTAINABLE CONSUMPTION: SEEDS OF CHANGE* 4 (2009).

28. *Id.* (quoting TOWARDS SUSTAINABLE CONSUMPTION: A EUROPEAN PERSPECTIVE 1 (Robert Brian Heap & Jennifer Kent eds., 2000)).

29. TOM CROMPTON & TIM KASSER, *MEETING ENVIRONMENTAL CHALLENGES: THE ROLE OF HUMAN IDENTITY* 27 (2009), available at http://assets.wwf.org.uk/downloads/meeting_environmental_challenges__the_role_of_human_identity.pdf (examining how materialistic perspectives can frustrate attempts at meeting environmental challenges).

2. Sustainable Consumption

Nearly all environmental threats have some link to consumer behavior: water is used to grow food for consumers or to water lawns; biodiversity is threatened by destruction of habitat for housing or agriculture; air and water pollutants come from automobiles, power generators, or factories that supply consumers with goods, energy, or services.

Broadly, *sustainable consumption* has been defined as “[t]he use of goods and services that respond to basic needs and bring a better quality of life, while minimizing the use of natural resources, toxic materials and emissions of waste and pollutants over the lifecycle, so as not to jeopardize the needs of future generations.”³⁰ Agenda 21, the policy document emerging from the 1992 Rio Earth Summit, dedicates chapter four to changing consumption patterns. It identifies two broad objectives: (1) promoting patterns of consumption and production that reduce environmental stress and will meet the basic needs of humanity, and (2) developing a better understanding of the role of consumption and of feasible routes to more sustainable consumption patterns.³¹ Agenda 21 calls on governments to “promote efficiency in production processes and reduce wasteful consumption in the process of economic growth, taking into account the development needs of developing countries.”³²

Although the concept of sustainable consumption has won broad acceptance, its definition remains contested. Jackson and Michaelis identify several points of departure among definitions employed in various contexts, including the level of emphasis on consumers, lifestyles, and consumerism; differentiation between sustainable consumption and sustainable production; and differing views about the need to change the aggregate level of consumption.³³

For present purposes, relatively rough definitions will suffice. We can define *consumption* as the use of resources and energy either

30. TIM JACKSON & LAURIE MICHAELIS, POLICIES FOR SUSTAINABLE CONSUMPTION 14 (2003), available at http://www.sd-commission.org.uk/data/files/publications/Policies_sust_consumption.pdf (quoting the definition proposed at the 1994 Oslo Roundtable on Sustainable Production and Consumption).

31. AGENDA 21: THE EARTH SUMMIT STRATEGY TO SAVE OUR PLANET 22 (Daniel Sitarz ed., 1993).

32. United Nations Conference on Environment and Development, Rio de Janeiro, Braz., June 3–14, 1992, *Agenda 21: The United Nations Programme of Action from Rio*, ¶ 4.17, U.N. Doc. A/CONF.151/26/Rev.1 (Vol. I) (Jan. 1, 1993), available at http://www.un.org/esa/dsd/agenda21/res_agenda21_04.shtml.

33. JACKSON & MICHAELIS, *supra* note 30, at 14–15.

directly by end users or to create goods and services for them. Note that this definition does not count the labor input into production of goods and services. The term as used here includes both tangible products and the services such as housing and transportation produced by infrastructure (including buildings and public infrastructure). In other words, we are interested in consumption in the sense of consuming energy and resources, as assessed at the end of the chain from resource extraction to consumer. For present purposes, it can be assumed that sustainability goals have been set that limit the amount of carbon emissions, pollution, or resource use. The question then is how society can promote changes in consumption by end users to assist in attaining these environmental goals. These changes may involve modifying goods and services at the point of production, creating different infrastructure, or promoting improvements in consumer behavior. In this Article, much of the focus will be on sustainable energy, but this is not much of a limitation since energy is such a ubiquitous part of the economy.

B. Research into Happiness and Well-Being

Some goods and services are simply needed for survival. Beyond that level, goods and services are useful to the extent they contribute to well-being. In the end, what people own matters less to them than how they feel; possessions count for less than quality of life.³⁴ Well-being is a multidimensional concept that includes objective factors such as health, but a key factor is subjective happiness. Efforts to develop metrics for quality of life involve both objective and subjective measures.³⁵ This Section explores these measures and what they tell us about the relationship between wealth and welfare.

1. Measuring Well-Being

Objective measures of well-being involve life circumstances such as health or personal activities such as recreation.³⁶ One

34. DEREK BOK, *THE POLITICS OF HAPPINESS: WHAT GOVERNMENT CAN LEARN FROM THE NEW RESEARCH ON WELLBEING* 15–16 (2010) (discussing the policy implications of the growing body of research on happiness). A more technical overview of the research can be found in *WELLBEING: THE FOUNDATIONS OF HEDONIC PSYCHOLOGY*, at ix (Daniel Kahneman et al. eds., 1999).

35. See STIGLITZ ET AL., *supra* note 23, at 143–44 (arguing that consumption and objective measures of resources are insufficient measures of well-being, and that subjective perspectives should also be considered).

36. *Id.* at 144.

important approach to objective well-being focuses on people's capabilities—the characteristics that define their potential actions (such as having healthy, functioning bodies or cognitive abilities and skills) and the freedom and information to make choices about the use of those characteristics.³⁷ The capabilities approach has become the basis for the United Nations Development Programme ("UNCP") human development index.³⁸ Although the capabilities approach is important in thinking about overall societal welfare, it seems less relevant in thinking about consumption, except to the extent that some kinds of consumption (such as exercise classes that improve health) develop an individual's capabilities and others (such as tobacco or drug use) reduce them.

Instead, this Article will focus on subjective well-being. Psychologists are beginning to develop a deeper understanding of the factors that control subjective well-being.³⁹ A substantial body of psychological research has emerged in recent years studying the subject of happiness.⁴⁰ Happiness has three separate aspects: a person's judgment about how life is going overall, the presence of positive feelings like joy, and the absence of negative feelings like

37. *Id.* at 151.

38. *Id.* at 153. For an example of the UNDP's work, see U.N. DEVELOPMENT PROGRAMME, HUMAN DEVELOPMENT REPORT 2010 – THE REAL WEALTH OF NATIONS: PATHWAYS TO HUMAN DEVELOPMENT 1 (2010), available at <http://hdr.undp.org/en/reports/global/hdr2010/chapters/en/> (discussing the human development approach and introducing new related measures). For a good introduction to the capabilities approach, see MARTHA NUSSBAUM, CREATING CAPABILITIES: THE HUMAN DEVELOPMENT APPROACH, at x (2011) (arguing in favor of the capabilities approach as a theory to better align policy goals).

39. CAROL GRAHAM, HAPPINESS AROUND THE WORLD: THE PARADOX OF HAPPY PEASANTS AND MISERABLE MILLIONAIRES 2 (2009) (providing a concise overview of the research and pointing out that the number of articles on happiness in the economics literature alone is now over a thousand); see SISSELA BOK, EXPLORING HAPPINESS: FROM ARISTOTLE TO BRAIN SCIENCE 10 (2010) (providing a discussion of this type of research from a philosophical perspective); ED DIENER & ROBERT BISWAS-DIENER, HAPPINESS: UNLOCKING THE MYSTERIES OF PSYCHOLOGICAL WEALTH 4 (2008) (writing on happiness for a more popular audience; note that the senior author is a leading researcher in the field); Carol D. Ryff, *Happiness Is Everything, or Is It? Exploration on the Meaning of Psychological Well-Being*, 57 J. PERSONALITY & SOC. PSYCH. 1069, 1069 (1989) (defining well-being in terms of attributes such as self-acceptance, positive relations with others, purpose in life, and sense of personal growth); Carol D. Ryff & Corey Lee M. Keyes, *The Structure of Psychological Well-Being Revisited*, 69 J. PERSONALITY & SOC. PSYCH. 719, 719 (1995) (presenting a theoretical model of psychological well-being and describing results in comparison with other methodologies). Although this approach adds an important dimension to studies of well-being, the results do not seem to have developed to the point of addressing the issues discussed in this Article.

40. See John Bronsteen et al., *Hedonic Adaptation and the Settlement of Lawsuits*, 108 COLUM. L. REV. 1516, 1526–36 (2008) (presenting a wide array of social scientific research on how disability affects happiness); Peter Huang, *Happiness Studies and Legal Policy*, 6 ANN. REV. L. & SOC. SCI. 21.1, 21.3–21.8 (2010).

sadness or depression.⁴¹ There is also a temporal dimension. Measurements of present emotions of joy or sadness do not always coincide with measures of overall satisfaction with life, which correlate more with external circumstances such as marriage and household income.⁴² Although some forms of consumption such as home ownership may translate into feelings of life accomplishment, most consumption seems to be aimed primarily at producing an immediate experience of pleasure or eliminating discomfort. For that reason, the primary focus here will be on the studies of affect—how people feel about particular experiences or about their place in life.

The basic methodology in studies of subjective well-being is simply to ask people to rate their level of happiness or satisfaction with life, either in cross-sectional studies (asking a number of people at the same time) or longitudinal studies (asking the same people repeatedly over some interval of time).⁴³ There are also alternative metrics such as the amount of time that people experience positive or negative feelings, or their general level of satisfaction in life.⁴⁴ Most of the main results discussed below are not sensitive to these differences.

One important finding is that people are not always good at forecasting how changes will affect their happiness. For example, increased wealth produces surprisingly modest long-term improvements in happiness at the individual level; in contrast, education produces a greater sense of well-being than its cost.⁴⁵ People

41. STIGLITZ ET AL., *supra* note 23, at 146, (citing Ed Diener, *Subjective Well-Being*, 95 PSYCHOL. BULL. 542 (1984)).

42. *Id.* at 148. Unemployment also has particularly strong negative effects. GRAHAM, *supra* note 39, at 18.

43. BOK, *supra* note 34, at 5; GRAHAM, *supra* note 39, at 30–46 (discussing methodological issues, including alternative ways to phrase questions).

44. BOK, *supra* note 34, at 10. The correlation between questions about present affect and those about overall satisfaction with life is about 0.5. GRAHAM, *supra* note 39, at 9.

45. GRAHAM, *supra* note 39, at 55; Rafael Di Tella & Robert MacCulloch, *Some Uses of Happiness Data in Economics*, J. ECON. PERSP., Winter 2006, at 25, 26; Daniel Kahneman & Alan B. Krueger, *Developments in the Measurement of Subjective Well-Being*, J. ECON. PERSP., Winter 2007, at 3, 7–8. People with college-level education report greater happiness than others, even controlling for differences in incomes. STIGLITZ ET AL., *supra* note 23, at 165 (citing John F. Helliwell, *Life Satisfaction and Quality of Development* 5 (Nat'l Bureau of Econ. Research, Working Paper No. 14507, 2008)). For a discussion of the indirect benefits of education, see Philip Oreopoulos & Kjell G. Salvanes, *Priceless: The Nonpecuniary Benefits of Schooling*, J. ECON. PERSP., Winter 2011, at 159, 160, which contends that “schooling may affect preferences in a way that makes individuals more patient, more goal-oriented, and less likely to engage in risky behavior.” Oreopoulos & Salvanes also report, “High school graduates with no additional schooling report being happy 8 percentage points more often than high school dropouts. College graduates report being happy 5 percentage point more often than high school graduates The relationship weakens, but only by half [after controlling for income].” *Id.* at 160–61.

adapt more readily to one-time events, either good (winning the lottery) or bad (losing a limb), than they do to the pain and anxiety associated with uncertainty.⁴⁶

2. Wealth, Economic Growth, and Happiness

The relationship between wealth and happiness turns out to be complex and somewhat unclear.⁴⁷ This issue is relevant for our purposes because of its implications regarding the importance of economic growth and increased consumption in affluent countries like the United States. Levels of happiness in the United States have remained static in the post-World War II era despite major economic growth.⁴⁸ Similarly, China's rapid economic growth from 1995 to 2004 more than doubled per capita income, but did not result in any increase in reported happiness.⁴⁹ And, even more strikingly, in the three decades after 1958, Japanese per capita income "multiplied a staggering five-fold" with "no improvement" in average feelings of well-being.⁵⁰ A plausible explanation is the Red Queen hypothesis⁵¹: people compare their wealth to a societal norm in deciding whether they are well-off, so they do not see themselves as better-off when everyone's income rises equally. Thus, an "increase in output itself makes for an escalation in human aspirations, and thus negates the expected positive impact on welfare."⁵²

Cross-country comparisons give a different picture than intra-country studies of the relationship between happiness and growth, perhaps in part because of the use of different measures of happiness. In cross-country studies, life satisfaction (rather than momentary happiness) varies roughly with the logarithm of GDP,⁵³ which means

46. GRAHAM, *supra* note 39, at 143.

47. For an extensive discussion of the data, see RICHARD A. EASTERLIN, HAPPINESS, GROWTH, AND THE LIFE CYCLE 6 (Holger Hinte & Klaus F. Zimmermann eds., 2010), which presents evidence of the complex relationship between wealth and happiness.

48. BOK, *supra* note 34, at 5.

49. Kahneman & Krueger, *supra* note 45, at 15.

50. See EASTERLIN, *supra* note 47, at 50.

51. The Red Queen famously told Alice that she had to run as fast as she could just to stay in one place. LEWIS CARROLL, THROUGH THE LOOKING-GLASS, AND WHAT ALICE FOUND THERE 39 (Florence Milner ed., Rand McNally & Co. 1917) (1871).

52. EASTERLIN, *supra* note 47, at 14.

53. GRAHAM, *supra* note 39, at 146–47. The result holds for some happiness indicators, but not others such as "how often you smiled yesterday" or "does your life have purpose," which seem unrelated to income. See *id.* at 33 (stating that the relationship of income to smiling and life purpose is negative and significant).

that an exponential increase in GDP translates into only a linear increase in average life satisfaction.

To see the implications of this, consider the simple case where average happiness simply equals the logarithm of average per capita GDP.⁵⁴ In that scenario, if the per capita GDP in a country is \$20,000 per year, a 10% increase in the level of happiness would require per capita GDP to rise by 270%, from \$20,000 to \$53,000.⁵⁵ In other words, increasing income levels is an inefficient way to increase happiness—it can take a big increase in average income to translate into a small increase in happiness (and even that is not certain). If the relationship between happiness and GDP takes a more complicated form, the numbers will be different, but the basic lesson is that there are sharply declining returns to increased wealth in terms of happiness. This should not be surprising. Wealth is presumably only one input into producing individual happiness, so we should expect declining returns to scale as in any production process. Moreover, obtaining wealth requires sacrifice of other activities that may themselves be sources of satisfaction.

A comprehensive literature review concludes, “[S]ubjective well-being is not mainly a matter of income and consumption opportunities.”⁵⁶ Individual wealth does correlate with improved happiness, and wealthier societies tend to have higher assessments of happiness,⁵⁷ but as discussed earlier, these relationships seem to be inconsistent and subject to declining returns. On the other hand, happiness does not seem to be affected much by income fluctuations.⁵⁸

There is still considerable controversy about whether economic growth increases national happiness beyond a moderate threshold of prosperity.⁵⁹ Periods of high economic growth seem to cause unhappiness, perhaps because of the stress and uncertainty deriving

54. This corresponds to the assumption that, in a regression of the log of income versus happiness, the slope of the line is 1.0 and the intercept is 0.

55. Here's the math. If Y is the level of happiness at \$20,000 and X is the amount of income required to produce a 10% increase in Y, then the logarithmic relationship $Y = \log X$ means that $1.1 = (1.1Y)/Y = \log X / \log 20,000$, or $1.1 * \log 20,000 = \log X$. So $X = 20,000^{1.1} = \$53,843$. Note that this is true regardless of the base used for the logarithm (e.g., base 10 rather than some other base). As they say in commercials, however, “actual results may vary,” depending on the slope and intercept of the regression in a particular study. The logarithmic relationship also implies that privation and poverty are particularly bad for happiness, because the slope of the log curve is high for low numbers.

56. Kahneman & Krueger, *supra* note 45, at 18.

57. BOK, *supra* note 34, at 5.

58. *Id.* at 11.

59. *Id.* at 14.

from rapid change.⁶⁰ Moreover, part of the value of wealth is relative: "[P]eople of similar income levels are less happy when the incomes of those in a relevant reference group, ranging from neighbors to professional cohorts, to towns and cities, are higher."⁶¹ Finally, those people who rank wealth as most important in surveys tend to be less satisfied and happy than average,⁶² so economic growth could decrease happiness to the extent that it strengthens the role of economic motivations in people's lives.

Although the relationship between economic growth and happiness is unclear, other factors are strongly associated with happiness.⁶³ Society might achieve greater increases in individual well-being by improving these other factors rather than focusing exclusively on economic indicators.

The studies are "remarkabl[y] consisten[t]" in identifying these other factors.⁶⁴ Self-perceived health and religious observance are both associated with happiness, as is job satisfaction (especially not losing one's job).⁶⁵ Some additional societal factors are having a democratic government, strong individual rights, and tolerance of minority groups.⁶⁶ Among American and French women, walking is seen as the most pleasurable activity, followed closely by sex, and then by exercise.⁶⁷ Social life is also important: marriage,⁶⁸ having friends, participating in civic groups, and performing acts of kindness all improve life satisfaction.⁶⁹ The empirical evidence clearly "link[s]

60. See GRAHAM, *supra* note 39, at 151 (arguing that rapidly changing economies create job insecurity and increases in inequality, leading to "unhappy growth").

61. *Id.* at 158.

62. BOK, *supra* note 34, at 15.

63. The role of these social factors is explored in David G. Myers, *Close Relationships and Quality of Life*, in WELLBEING: THE FOUNDATIONS OF HEDONIC PSYCHOLOGY, *supra* note 34, at 374. There are some cross-cultural differences in the strength of these factors. For instance, "[i]t turns out that friendships and relatives matter more to the well-being of the average Latin American respondent than health, employment, or personal assets, and only slightly less than food security" GRAHAM, *supra* note 39, at 190.

64. GRAHAM, *supra* note 39, at 49. A number of the studies are reviewed in Michael Argyle, *Causes and Correlates of Happiness*, in WELLBEING: THE FOUNDATIONS OF HEDONIC PSYCHOLOGY, *supra* note 34, at 353.

65. BOK, *supra* note 34, at 17-22.

66. *Id.* at 22-23.

67. See STIGLITZ ET AL., *supra* note 23, at 48 (ranking activities based on enjoyment).

68. As one indicator of the value of marriage, it would take roughly a \$100,000 pay raise to offset the level of unhappiness caused by divorce. GRAHAM, *supra* note 39, at 12.

69. BOK, *supra* note 34, at 17, 19-20, 22. Friends may not only be a direct source of gratification but may also assist in dealing with negative events. For instance, "women with even a single close friend are better able to tolerate various hardships than are otherwise associated with depression" Nancy Cantor & Catherine A. Sanderson, *Life Task Participation and*

higher levels of social capital to outcomes that are, on balance, positive for quality of life and economic progress”⁷⁰ Indeed, “all measures of social connections are significantly correlated with life satisfaction”⁷¹ Thus, buying less does not necessarily mean having a poorer quality of life, given the importance of other factors.

If material consumption is not central to quality of life (at least above some minimal level of need), neither is production. On the whole, the most pleasurable experiences do not derive from work—people get the most satisfaction from social activities, even though having a job may be important for their self-esteem.⁷² Interestingly, the happiest people tend not to be superachievers; apparently, whatever drives people to the highest levels of achievement does not sit well with personal satisfaction.⁷³ In general, materialism is not conducive to well-being.⁷⁴ Thus, most of what determines happiness is noneconomic. This helps explain the weak, inconsistent evidence linking income and consumption, because some activities that promote happiness may not be readily affected by wealth, and others may compete for personal time and energy with wealth-seeking activities.

In short, according to the research, neither production nor consumption has an intrinsic connection with personal satisfaction. A heavy focus on economic growth as a goal in its own right hinders consideration of alternative ways for social policy to promote happiness, because economic activities can conflict with other conditions conducive to well-being—for instance, by reducing time available for connections with friends and family. For this reason, measuring welfare in purely economic terms may be quite misleading.

Before drawing broad policy conclusions from this research, the reliability of the findings must be considered. As with any area of social science, it would be a mistake to expect the precision or reliability customary in physics.⁷⁵ Reported happiness can vary over

Well-Being: The Importance of Taking Part in Daily Life, in WELLBEING: THE FOUNDATIONS OF HEDONIC PSYCHOLOGY, *supra* note 34, at 230, 235.

70. GRAHAM, *supra* note 39, at 189.

71. *Id.* at 191. There are notable regional variations in social capital, with the Southern states having low levels, while New England, the Great Plains, and Rocky Mountain states have high levels. STIGLITZ ET AL., *supra* note 23, at 187.

72. BOK, *supra* note 34, at 29–30, 33.

73. *Id.* at 51.

74. J. Ian Norris & Jeff T. Larsen, *Wanting More than You Have and Its Consequences for Well-Being*, 12 J. HAPPINESS STUD. 877, 878–79 (2010).

75. There are a number of methodological pitfalls, including asking questions about happiness after other items on a survey, that could skew responses. See GRAHAM, *supra* note 39, at 9–10 (discussing methodological challenges to happiness surveys).

short periods and can be influenced by the weather or other minor events.⁷⁶ Nevertheless, the measurements are reasonably good. Self-reported happiness correlates with behaviors like smiling and with peer appraisals of an individual's happiness.⁷⁷ Moreover, the major patterns in the results are quite consistent across studies, providing some additional grounds for confidence in the findings:

In exploring happiness in a number of contexts around the world, we find a remarkable amount of consistency in the socio-economic and demographic determinants of happiness. The *modest* differences that we find across countries and regions are usually explained by *major* differences in economic contexts or education and labor market structures.⁷⁸

For the purposes of this Article, these major patterns are what matter, not the nuances and ambiguities of the research results.⁷⁹ The next Section will consider the implications of these findings for consumption policies.⁸⁰

First, however, consider the implications for the methodology that is currently used to assess public policies. For the past three decades, regulatory agencies like the Environmental Protection Agency ("EPA") have been required to perform cost-benefit analyses and to employ a presumption in favor of basing their decisions on the outcome of the analysis.⁸¹ Critics such as Frank Ackerman and Lisa

76. See Kahneman & Krueger, *supra* note 45, at 6-7 (discussing factors that may influence reported life satisfaction). Presumably, much of this "noise" averages out over larger groups or time periods. Kahneman and Krueger also report significant correlation between life satisfaction and certain neurological evidence. *Id.* at 7-8.

77. BOK, *supra* note 34, at 38.

78. GRAHAM, *supra* note 39, at 84.

79. It is important to note, however, that much of the research documents correlations, but does not purport to prove causation. Nevertheless, the causal connections seem plausible and are consistent with the correlations.

80. A skeptical economist might argue that this literature is irrelevant to social policy because economic growth increases the set of opportunities available to individuals, who will choose within that expanded set so as to improve their own welfare. There is some merit to this argument, but there are also reasons not to take it to its logical conclusion. First, it requires unrealistic faith in individual rationality to believe that individuals invariably make choices that increase their own well-being. Second, individual choices may be shaped in part by comparisons with others, leading to the possibility of a Red Queen race among individuals to increase consumption merely to retain their existing status. Finally, some factors shaping individual choices involve public goods (the availability of parks or information), infrastructure investments (public transportation), or coordination of multiple decisions (land use planning). Individuals may not be able to control the level of these public goods. In short, we should not assume that if we just give people as much money as possible to spend, individual happiness will take care of itself. Consistent with individual liberty, the government may be able to take steps to promote happiness without using increased wealth as a tool (unless of course, "wealth" is simply defined to include all objective and subjective measures of welfare).

81. Regulatory review takes place within the Office of Information and Regulatory Affairs ("OIRA"). For a description of the development of OMB's role in regulatory oversight, along with

Heinzerling maintain that “cost-benefit analysis promotes a deregulatory agenda under the cover of scientific objectivity.”⁸² Investigating the motives behind the use of cost-benefit analysis or its impacts on regulation is beyond the scope of this Article, but the happiness literature does suggest another difficulty with reliance on this technique.

The problem relates to the metric used by cost-benefit analysis. The evidence shows that wealth is at most one input to well-being and subject to diminishing returns. Making this one input the dominant factor in decisions seems questionable since government policy may well directly impact other dimensions of well-being.

Deciding on a major policy based solely on whether it increases GDP, particularly for a country that is already affluent, is somewhat like buying a house based solely on square footage—floor area may be an easily quantified measure and a relevant attribute, but the area metric fails to capture qualities like location, design, upkeep, and style. Similarly, the cost-benefit metric measures only the effect of an action on economic wealth, failing to capture other impacts on personal well-being. Advocates of cost-benefit analysis point out that it can be adjusted to monetize noneconomic attributes,⁸³ but this seems an obtuse way to proceed if the other attributes dwarf the monetary dimension.⁸⁴

some useful suggestions for improving cost-benefit analysis, see COST-BENEFIT ANALYSIS: LEGAL, ECONOMIC, & PHILOSOPHICAL PERSPECTIVES (Matthew D. Adler & Eric A. Posner eds., 2000); RESOURCES FOR THE FUTURE, REFORMULATING REGULATORY IMPACT ANALYSIS (Winston Harrington, Lisa Heinzerling & Richard D. Morgenstern eds., 2009); RICHARD L. REVESZ & MICHAEL A. LIVERMORE, RETAKING RATIONALITY: HOW COST-BENEFIT ANALYSIS CAN BETTER PROTECT THE ENVIRONMENT AND OUR HEALTH (2008); Daniel H. Cole, *‘Best Practice’ Standards for Regulatory Benefit-Cost Analysis*, 23 RES. L. & ECON. 1 (2007).

82. FRANK ACKERMAN & LISA HEINZERLING, PRICELESS: ON KNOWING THE PRICE OF EVERYTHING AND THE VALUE OF NOTHING 9 (2004); see also *id.* at 11–12 (“Cloaked in the language of scientific objectivity, economic arguments have repeatedly played a partisan role.”).

83. See Matthew Adler & Eric A. Posner, *Happiness Research and Cost-Benefit Analysis*, in LAW & HAPPINESS 253, 282–83 (Eric A. Posner & Cass R. Sunstein eds., 2010) (discussing the integration of happiness research and conventional economic analysis).

84. No doubt we could adjust square footage measures to provide area credits for features like good location, so that we might say that for a given consumer considering a given house, the handsome wood floors are equal to an additional 237 hundred square feet of floor space. Nevertheless, picking a house based on some metric like “aesthetic quality-adjusted square footage” seems an obtuse way to proceed, particularly since the adjustment will vary on an individualized basis.

This analogy may actually be too favorable to cost-benefit analysis. Recall that under the Red Queen hypothesis, the increased happiness in income gains to one individual is balanced by the corresponding decline of happiness by others. If this theory turns out to be correct, using increased wealth as the standard for evaluation of social welfare is more like thinking that you have made a house bigger by moving an interior wall—true, it may make one room look a lot

Advocates of cost-benefit analysis are on stronger ground in arguing that subjective well-being should not be the exclusive measure of social welfare, and they are quite possibly right that absolute income levels are one component of well-being (contrary to the Red Queen theory that only relative levels count). But if income is just one component of well-being, it seems better to judge outcomes based on a broader range of welfare measures,⁸⁵ rather than trying to collapse multiple dimensions of social welfare into a single monetary metric.

C. Consumerism and Happiness

Consumption is relevant to sustainability because of its environmental impacts. One strategy for controlling the environmental burden of consumption would be to cap or even reduce the current level of consumption. Although it may seem almost un-American to suggest that consumers should use fewer commodities and less energy, the idea deserves closer attention. Even though this might require a shift in norms that seems unlikely in the short run, it can help frame the discussion of more incremental changes later in this Article.

1. Reconsidering Economic Growth

The idea of abandoning economic growth as a dominant goal for industrialized societies may seem startling, but it deserves further consideration.⁸⁶ Leading economists have often viewed the desirability of growth as self-evident.⁸⁷ In contrast, some leading environmentalists believe “the rising tide of goods and services is ruining the environment, creating urban sprawl, choking our

bigger, but only by correspondingly shrinking another. Adler and Posner argue that cost-benefit analysis can be saved by counting the decreased happiness of others as an externality and adjusting accordingly. *Id.* at 285. But why measure social welfare with an index (total societal income) that turns out (if the Red Queen theory is right) to be irrelevant to welfare? For an explanation of how to replace cost-benefit analysis with a better metric, see John Bronsteen, Christopher Buccafusco & Jonathan S. Masur, *Well-Being Analysis vs. Cost-Benefit Analysis*, DUKE L.J. (forthcoming) (manuscript at 3–5), available at www.ssrn.com/abstract=1989202.

85. For a discussion of some of these other measures, see Martha C. Nussbaum, *Who Is the Happy Warrior? Philosophy Poses Questions to Psychology*, 37 J. LEGAL STUD. 81, 88–92 (2008).

86. It bears emphasis that this Article is concerned with affluent societies like the United States, not with the much different situation of developing countries. Moreover, within the United States, the issue is whether continual growth in aggregate consumption may not be a valid priority, not whether consumption should be spread more evenly among the population.

87. BOK, *supra* note 34, at 66.

highways with cars, and threatening to inflict grave hardships on future generations.”⁸⁸ It is easy to dismiss critics of economic growth as representatives of a self-sacrificing asceticism, but it may be the growth advocates who are mistaken about what people need for happiness.

American society has often been criticized for an excessive concentration on consumption. Thomas Princen has written extensively on *sufficiency* as an alternative to consumerism.⁸⁹ Indeed, the consumption orientation of Americans has even been described as a psychological pathology. Jessie H. O'Neill, a psychotherapist, defines *affluenza* as:

The collective addictions, character flaws, psychological wounds, neuroses, and behavioral disorders caused or exacerbated by the presence of, or desire for money/wealth In individuals, it takes the form of a dysfunctional or unhealthy relationship with money, regardless of one's socio-economic level. It manifests as behaviors resulting from a preoccupation with—or imbalance around—the money in our lives.⁹⁰

From quite a different perspective, Pope Benedict XVI has also criticized consumerism and has spoken of “a need . . . to move beyond a purely consumerist mentality”⁹¹ He also observed:

It is becoming more and more evident that the issue of environmental degradation challenges us to examine our life-style and the prevailing models of consumption and production, which are often unsustainable from a social, environmental and even economic point of view. We can no longer do without a real change of outlook which will result in new life-styles, “in which the quest for truth, beauty, goodness and communion

88. *Id.* As Wilk has pointed out, consumption can serve many different individual, social, and cultural purposes. Richard Wilk, *Consumption, Human Needs, and Global Environmental Change*, 12 GLOBAL ENVTL. CHANGE 5, 6–7 (2002). Making fundamental changes in the ways that people view consumption will be correspondingly complex.

89. See THOMAS PRINCEN, *THE LOGIC OF SUFFICIENCY* 1–19 (2005) (discussing the idea of sufficiency). Princen defines sufficiency as “a sense of ‘enoughness’ and ‘too muchness,’ a quality where concern for excess is paramount in the life of an individual, an organization, or a nation.” *Id.* at 18. He adds:

[T]he effective decision maker is precisely the one who has the wits to engage the interrelatedness, to avoid excess, to take long-term impacts and displaced costs into account, and to avert irretrievable diminution of ecological integrity. . . . [T]he sufficient person exercises restraint . . . because such principles are consistent with a world that is ultimately unknowable and uncontrollable, a world where cause-and-effect relationships are deeply problematic, a world where limited predictability, system surprise, threshold, and synergistic effects are the norm, not the exception.

Id. at 18–19. “Prudence” might be another name for this attitude.

90. CLIVE HAMILTON & RICHARD DENNISS, *AFFLUENZA: WHEN TOO MUCH IS NEVER ENOUGH* 7 (2005).

91. Pope Benedict XVI, Message of His Holiness Pope Benedict XVI for the Celebration of the World Day of Peace: If You Want to Cultivate Peace, Protect Creation (Jan. 1, 2010), available at http://www.vatican.va/holy_father/benedict_xvi/messages/peace/documents/hf_ben-xvi_mes_20091208_xliii-world-day-peace_en.html.

with others for the sake of common growth are the factors which determine consumer choices, savings and investments.”⁹²

No doubt a number of other secular and religious figures share these views, not to mention some private individuals. As Part B showed, the happiness literature suggests that consumerism may be a false pathway even from the perspective of individual gratification.

Yet, moving to a no-growth society⁹³ could clearly be problematic in a number of ways, including consumption’s entrenched status as a personal goal for Americans.⁹⁴ It is hard to gainsay the perception that “Americans take their freedom to consume very seriously and they do not like it when people suggest that they are going to have to give up some comforts and luxuries.”⁹⁵ Even if abandoning economic growth as a societal goal would be desirable (which is surely controversial), doing so would be a tricky endeavor. Yet, at least a shift in emphasis seems warranted. Derek Bok’s conclusion seems sensible:

Whatever research eventually shows concerning the effects of income and possessions on happiness, it surely does not suggest that money and the goods and services it buys are the dominant source of well-being. As a result, while continued growth may be needed for the foreseeable future, insisting on having the economy grow “as rapidly as possible” is harder to justify, especially when it becomes a reason for opposing sensible policies that could brighten the lives of large numbers of people.⁹⁶

92. *Id.* (quoting Pope John Paul II, *Centisimus Annus* (May 1, 1991), available at http://www.vatican.va/holy_father/john_paul_ii/encyclicals/documents/hf_jp-ii_enc_01051991_centisimus-annus_en.html).

93. It is actually not clear what having zero growth in terms of energy and resource use would mean in terms of economic metrics. A decrease in energy and resource use does not necessarily translate into lower GDP, because energy intensity (energy per unit of output) might decrease. This might happen because of improved energy efficiency or a shift toward goods and services that are not energy intensive. The new mix of goods and services might be valued more than the older, leading to a higher measurement of GDP. Even if GDP does not rise, people might shift to nonmarket activities that they find more enjoyable than market consumption, so that individual welfare might rise even though measured GDP would not. *See* Friedman, *supra* note 18 (discussing the decoupling of energy and resource consumption from economic growth).

94. *See* BOK, *supra* note 34, at 65–78 (discussing obstacles to a no-growth society). The essays in *The Environmental Politics of Sacrifice* suggest, however, that we should not assume that people can never be motivated to sacrifice for others and find satisfaction in doing so. *See* John M. Meyer & Michael Maniates, *Must We Sacrifice?: Confronting the Politics of Sacrifice in an Ecologically Full World*, in *THE ECONOMIC POLITICS OF SACRIFICE* 1, 1–8 (Michael Maniates & John M. Meyer eds., 2010) (discussing the notion of sacrifice).

95. Wilk, *supra* note 25, at 47. Wilk adds that “people think about their bodies, morality and personal conduct, families, and relationships with the government through consumption-related metaphors.” *Id.* at 46.

96. BOK, *supra* note 34, at 78.

Thus, even if zero growth is not a feasible goal, maximizing the rate of growth is a dubious focus for social policy.⁹⁷ At least policy analysts would do well to consider a broader range of metrics in considering energy policy as well as elsewhere.

2. Improved Measures for National Well-Being

As a step toward a more balanced set of policy goals, the United States could begin to measure social well-being in more sophisticated ways that go beyond conventional measures such as GDP and employment. This would provide a better picture of the relationship between energy use and social welfare, allowing more sensible use of energy resources. France has already begun to take some steps in that direction, on the advice of leading economists.⁹⁸ Similarly, “[t]he UK government is poised to start measuring people’s psychological and environmental wellbeing, bidding to be among the first countries to officially monitor happiness.”⁹⁹ Prime Minister David Cameron reportedly plans to make the results central to government planning.¹⁰⁰ The goal is “for respondents to be regularly polled on their subjective wellbeing, which includes a gauge of happiness, and also a more objective sense of how well they are achieving their ‘life goals.’”¹⁰¹

Even the well-being researchers themselves agree that “results based on happiness surveys should be treated critically and

97. If only for political reasons, a radical shift toward a less consumption-oriented society does not seem to be a plausible policy goal in the immediate future, whether or not it would be desirable in some broad sense. However, we can begin to think about moves that would deemphasize consumption as a path to well-being and that would gradually strengthen other modes of gratification.

Assuming that improving social welfare is an appropriate governmental goal, subjective happiness seems to be at least one component of welfare. This does not necessarily mean that the government should have a free hand to engage in whatever policies it thinks will make people happier, regardless of their own preferences. Nevertheless, governmental intervention seems warranted at least when collective actions, problems, or externalities block individual efforts to achieve preferred outcomes, and probably when clearly defined cognitive shortcomings or poor impulse control prevent individuals from adopting actions that would make them happier. The strategies discussed in this Article are easy cases for intervention because they are designed to remedy physical externalities such as carbon emissions. Increased happiness is a side-benefit but is not needed to justify the government’s actions.

98. STIGLITZ ET AL., *supra* note 23, at 7.

99. Allegra Stratton, *Happiness Index to Gauge Britain's National Mood*, GUARDIAN (London) (Nov. 14, 2010), <http://www.guardian.co.uk/lifeandstyle/2010/nov/14/happiness-index-britain-national-mood>.

100. *Id.*

101. *Id.*

cautiously.”¹⁰² It would be at least premature to announce a new unified metric of well-being or to advocate radical policy changes such as abandoning growth as a goal based on hedonic psychology. But traditional economic measures of well-being surely are quite incomplete, and some of the important missing factors are clearly identifiable. In particular, the happiness research suggests the existence of ways of making trade-offs between consumption and other sources of satisfaction, some of which are less energy intensive and more environmentally benign. In short, the trade-offs between sustainable consumption and personal well-being may not be as serious as they might seem. The remainder of this Article discusses strategies for combining sustainability with well-being in developed societies such as the United States.

III. CONSUMPTION-SIDE MEASURES TO REDUCE ENERGY USAGE

The happiness research indicates that quality of life depends only partly (at most) on personal levels of consumption.¹⁰³ The incomplete connection between happiness and wealth creates space for reducing the burden of consumption on the environment while providing equal or greater quality of life—a kind of happiness dividend. Other strategies, particularly in terms of energy efficiency, may actually improve the consumer’s economic position. This is not to deny the possible need to sacrifice in the name of sustainability, it is only to say that such sacrifices may not be as substantial as many people would assume. This Part considers pathways to sustainability that maintain or improve individual well-being, independently of their positive environmental effects.

Essentially, three pathways to more sustainable consumption exist. First, people could consume fewer goods and services, finding more satisfaction from nonmarket activities by spending more time on friends, exercise, and family. A substantial move in this direction would require major changes in American culture and society, but at least over the long term may be a possibility if people better understand the teachings of modern psychological research. Note that while decreased emphasis on consumption may seem a “liberal” goal

102. Di Tella & MacCulloch, *supra* note 45, at 43.

103. Perhaps this is not entirely utopian. Thomas Princen has assembled case studies of situations in which a choice has been made to eschew growth and to respect environmental constraints: “An urban neighborhood eschews the car, a timber company holds back on its harvests, two industrial countries find that treated sewage is enough, persistent toxics too much, and international society bans ozone-depleting substances.” PRINCEN, *supra* note 89, at 5.

in terms of the American political spectrum, it may also be attractive to some religious conservatives as a step toward spirituality. Second, goods and services could be redesigned to have smaller environmental footprints. This includes not only consumer goods such as refrigerators but also green building for houses and apartments. Third, consumer choices could change, so that people would select goods with smaller footprints or reduce their use of automobiles by using public transportation, biking, or walking. Some of the changes require infrastructure such as improved public transit or community designs that give people the opportunity to avoid car use.

Section A below explores strategies that directly reduce the environmental footprint of energy consumption. Many of these strategies in effect create wealth by reducing waste. Sections B and C contain similar examinations of household water use and food consumption, which would indirectly reduce energy use. Although Americans consume energy directly in the form of fuel and electricity, U.S. consumption of food and water also has a substantial environmental footprint.

A. Energy Use

Energy use has several environmental impacts. Given the heavy reliance of much of the United States on fossil fuels as a source of energy, energy use is linked most obviously with climate change. Fossil fuels are also a source of conventional pollutants, and resource extraction and transportation can cause other kinds of environmental harm. Much can be done to reduce the harmful impact of energy use by developing renewable energy sources, but reducing the amount of energy consumed sometimes can be more cost effective and easier to implement. Energy conservation does not necessarily carry a price in terms of individual well-being; on the contrary, conservation measures may enhance pecuniary or nonpecuniary well-being.

The environmental benefits of energy conservation could be substantial. Direct individual energy consumption—including household heating and cooling as well as nonbusiness transportation—is responsible for roughly one-third of U.S. energy use and carbon emissions.¹⁰⁴ It would be feasible to reduce these emissions by 20% in a decade; there is a lot of low-hanging fruit yet to be

104. Michael Vandenbergh et al., *Implementing the Behavioral Wedge: Designing and Adopting Effective Carbon Emissions Reduction Programs*, 40 ENVTL. L. REP. 10547, 10549 (2010).

picked.¹⁰⁵ In addition, households are major sources for pollutants that cause local ozone problems and toxic pollution such as mercury releases.¹⁰⁶ Since “[p]roducts have environmental impacts throughout their lifecycle, from extraction, transport, and production, to distribution, use, and disposal,” the environmental impact of typical individual acts of consumption, such as the purchase of a pair of jeans or a pair of leather boots, can be significant.”¹⁰⁷

These findings suggest possible strategies that would favor sustainable consumption and energy conservation. Those strategies provide attractive avenues for improving sustainability. As the next sections show, possibilities include energy-efficient consumer goods and buildings as well as urban-design measures to decrease energy use. These are not utopian concepts. Indeed, there are numerous models of policy interventions at the local, state, and federal levels that have the potential to improve sustainability through energy conservation while also benefiting well-being. Thus, realistic policy options exist that would both address sustainability and directly improve individual well-being.

1. Higher-Efficiency Products

Energy efficiency presents a significant opportunity for low-cost reductions in consumers’ energy use and the resulting emissions. For example, a recent report found that improvements in energy efficiency could achieve a 23% reduction of projected demand for energy consumption by individuals.¹⁰⁸ Another study estimates that “behavioral measures targeting household conservation and efficiency could reasonably be expected to reduce total U.S. emissions by over

105. *Id.* at 10547. Several of the principles for designing effective programs seem intuitive (e.g., “Prioritize High-Impact Actions” and “Provide Credible Information at Points of Decision”). *Id.* at 10551. Nevertheless, some existing programs violate one or more of those principles (e.g., “Energy Efficiency Tax Credits” and “Financial Incentives for Residential Photovoltaics”). *Id.* at 10552–54.

106. *See* Babcock, *supra* note 8, at 120–21.

107. Kuh, *supra* note 8, at 157–58. This Article focuses on decisions about what to buy rather than the buying process, but there is also considerable room to increase the sustainability of stores and malls. *See* Belson, *supra* note 8 (discussing energy-efficiency efforts at shopping malls).

108. HANNAH CHOI GRANADE ET AL., MCKINSEY & CO., UNLOCKING ENERGY EFFICIENCY IN THE U.S. ECONOMY, at iii (2009), available at http://www.mckinsey.com/client_service/electric_power_and_natural_gas/latest_thinking/~media/204463A4D27A419BA8D05A6C280A97DC.ashx

seven percent by 2020,” an amount greater than the total emissions of France.¹⁰⁹

Energy conservation may actually be in the economic self-interest of consumers, because most conservation measures have relatively short payback periods. But cognitive habits and predispositions seem to lead consumers to undervalue those economic benefits, possibly because of an inertia factor in changing consumer tastes. Thus, regulatory interventions may be warranted even apart from the externalities caused by production of the additional, unnecessary energy.¹¹⁰

Improved product standards are one route to reducing the contribution of consumption to energy use. Federal law requires the Department of Energy (“DOE”) to create standardized test procedures for energy efficiency, while the Federal Trade Commission (“FTC”) adopts corresponding labeling rules.¹¹¹ After litigation and considerable prompting from Congress and the White House,¹¹² the DOE has also established standards for refrigerators, central air

109. Michael P. Vandenbergh et al., *Regulation in the Behavioral Era*, 95 MINN. L. REV. 715, 765 (2011).

110. See Noah M. Sachs, *Greening Demand: Energy Consumption and U.S. Climate Policy*, 19 DUKE ENVTL. L. & POL’Y F. 295, 305–11 (2009) (arguing that federal initiatives are needed to sufficiently reduce energy demand because price signals fail to achieve this end). For example, a study of hybrid car purchases found that consumers had an implicit discount rate of 14–28% depending on the vehicle’s assumed useful life—an extraordinarily high amount compared with the returns accepted on other forms of investment. Kelly Sims Gallagher & Erich Muehlegger, *Giving Green to Get Green? Incentives and Consumer Adoption of Hybrid Vehicle Technology*, 61 J. ENVTL. ECON. & MGMT. 1, 11–12 (2011). Energy conservation also may well be the most cost-effective way of reducing carbon, at least in the short run:

According to the International Energy Agency, an additional \$1 spent on more efficient electrical equipment, appliances, and buildings avoids, on average, \$2 in investment in energy supply. For planning purposes, U.S. government regulators estimate the cost of efficiency improvements at three cents per kilowatt hour saved, and a widely cited 2007 report by McKinsey & Co. identified about a dozen energy efficiency improvements in the residential, commercial, and industrial sectors that could reduce greenhouse gas emissions at *negative* marginal cost—at a net savings to the economy. In contrast, new coal-fired plants ordered in 2009 are likely to sell electricity for ten to thirteen cents per kilowatt hour, and new nuclear power plants are likely to sell electricity for fifteen to twenty-one cents per kilowatt hour, based on projected capital costs.

Sachs, *supra*, at 303. It should be noted, however, that consumers may not find energy-efficient and conventional products interchangeable along other dimensions, which could undercut the cost-saving rationale for efficiency to some extent. See Hunt Allcott & Michael Greenstone, *Is There an Energy Efficiency Gap?*, J. ECON. PERSP., Winter 2012, at 3, 17–19 (critiquing cost-saving rationale for efficient products). Differences in product characteristics might be less relevant if they are driven by familiarity with current product traits and so might adapt to the traits of more efficient products.

111. Dernbach & Tyrrell, *supra* note 14, at 32.

112. *Id.* at 33.

conditioners, furnaces, dishwashers, and various types of lighting.¹¹³ These standards have reduced U.S. electricity use by 11%.¹¹⁴

State appliance standards are normally subject to federal preemption, but the DOE can waive preemption so that states can enact higher energy-conservation standards than are federally mandated.¹¹⁵ At least ten states have set such standards.¹¹⁶ California estimates that by 2020 its standards will have saved consumers \$3 billion in utility bills for power that would otherwise have been consumed and that it will eliminate the need for three new power plants.¹¹⁷ But consumers still need to be willing to buy more efficient products rather than retaining older ones. And other efficiency measures relate to consumer behavior rather than purchasing new or different products. Of course, any one consumer's decisions have only minimal impact, but the collective impact of decisions by many consumers can be substantial.

2. Improving Consumer Decisionmaking

Another opportunity for reducing energy use involves the ways in which consumers use products. Individuals make daily decisions about energy use. Some of these decisions occur infrequently but have long-term implications for energy use (e.g., weatherizing a house or buying a fuel-efficient vehicle). Some decisions occur regularly (e.g., using cold water to wash clothes or reducing highway-driving speeds from seventy to sixty miles per hour). Although each of these individual decisions might only save a small amount of energy, the cumulative savings over many months and years can be substantial.¹¹⁸

113. *Id.* at 32.

114. *Id.*

115. For an argument for a more extensive state role, see Alexandra B. Klass, *State Standards for Nationwide Products Revisited: Federalism, Green Building Codes, and Appliance Efficiency Standards*, 34 HARV. ENVTL. L. REV. 335, 336–39 (2010). For example, Klass reports an Albuquerque energy-conservation ordinance was invalidated where the ordinance allowed compliance through one of three alternatives, one of which was LEED certification. *Id.* at 355. In the court's view, a building that complied with the ordinance through this route but then decided to revert to the less efficient components allowed by federal law would be penalized by having to make other changes in the building to compensate for the increased emissions. *Id.* at 355–56. This possibility seems like a flimsy justification for finding preemption.

116. David Hodas, *State Initiatives*, in GLOBAL CLIMATE CHANGE AND U.S. LAW 343, 364 (Michael B. Gerrard ed., 2007).

117. *Id.*

118. For a discussion of how consumers could reduce home energy use and of policies to encourage such a shift, see CZARNEZKI, *supra* note 9, at 43–45. Increased use of information technology to control heating, cooling, and lighting also has great potential. See Diane J. Cook,

Other decisions pertain to equipment settings (e.g., raising the thermostat to 78°F during the summer and lowering it to 68°F during the winter) and equipment maintenance (e.g., getting regular vehicle tune-ups).¹¹⁹ Behavioral change may not be as straightforward as issuing a mandate to producers, but it has substantial potential to reduce energy consumption.

People tend to underestimate the amount of energy consumed by different activities, as well as the overall potential for energy savings available from conservation and efficiency efforts.¹²⁰ For instance, many drivers erroneously believe that they need to idle their motor vehicle's engine for several minutes when starting in cold weather or that idling is more efficient than stopping and restarting the engine during traffic delays.¹²¹ In 2002 Americans released an estimated thirty-four million tons of carbon dioxide from unnecessary idling while waiting.¹²² Similarly, "[m]any homeowners . . . are unaware of the energy inefficiencies in their properties, the opportunities for long-term cost savings through retrofits, and the best retrofit methods for achieving financial benefits."¹²³ The result of this lack of information is avoidable and wasteful consumption.

Congress has subsidized weatherizing for low-income households, assisting over six million households in reducing their energy bills.¹²⁴ To make most effective use of these subsidies, building owners need easy access to data about the typical retrofit needs for their buildings' ages and types, as well as for their neighborhoods and climates. Geographic information systems ("GIS") can convey this information effectively to building owners. The more standardized the

How Smart Is Your Home?, 335 SCIENCE 1579, 1579–81 (2012) (providing an overview of the aspirations of, and the challenges to, ambient intelligent homes).

119. Thomas Dietz et al., *Household Actions Can Provide a Behavioral Wedge to Rapidly Reduce U.S. Carbon Emissions*, 106 PROC. NAT'L ACAD. SCI. 18452, 18453–54 (2009); see also Gerald T. Gardner & Paul C. Stern, *The Short List: The Most Effective Actions U.S. Households Can Take to Curb Climate Change*, ENV'T, Sept.–Oct. 2008, at 12, 14–24 (discussing strategies for reducing household carbon emissions).

120. See Shahzeen Z. Attari et al., *Public Perceptions of Energy Consumption and Savings*, 107 PROC. NAT'L ACAD. SCI. 16054, 16054 (2010) (finding individuals surveyed underestimated energy consumption in fifteen different activities).

121. Vandenberg & Steinemann, *supra* note 12, at 1701–02.

122. *Id.* (American drivers in 2000 released more than sixty-eight billion pounds, equal to thirty-four million tons, of carbon dioxide while idling).

123. ETHAN N. ELKIND, SAVING ENERGY: HOW CALIFORNIA CAN LAUNCH A STATEWIDE RETROFIT PROGRAM FOR EXISTING RESIDENCES AND SMALL BUSINESSES 3 (2010), available at [http://www.law.berkeley.edu/files/Saving_Energy_May_2010\(1\).pdf](http://www.law.berkeley.edu/files/Saving_Energy_May_2010(1).pdf).

124. Dernbach & Tyrrell, *supra* note 14, at 36–37.

retrofit recommendations, the easier for building owners to decide to begin the process.¹²⁵

Thus, maximizing the potential for weatherizing requires better methods for communicating key information in forms that consumers will find relevant. Doing so will require more research into how consumers process information and make choices, combined with new technologies for gathering and delivering consumer-relevant information. Better information can lead to more sustainable consumer choices. The point is not to indoctrinate the public with environmentalism, but to provide information and show how desirable conduct connects with personal norms. Given the potential for consumers to save money while also benefitting the environment, energy conservation provides a potential win-win for sustainability and well-being.

B. Conserving Energy by Conserving Energy-Intensive Water Use

Energy use due to consumption is not always direct. In California and other western states, a large amount of energy is used to obtain, transport, and purify water.¹²⁶ Nationally, water accounts for 123 million megawatt-hours per year in electricity use.¹²⁷ In this setting, reducing water consumption translates into conserving energy use.

A number of tactics are available for reducing water use by consumers. For instance, over half of the water consumption in Southern California is residential, and much of that water use could be reduced through increased reliance on gray water (recycled water for use other than drinking).¹²⁸ The capacity for gray water recycling in the L.A./San Diego area is estimated at about 25% of the municipal

125. The mapping data provided by these assessments could help policymakers target the most cost-effective areas for retrofit programs. For example, state and local governments could focus retrofit incentives and financing programs on areas with older and inefficient homes in inland zones that have significant temperature fluctuations.

126. Water accounts for approximately 19% of California's energy use. Steven Weissman & Lindsay Miller, *The California Public Utilities Commission's Pilot Program to Explore the Nexus of Energy Efficiency and Water Conservation*, 22 PAC. MCGEORGE GLOBAL BUS. & DEV'T L.J. 257, 258 (2010).

127. U.S. DEP'T OF ENERGY, *ENERGY DEMANDS ON WATER RESOURCES: REPORT TO CONGRESS ON THE INTERDEPENDENCY OF ENERGY AND WATER* 26 (2006).

128. YOREM COHEN, *GREYWATER – A POTENTIAL SOURCE OF WATER* 2, 8–9 (2009), available at <http://www.environment.ucla.edu/media/files/RC-Graywater-Fall2009.pdf>; see also R.F. Michael Snodgrass, *Greywater – The Reuse of Household Water: A Small Step Toward Sustainable Living and Adaptation to Climate Change*, 22 GEO. INT'L ENVTL. L. REV. 591, 593–98 (2010) (discussing the use of gray water).

and industrial water used daily.¹²⁹ Expanding the use of low-flow fixtures and efficient washers would also make a major contribution. The California Plumbing Code now allows on-site treatment for nondrinking uses only for wastewater from showers, bathtubs, bathroom sinks, and clothes washers. Laundry and shower water can be used for subsurface or covered irrigation without treatment.

California is not alone in pursuing such water-conservation initiatives. Texas and Colorado are showing interest in rainwater collection, as have a number of cities.¹³⁰ In Australia, the government provides information about commercial gray water systems online. Australia has also established a system of funding and rebates to encourage the adoption of gray water recycling and rainwater storage.¹³¹ Florida and Texas laws encourage or allow local governments to consider xeriscape (nonirrigated) landscaping to reduce water usage, and cities have adopted xeriscape ordinances in those states and elsewhere.¹³² In addition, consumers need better information about their water use, akin to smart metering of electricity, and better conservation incentives.

Various methods exist to promote conservation awareness and behavior change in urban consumers.¹³³ Green building can also promote water conservation.¹³⁴ An emerging issue relating to urban water conservation is the link between urban food habits and agricultural water use.¹³⁵ The water footprint of grains and vegetables is several times lower than that of meat.¹³⁶ In terms of carbon

129. COHEN, *supra* note 128, at 7. Many other resources on water conservation can be found on the Pacific Institute's website, <http://www.pacinst.org/>.

130. Patricia E. Salkin, *Sustainability and Land Use Planning: Greening State and Local Land Use Plans and Regulations to Address Climate Change Challenges and Preserve Resources for Future Generations*, 34 WM. & MARY ENVTL. L. & POLY REV. 121, 164–165 (2009).

131. Snodgrass, *supra* note 128, at 609–10.

132. Salkin, *supra* note 130, at 166.

133. See PETER H. GLEICK ET AL., PAC. INST., WASTE NOT, WANT NOT: THE POTENTIAL FOR URBAN WATER CONSERVATION IN CALIFORNIA 32–35 (2003), available at http://www.pacinst.org/reports/urban_usage/waste_not_want_not_full_report.pdf (describing steps available to promote efficiency).

134. See J. Cullen Howe, *Overview of Green Buildings*, 41 ENVTL. L. REP. 10043, 10046–47 (2011) (discussing water conservation in buildings and pointing out that new buildings can burden municipal sewer systems and increase storm water runoff that can aggravate flood risks).

135. Water used in food production constitutes a virtual water transfer when the food is shipped elsewhere. DANIEL ZIMMER & DANIEL RENAULT, VIRTUAL WATER IN FOOD PRODUCTION AND GLOBAL TRADE REVIEW OF METHODOLOGICAL ISSUES AND PRELIMINARY RESULTS 1 (2003), available at http://www.fao.org/nr/water/docs/VirtualWater_article_DZDR.pdf.

136. See Mat McDermott, *From Lettuce to Beef, What's the Water Footprint of Your Food?*, TREEHUGGER (June 11, 2009), <http://www.treehugger.com/files/2009/06/from-lettuce-to-beef-whats-water-footprint-of-your-food.php>.

emissions, shifting one day a week from meat or dairy products to chicken, fish, or eggs is equivalent to reducing driving by around 760 miles per year.¹³⁷ Dietary change could be an effective water conservation strategy, but is not usually treated as such. As discussed in the next Section, diet also has other implications for both sustainability and well-being.

C. Diet and Food Systems

Our food system is a major source of environmental problems, including a substantial source of greenhouse gases.¹³⁸ The food industry, from fertilizer production through fast-food outlets, accounts for a startling 14% of U.S. energy use.¹³⁹ The problem involves not only the amount of food and the way it is produced, but also the balance between different food groups.¹⁴⁰ Every year, Americans slaughter more than ten billion animals for food, over 15% of the global total while U.S. population is under 3% of the total; this high consumption is especially alarming since meat production accounts for a surprisingly high amount of greenhouse gas emissions.¹⁴¹ Thus, the current ecological footprint of the American food system is problematic. Food production is ultimately driven by consumption, so consumption practices as well as production methods must be considered.

Current consumption patterns are not necessarily to the benefit of consumers. Overconsumption of food is an increasing

137. CZARNEZKI, *supra* note 9, at 86.

138. HANNAH PEARCE ET AL., SOIL ASSOC., DOUBLE DIVIDEND? PROMOTING GOOD NUTRITION AND SUSTAINABLE CONSUMPTION THROUGH HEALTHY SCHOOL MEALS 11–23 (2005), *available at* http://www.sd-commission.org.uk/data/files/publications/Double_Dividend.pdf.

139. PATRICK CANNING ET AL., U.S. DEP'T OF AGRIC., Economic Research Report No. 94, ENERGY USE IN THE U.S. FOOD SYSTEM 11 (2010), *available at* http://www.ers.usda.gov/media/136418/err94_1_.pdf. However, relatively little of U.S. energy use is agricultural (slightly more than 1% in 2002). RANDY SCHNEPP, CONG. RESEARCH SERV., RL32677, ENERGY USE IN AGRICULTURE: BACKGROUND AND ISSUES 2–3 (2004). Thus, the majority of food related energy use occurs after food leaves the farm.

140. According to a British government report:

Many studies show that meat and dairy products, when produced using modern intensive methods, have the highest environmental impacts of all food groups. These impacts reflect the resources (fertiliser, pesticides and energy) required to produce and transport animal feed in the first place, the low efficiency with which animals convert that feed to milk or meat, the high water needs of cattle, slaughterhouses and processing factories, and the waste produced by farm animals. There are also lesser impacts associated with overgrazing when this occurs, which reduces soil carbon and biodiversity.

PEARCE ET AL., *supra* note 138, at 17.

141. See CZARNEZKI, *supra* note 9, at 86.

problem in the United States.¹⁴² Between the middle of the last century and the beginning of this one, the proportion of the U.S. population suffering from obesity increased from 13% to 35%—over a third of the population.¹⁴³ Another indication of changes in eating patterns comes from cookbooks. Recipes that appeared in different editions of the same cookbook increased the number of calories per serving by a startling average figure of 63% from 1936 to the present.¹⁴⁴ There is nothing inevitable about this progression.

The Centers for Disease Control and Prevention (“CDC”) estimate that obesity causes 200,000 to 300,000 premature deaths annually.¹⁴⁵ Overconsumption of food poses a particular problem in a world that will be struggling to feed an additional two to three billion people by midcentury.¹⁴⁶ Current approaches are unsatisfactory: as one journalist says, “To describe existing federal policies and regulatory approaches on obesity as a patchwork is an insult to quilts everywhere.”¹⁴⁷

Diet and lack of exercise are key factors in producing obesity, and the average amount walked per day has fallen dramatically just since the 1970s as people have increased their car use.¹⁴⁸ For this reason, the CDC recommend green-community measures as a way of combating obesity.¹⁴⁹ As discussed in Part IV, those measures have clear sustainability benefits as well.¹⁵⁰

142. For a general discussion of the problem and a survey of potential interventions, see David H. Freedman, *How to Fix the Obesity Crisis*, SCI. AM., Feb. 2011, at 40, 40–47 (2011).

143. Jay Bhattacharya & Neeraj Sood, *Who Pays for Obesity?*, J. ECON. PERSP., Winter 2011, at 139, 139 (2011). They conclude that there is no pooling of risks between obese and nonobese workers in employer-provided health plans because employers compensate by paying obese workers less. *Id.* at 150.

144. See Marc Ambinder, *Beating Obesity*, THE ATLANTIC, May 2010, at 72, 76 (discussing the factors contributing to obesity in the United States).

145. See PETER CALTHORPE, URBANISM IN THE AGE OF CLIMATE CHANGE 31 (2011). Apart from obvious cardiovascular issues, obesity is also linked with cancer. See Gary Taubes, *Unraveling the Obesity-Cancer Connection*, 335 SCIENCE 28 (2012).

146. See SMITH, *supra* note 20, at 35; John Parker, *The 9 Billion-People Question*, THE ECONOMIST (Feb. 24, 2011), <http://www.economist.com/node/18200618>.

147. Ambinder, *supra* note 144, at 79.

148. See CALTHORPE, *supra* note 145, at 31 (discussing the health implications of increased car use).

149. See *id.* (noting that CDC encourages mixed-use development, improved access to transit, and investment in biking and pedestrian infrastructure to help fight obesity).

150. Moreover, obese individuals need larger vehicles and rooms, and more energy is needed to transport them. See Umair Irfan, *A Global Shift Toward Obesity Has Serious Climate Consequences – Study*, CLIMATE WIRE (June 21, 2012), <http://www.eenews.net/public/climatewire/2012/06/21/1>.

In short, dietary change could result in substantial health improvements as well as reducing energy use. As many readers are probably aware from personal experience, changing diet and exercise patterns is not easy. Nevertheless, the benefits to well-being and environmental quality could be quite substantial.

D. Motivating Consumption Changes

As the previous sections have shown, changes in consumer behavior have significant capacity to reduce energy use. The question is how to motivate these behavioral changes. Promoting sustainable consumption is not necessarily easy, but some promising approaches are already in use.

Other countries have implemented communications campaigns encouraging more sustainable consumption. The annual Canadian "Clean Air Day" links climate change and personal lifestyles, while a recent French campaign communicated that "[t]he little things aren't so little if 60 million of us are doing them."¹⁵¹ The Japanese have promoted informal workplace dress as a way of allowing people to remain comfortable despite reductions in summer cooling.¹⁵² Education is also important to ensure a fully informed populace, and such programs are now underway in Japan, Germany, Portugal, and Sweden.¹⁵³

To consume sustainably, consumers also need access to product information. Green labeling makes it possible for informed consumers to translate their preferences into practice.¹⁵⁴ Without effective labeling, consumers have no way of knowing the amount of carbon embedded in the goods that they buy or the energy demands of those goods. Governments could do much more to educate consumers and provide them with key information. It is also important to prevent misleading labeling.¹⁵⁵

Another promising approach to mobilizing individuals is to enlist firms in modifying the behavior of their customers. Directly motivating changes in behavior is likely to be challenging for regulators. However, agencies are far more experienced in regulating

151. ORG. FOR ECON. CO-OPERATION & DEV., *supra* note 2, at 21–22.

152. *See id.* at 23.

153. *See id.* at 26.

154. *See id.* at 11 (detailing different green labeling projects in OECD countries).

155. *See* Bradford Plumer, *The Coming Crackdown on Greenwashing*, NEW REPUBLIC (Feb. 8, 2010), <http://www.tnr.com/blog/the-vine/the-coming-crackdown-greenwashing> (discussing possible government action against misleading "green" labels).

the behavior of large firms, and these firms already invest a great deal of advertising money in an effort to change consumer behavior. Regulators should consider ways to leverage regulation of firms in order to change behavior at the individual level. For instance, in California, the Public Utilities Commission has long used this strategy as part of its energy-conservation efforts, enlisting utilities in improving energy-efficiency decisions of consumers.¹⁵⁶

Building on this strategy, regulators could incorporate efficiency improvements as a component of mandates for utilities to increase use of renewable energy, allowing utilities to reduce their carbon footprints with a mixture of changes in consumer behavior and use of new energy sources. Cap-and-trade schemes can also provide an opportunity for consumer initiative in the form of offset purchases, as consumers buy offsets to make up for carbon consumption when they feel unwilling or unable to simply reduce their consumption.¹⁵⁷ Offsets have to be carefully supervised to ensure that they represent emission reductions rather than paper improvements. Nevertheless, they could potentially provide an important mechanism for concerned consumers.

These strategies reach consumers as individuals, but group participation can also be useful in promoting changed lifestyles. Realistically, only some members of the population will choose to participate in such groups, as with all voluntary associations. But participation has clear environmental benefits, while also building the kind of social capital that studies link with subjective well-being.

One model is provided by Carbon Rationing Action Groups ("CRAGs"), which began in England and are considered "the most intense versions of neighborhood groups" dedicated to sustainable lifestyles.¹⁵⁸ Participation in these groups seems not only to be effective but also to be gratifying to the participants. A study of members of CRAGs garnered comments such as the following:

The group is "very effective, wouldn't have made these changes without it, makes it fun and [creates] solidarity." Another commented similarly that the CRAG motivated her household to make "fairly cheap, easy and efficient home insulation measures" and also to seek out a grant for further work in their house. "Thank you CRAG, and shame on the six of us for not being quicker off the mark. . ." This CRAG member also editorialized that "Exchanging tips with other people who were also striving to cut on their carbon . . .

156. See, e.g., Press Release, California Public Utilities Commission, CPUC Approves Incentive Payments for Utility Energy Efficiency Investments (Dec. 17, 2009), available at http://docs.cpuc.ca.gov/published/news_release/111358.htm (detailing new incentive program).

157. See Ezra Rosser, *Offsetting and the Consumption of Social Responsibility*, 89 WASH. U. L. REV. 27 (2011) (discussing the implications of carbon offsets in a cap-and-trade regime).

158. Sarah Krakoff, *Planetary Identity Formation and the Relocalization of Environmental Law*, 64 FLA. L. REV. 87, 113 (2012).

seemed like a good idea, but I hadn't appreciated at the time just how valuable a resource my fellow CRAGgers would turn out to be! And nice too."¹⁵⁹

What are the effects of participation in such group efforts on well-being? Researchers have asked CRAG members to comment on how the changes affected their quality of life. Responses were "uniformly positive."¹⁶⁰ For instance, one busy professional responded that she "learned a lot, life is much better for it."¹⁶¹ Although we cannot expect this level of commitment from most people, these results do indicate that at least for some people the very act of changing behavior to achieve global sustainability goals was satisfying. Participants in CRAGs and in less tightly organized groups expressed "a sense of joy and satisfaction with their actions": "They claim that 'no hair shirts' have been donned; that hanging their laundry makes them happy; that they enjoy walking and biking everywhere; that their actions 'just feel good . . . ' "¹⁶²

The people who joined these groups were more motivated than most members of the population, so it is certainly unreasonable to expect equally strong responses from everyone. But the research does show that for some segments of the population lifestyle changes can be experienced as very positive. Although it would be wrong to force individuals to participate in such groups, policymakers could do more to provide the opportunity for them to do so.

IV. PURSUING SUSTAINABILITY AT THE COMMUNITY LEVEL

In order to limit the level of consumption in an acceptable way, policymakers should provide people with more opportunities for satisfying nonconsumption activities.¹⁶³ Doing so may dovetail directly with environmental goals, producing improvements along both dimensions of sustainability and well-being. Not every form of enjoyment requires use of energy and resources, at least not to the same extent, but some aspects of our society limit individual ability to pursue more sustainable sources of well-being.

For instance, reducing traffic and commute times through better land use planning provides more time for leisure and family

159. *Id.* at 120.

160. *Id.* at 122.

161. *Id.*

162. *Id.* at 131.

163. Although consumption in a broad sense includes all market transactions by consumers, for sustainability purposes the problem lies with those transactions that involve resource and energy use, so services are less of a problem than goods.

activities, but it also reduces pollution and carbon emissions. In addition, well-designed neighborhoods foster more social interactions with neighbors and more civic involvement. The research discussed earlier shows that increased social capital improves individual well-being and reduces the need for consumption as a mode of satisfaction.

Community design shapes consumption choices. Consumption decisions may appear individualistic but these decisions depend on the menu of choices that are available, some of which are determined by infrastructure and architecture. Although individuals may choose where to live and what forms of transportation to use, they must choose from a menu of options that are shaped by community decisions about zoning, housing types, transportation infrastructure, and economic development.

Thus, people cannot choose to take public transportation unless the option is available, just as they could not drive if society had not invested heavily in road construction. Transportation accounts for almost a third of CO₂ emissions in the United States.¹⁶⁴ In the absence of affordable and efficient public transportation, individuals need cars to get to work or for other travel. In the absence of walkable communities, individuals must drive rather than walk.¹⁶⁵ If the only affordable, attractive housing is in remote suburbs or exurbs, people with other options will not choose to live in cities. Our present pattern of suburban sprawl is not simply an outgrowth of the market; it is the product of a variety of state, federal, and local policies and incentives.¹⁶⁶ Since zoning and public infrastructure do so much to shape the menu of available choices, the current mix of behavior is not necessarily optimal.

In short, urban-planning and public-infrastructure decisions are intertwined with individual consumption choices.¹⁶⁷ They are also intertwined with many aspects of quality of life, from the health of

164. See Trip Pollard, *Building Greener Communities: Smarter Growth and Green Building*, 27 VA. ENVTL. L.J. 125, 136 (2009).

165. For instance, in the San Francisco Bay Area, neighborhoods vary by a factor of four in average vehicle miles driven, depending on walkability, the mix of uses, and access to public transportation. See CALTHORPE, *supra* note 145, at 22–23 (discussing the implications of urban design on vehicle miles traveled).

166. See Rachel Medina & A. Dan Tarlock, *Addressing Climate Change at the State and Local Level: Using Land Use Controls to Reduce Automobile Emissions*, 2 SUSTAINABILITY 1742, 1745–47 (2010) (discussing how government zoning laws and priorities contribute to urban sprawl); CALTHORPE, *supra* note 145, at 120 (arguing that sprawl is not a product of the free market, but rather due to federal, state, and local policies that encourage urban sprawl).

167. The rubric “Green Urbanism” combines many of the themes discussed in this Section. See CALTHORPE, *supra* note 145, at 114–17.

social networks to the frustrations of commuting and its negative impact on home life and the viability of public spaces.¹⁶⁸

Sections A and B of this Part consider how communities can improve sustainability through transportation-related decisions and urban design. Section C and D integrate the discussions of sustainable consumption, energy conservation, and well-being from throughout this Article. Section C shows how communities and individuals can change behavior in order to combat the so-called rebound effect. Section D offers some closing thoughts about how the sustainability strategies discussed in this Article combine with an improved understanding of well-being to provide the outlines for future societal developments.

A. Transportation-Related Energy Issues

Recall that commuting is almost universally disliked as a use of time, and it crowds out more desired uses such as leisure activities and family interactions. Improved passenger rail can not only reduce emissions but also aid the remaining drivers by reducing congestion. In 2007, automobile congestion caused over four billion person-hours in delay at a total cost of over \$85 billion, and these numbers seem to be rapidly growing.¹⁶⁹ Well-designed rail improves quality of life by decreasing stress.¹⁷⁰

Green building can also reduce the environmental footprint of communities.¹⁷¹ Estimates vary, but buildings appear to account for

168. As Calthorpe says, the "public domain must become richer as the private domain becomes more frugal . . . success and wellbeing should be a shared, rather than a private, affair." CALTHORPE, *supra* note 145, at 126.

169. See Benjamin J. Wickizer & Andrew Snow, *Rediscovering the Transportation Frontier: Improving Sustainability in the United States Through Passenger Rail*, SUSTAINABLE DEV. L. & POLY, Fall 2010, at 12, 15 (advocating the development of commuter rail lines in order to help alleviate the ills caused by automobile commuting).

170. Public transport can reduce stress in two ways. Some individuals may find it a less stressful or time-consuming transportation option than driving. Individuals who continue to drive will benefit from reduced congestion due to the increased use of public transportation, improving their quality of life (assuming other driving does not increase enough to cancel out the effect on congestion). This is one reason that subsidies for public transportation make sense, even apart from its desirable environmental effects. See *id.*

171. See Pollard, *supra* note 164, at 125–26. Green building has been defined as "the practice of (1) increasing the efficiency with which buildings and their sites use energy, water, and materials, and (2) reducing building impacts on human health and the environment, through better siting, design, construction, operation, maintenance, and removal—the complete building life cycle." OFFICE OF THE FED. ENVTL. EXEC. & COUNCIL ON ENVTL. QUALITY, THE FEDERAL COMMITMENT TO GREEN BUILDING: EXPERIENCES AND EXPECTATIONS (2003), available at http://www.ofee.gov/Resources/Guidance_reports/Guidance_reports_archives/fgb_report.pdf.

one-third or more of greenhouse gas emissions.¹⁷² Municipalities are experimenting with a range of building code requirements and incentives to encourage green building.¹⁷³

A number of other innovative techniques can reduce residential energy use. Trees can provide a windbreak and thereby reduce heating costs, while also reducing cooling costs in the summer by providing shade.¹⁷⁴ Urban forests provide a variety of other ecosystem services, such as capturing and filtering storm water and reducing urban air pollution.¹⁷⁵ High-albedo (i.e., light-colored) roofs can reduce energy use, decrease cooling costs, and reduce the urban heat-island effect.¹⁷⁶ Chicago, Dallas, and Houston mandate high-albedo roofs for certain construction, while cities ranging from Portland to Cincinnati and Philadelphia offer incentives to encourage such roofs.¹⁷⁷ Transit-oriented development ("TOD") schemes encourage development in areas close to transportation hubs, in order to promote "urban, mixed-use development in transit corridors and provide residents with walking access to mass transit and nearby points of interest."¹⁷⁸

California provides a useful setting to consider the potential for infrastructure and urban planning to contribute to sustainability. California is expected to grow by twenty million people (seven million new households) by 2050.¹⁷⁹ The transportation sector in California accounts for almost 40% of the state's greenhouse gas emissions.¹⁸⁰ These emissions, in major part, result from the miles that Californians drive their cars and light trucks. The California Department of Transportation ("Caltrans") concludes that even with new greenhouse gas regulations and improvement to the carbon content of fuel,

172. See Pollard, *supra* note 164, at 127.

173. See *id.* at 141–45 (discussing different municipalities' efforts to encourage green building via their building codes).

174. See Lynn Scarlett, *Introduction: Cities and Sustainability—Ecology, Economy, and Community*, SUSTAINABLE DEV. L. & POL'Y, Fall 2010, at 2, 2 (discussing the positive impacts of trees upon the urban landscape).

175. See Keith H. Hirokawa, *Sustainability and the Urban Forest: An Ecosystem Services Perspective*, 51 NAT. RESOURCES J. 233 (2011) (detailing ecosystem services provided by urban forests).

176. See Elise Stull, Xiaopu Sun & Durwood Zaelke, *Enhancing Urban Albedo to Fight Climate Change and Save Energy*, SUSTAINABLE DEV. L. & POL'Y, Fall 2010, at 5, 5–6 (discussing how increased roof reflectivity can indirectly reduce greenhouse gas emissions by decreasing energy used to cool buildings).

177. See Salkin, *supra* note 130, at 169.

178. *Id.* at 153.

179. CALTHORPE, *supra* note 145, at 11.

180. See *Fuels and Transportation Division*, CAL. ENERGY DIVISION, <http://www.energy.ca.gov/transportation/> (last visited Oct. 2, 2012) (36%).

projected increases in vehicle miles traveled will outweigh these policies' combined impact on greenhouse gas emissions.¹⁸¹

To control increases in driving, states like California need land use policies that encourage sustainable development. Residents in sustainable communities do not have to drive a car to get to jobs and run errands, and the compact footprint of these neighborhoods lessens development pressure on open space and farmland. Buyers are demanding more sustainable development.¹⁸² In California, the share of residential construction in historic central cities and core suburban communities has increased over the past five years—including during the recent real estate downturn.¹⁸³ In many metropolitan areas, central cities have increased their share of new construction while suburban construction has declined.¹⁸⁴ Outlying areas experienced the greatest price declines in the 2008 meltdown.¹⁸⁵

Building codes can also move communities toward more energy-efficient buildings as well as healthier ones.¹⁸⁶ A statewide California building code sets goals for energy efficiency.¹⁸⁷ Similar actions have taken place in many cities.¹⁸⁸

These methods of pursuing energy conservation at the community level, like the methods at the individual level considered previously, have the potential to deliver dual benefits. On the one hand, by reducing energy use, they reduce the impact of energy production on the environment. On the other hand, they can improve individual well-being, sometimes in pecuniary terms and sometimes

181. See ETHAN N. ELKIND, *PLAN FOR THE FUTURE: HOW LOCAL GOVERNMENTS CAN HELP IMPLEMENT CALIFORNIA'S NEW LAND USE AND CLIMATE CHANGE LEGISLATION 1* (2010) (advocating for policies that prevent population growth from negating policies that reduce greenhouse gas emissions).

182. See Jane Mueller & Suzanne Rynne, *Integrating Energy and Climate into Planning*, AM. PLANNING ASSN (January/February 2009), <http://www.planning.org/pas/memo/open/jan2009/index.htm>.

183. ELKIND, *supra* note 181, at 4.

184. CALTHORPE, *supra* note 145, at 13.

185. *Id.* at 14.

186. Americans spend the large majority of their time indoors, but indoor air even in new houses can be much more polluted than outdoor air. See Keith H. Hirokawa, *At Home with Nature: Early Reflections on Green Building Laws and the Transformation of the Built Environment*, 39 ENVTL. L. 507, 517 (2009) (discussing how toxins in materials used in conventional construction contribute to indoor air pollution).

187. Salkin, *supra* note 130, at 160.

188. Salkin, *supra* note 130, at 161. Congress has made efforts to encourage states to adopt more energy-efficient building codes. See Dernbach & Tyrrell, *supra* note 14, at 42 (discussing the Waxman-Markey bill's efforts to foster construction of energy-efficient buildings).

by allowing individuals to shift from commuting to more desired activities.

B. Barriers and Opportunities

Sustainable land development may promote well-being and sustainability, but it also faces significant regulatory, political, and financial hurdles. Some areas may experience paralyzing local opposition, expressed as fear of increased traffic and decreased property values. Community opposition can then translate into political failure at the local level. In addition, many local governments lack the resources, financing, and expertise to facilitate sustainable development in older urban areas, which sometimes require significant infrastructure upgrades. Outdated local land use plans and ordinances can work to prevent precisely the type of eco-friendly neighborhoods that many buyers are now demanding.¹⁸⁹

California took an important step forward with the passage of Senate Bill 375 ("SB 375"),¹⁹⁰ an innovative effort to reduce greenhouse gases through land use regulation.¹⁹¹ Although SB 375 is a breakthrough in terms of engaging state and local governments in the development of sustainable communities, in reality it is only a first step. Quite apart from SB 375, some municipalities are experimenting with New Urbanism.¹⁹² California already has a few successful examples such as downtown Berkeley and Los Angeles, neighborhoods in San Francisco and Pasadena, and San Diego's Gaslamp Quarter. Residents in these communities have the option of walking to services (such as stores and schools), jobs, and major public transit stops. Remember that walking is highly rated as a satisfying activity, besides its health and pollution-reduction benefits. Additionally, the varied housing in these communities means that grown children can live near parents, empty nesters can downsize within their communities, and residents of diverse incomes can live near each other.¹⁹³ Light rail could also be a valuable option, reducing

189. CALTHORPE, *supra* note 145, at 1–8.

190. S.B. 375, 2007–2008 Leg., Reg. Sess., 2008 Cal. Stat. 728 (codified in part as CAL. CODE REGS. tit. 2, § 14522.11 (2011)).

191. See Kira Hettinger, *New Frontier in Urban Greenhouse Gas Emissions Regulation: Overview of California's Senate Bill 375*, SUSTAINABLE DEV. L. & POL'Y, Fall 2010, at 58, 58.

192. See MARK LUBELL ET AL., *ACHIEVING SUSTAINABILITY IN CALIFORNIA'S CENTRAL VALLEY* 5 (2009) available at http://pubs.its.ucdavis.edu/publication_detail.php?id=1286 (discussing the efforts to implement New Urbanist policies in various cities in California's Central Valley)

193. See Di Tella & MacCulloch, *supra* note 45.

automobile use and channeling growth toward sustainability. Dedicated bus-ways can serve much the same purposes.¹⁹⁴

Public transportation and sustainable communities are synergistic. Public transportation aids sustainability, while the resulting TOD makes use of public transport more feasible. California is not alone in seeking to encourage more sustainable development. For instance, Florida planning law now encourages cities to avoid urban sprawl and support energy-efficient development.¹⁹⁵ Arizona and Connecticut pursue similar policies.¹⁹⁶ Some notable examples of local comprehensive plans that address sustainability and climate change can be found in Blacksburg, Virginia; Boudier County, Colorado; Buffalo, New York; Marin County, California;¹⁹⁷ and Seattle, Washington.¹⁹⁸

U.S. cities have changed vastly in the century since World War I. In the interest of sustainability, they need equally great changes in the upcoming century. But these changes will not happen overnight and will require many intermediate steps.

Parts III and IV discussed a variety of strategies, at the individual and community level, to promote both sustainability and well-being. It is time to pull some of the strands of the discussion together. The next Section discusses a problem raised by energy-efficiency strategies—the rebound effect—and the way that changes in consumer attitudes and behavior can help address the problem. The final Section discusses the broader implications of a shift in the concepts of sustainability, well-being, and their relationship to each other.

194. See Robert Cervero, *Transport and Land Use: Key Issues in Metropolitan Planning and Smart Growth* 13 (Univ. of Cal. Transport. Ctr., Research Paper No. 436, 2000), available at <http://uctc.net/research/papers/436.pdf>. (Since published in 38 AUSTL. PLANNER 29 (2001)) (highlighting the success of dedicated bus lines in Curitiba, Brazil).

195. Salkin, *supra* note 130, at 131.

196. *Id.* at 130.

197. See Medina & Tarlock, *supra* note 166, at 1756–57 (providing a case study of the Marin County experience, highlighting among other salient points: “The Marin County General Plan uses sustainability as an underlying theme throughout. The plan even calculates the ecological footprint of the average resident and includes measures to reduce the footprint. It is allegedly the first local comprehensive plan in the country to use such an approach. . . . Marin County cites many policy initiatives, some of which are quite relevant to greenhouse gas reductions, such as establishing a housing overlay designation, locating housing near activity centers, focusing intensive development at nodes, enhancing existing commercial and industrial areas and businesses, and expanding countywide efforts to increase workforce housing rather than full commercial build-out.”).

198. Salkin, *supra* note 130, at 135–40.

C. Changing Consumption Behavior to Combat the Rebound Effect

Many of the policies discussed in Parts III and IV actually reduce expenses for consumers while at the same time reducing energy use and carbon emissions. This may seem too good to be true, and arguably some of the energy savings may be deceptive. In assessing the environmental benefits of energy conservation, policymakers need to keep in mind an important side effect called the “rebound effect.”¹⁹⁹ The rebound effect involves increases in energy use that are paradoxically caused by increased energy efficiency.

This effect actually takes three forms. First, when energy use is more efficient, consumers may increase some of their energy-using activities. For instance, if lighting is very energy efficient, consumers may be less careful about turning off lights in vacant rooms. Or they may simply use more lights in order to have a brighter room, negating the energy savings from the more efficient lighting. Second, if they do use less power, consumers will have lower electric bills. This gives them more money to spend on other things, and some of those other things may require energy to produce or use. For example, the money that is saved might go to buy a new appliance like a dishwasher. The dishwasher will use energy, and the process of manufacturing it will also have required energy. Third, if less energy is used, demand for fuel is lower, which decreases the price of fuel. This may cause consumption elsewhere in the world to increase. For instance, if the United States buys less oil on the international market because fewer people are driving, China could take advantage of the lower price to import more oil. The result could be the same level of global carbon emissions, but with a shift from the United States to China.

Because of the rebound effect, it is even theoretically possible that increased energy efficiency could actually lead to greater total consumption of energy. This phenomenon is called “backfire.” It is an extreme form of rebound, as if a dropped ball bounced higher than the original height. Backfire is most likely in the context of industrial uses of energy, where increased energy efficiency might cause higher productivity and economic growth that would in turn increase the use of energy.²⁰⁰

199. The rebound effect received popular attention in David Owen, *The Efficiency Dilemma*, NEW YORKER, Dec. 20, 2010, at 78 (giving a somewhat one-sided view of the problem).

200. See SHEETAL GAVANKAR & ROLAND GEYER, THE REBOUND EFFECT: STATE OF THE DEBATE AND IMPLICATIONS FOR ENERGY EFFICIENCY RESEARCH 4 (2010), available at <http://iee.ucsb.edu/files/pdf/Rebound%20Report%20for%20IEE-UCSB.pdf>.

For policy purposes, the size of the rebound effect is the crucial question. A 2010 review of the economic literature concluded that “there seems to be some evidence for direct rebound under certain conditions like a large unsatisfied demand,” but the studies do not support the backfire scenario or large rebound otherwise.²⁰¹ In developed countries the rebound seems to be below 30%, possibly much lower, but rebound in developing countries may be higher because of unmet demand.²⁰² Examples of unmet demand leading to large rebound include residential heating in Japan and Britain in the 1970s, and use of residential lighting in rural India.²⁰³

The European Union completed a major study of the rebound effect in April 2011.²⁰⁴ For OECD countries, the report estimates direct rebound effects of 5% to 12% for lighting and 10% to 30% for heating/cooling and appliances.²⁰⁵ In general, economy-wide (indirect) rebound seems to be around 10%, although it is difficult to estimate.²⁰⁶ Policymakers are taking these effects into account:

[T]he UK Department of Energy and Climate Change (DECC) accepts the existence of the direct rebound effects in relevant policy interventions, and officially incorporates ‘take back’ in energy savings from rebound in its policy evaluation. To date this has been incorporated in domestic insulation energy policy; where a 15% direct rebound effect is accounted for in recognition of ‘comfort taking’ in a newly insulated home. This 15% reduction in savings has been applied to the CERT (Carbon Emissions Reduction Scheme) scheme, which has been running in the UK since 2008.²⁰⁷

As this Section has shown, because of the rebound effect, some of the benefits of energy efficiency come back to consumers by reducing their expenses and allowing them to purchase more goods and services. Because these goods and services may themselves require energy, the rebound effect must be taken into account to calculate the true impact of energy efficiency on carbon reduction. Rebound reduces the environmental benefits of energy efficiency, perhaps by as much as 30%. Thus, in shaping overall sustainability

201. *Id.* at 46.

202. *See id.* at 61 (discussing the problem of “rebound” in both the developed and developing world).

203. FRANK GOTTRON, CONG. RESEARCH SERV., RL31188, ENERGY EFFICIENCY AND THE REBOUND EFFECT 8–10 (2001).

204. DOROTHY MAXWELL ET AL., ADDRESSING THE REBOUND EFFECT: A REPORT FOR THE EUROPEAN COMMISSION DIRECTORATE-GENERAL FOR THE ENVIRONMENT (2011), available at http://ec.europa.eu/environment/eussd/pdf/rebound_effect_report.pdf.

205. *Id.* at 82.

206. *Id.* at 83–84.

207. *Id.* at 33.

policy, policymakers should be cautious about placing excessive weight on efficiency measures.

The rebound effect can be limited by using other tools to help control carbon emissions, such as an emissions-trading system or carbon tax. These techniques raise the price of energy, offsetting the potential rebound effect of greater efficiency. Energy efficiency makes it more feasible to impose such a system by reducing the burden on consumers. Increased efficiency, conversely, decreases the economic burden of a carbon tax or emission-trading system on consumers.

Voluntary changes in consumer behavior can also be important in controlling the rebound effect:

For indirect rebound effects (where consumers use income from efficiencies to consume more products with a high environmental burden) the importance of effective awareness raising for consumers is key. A Swiss study where no indirect rebound effects were found for hybrid cars identified a potential link between increasing consumer knowledge on the environmental impacts of their car that can translate across to other consumption expenditure choices e.g. food. Further a UK example shows the importance of encouraging householders to shift consumption patterns to lower GHG intensive expenditure and to invest in low carbon investments vs. consuming.²⁰⁸

In short, if the goal is to reduce carbon emissions, it is important to combine energy-efficiency requirements with other measures in order to limit the rebound effect. The rebound effect is a problem but not an insuperable barrier.

V. CLOSING THOUGHTS ON SUSTAINABILITY AND THE AMERICAN DREAM

The theme of this Article is that sustainability involves more than regulating enterprises that emit greenhouse gases. In the long run, to achieve energy sustainability, society should not only change the ways that businesses operate, but also change some aspects of everyday life.

This change must occur at two levels. At the level of individual decisionmaking, policymakers should give people the basis for making more informed, sustainable consumption decisions, both about their direct energy use and about goods such as water and food that require energy expenditures. At the societal level, policymakers should strive to provide communities and infrastructure that give people the opportunity to live healthier, more satisfying, and more sustainable lives, while reducing consumption of energy.

Change will be slow, but practical first steps do exist. As this Article has shown, changes in individual behavior such as more

208. *Id.* at 17–18.

intelligent energy consumption, dietary changes, and more careful use of water could have measurable environmental dividends. At the community level, denser, more walkable communities could reduce emissions as well as unpleasant commuting, while fostering enjoyable activities and improving health. Much of this Article has been devoted to detailing these strategies and their probable benefits.

Many of the immediately practical efforts will have only incremental effects. Incremental progress is better than no progress. Moreover, these first steps will hopefully initiate a cycle of positive feedback. They may help people experience gratification in forms with lower consumption and smaller environmental footprints, which in turn could make them open to further initiatives moving in the same direction. In the end, unless people can have full and satisfying lives while also improving sustainability, only ascetics and saints will support the move to sustainability. To be itself sustainable culturally and politically, environmental sustainability must have an attractive human dimension.

The search for a better life is a fundamental component of the American dream. Given environmental realities, pursuing the dream will require Americans to make wise consumer choices, to reduce their reliance on energy- and resource-intensive consumption as the key to quality of life, and to live in sustainable communities.

Happiness, as a societal goal, may seem self-centered, if not greedy. But as Derek Bok points out:

[T]he happiness [Americans] feel does not seem to come primarily from mere pleasure-seeking or from selfishly looking out for number one. Rather, apart from such basic conditions as how well people feel, how much freedom they enjoy, and whether they possess the necessities and comforts of life, the most important sources of happiness seem to include having close relationships with family and friends, helping others, and being active in community, charitable and political activities.²⁰⁹

Likewise, for the author of the Declaration of Independence, the "pursuit of happiness" meant more than private self-gratification, because he drew on an Enlightenment tradition that made individual happiness dependent on pursuing the happiness of others.²¹⁰

A key insight is that sustainability connects with a range of issues concerning quality of life, not merely the set of issues that are usually considered "environmental." Moving away from consumerism means giving people more time and opportunity for family, friends, personal activities, and civic involvement. Thus sustainability efforts

209. BOK, *supra* note 34, at 205.

210. See GARRY WILLS, *INVENTING AMERICA: JEFFERSON'S DECLARATION OF INDEPENDENCE* 248–55 (1978).

can be situated within a broader vision of the good life—one that also has implications for family-friendly social policies, urban design, public health, consumer protection, taxation, and other arenas of social policy.

Understood in these broader senses, no necessary conflict exists between happiness and sustainability. Instead, policymakers can design strategies that both provide more fulfilling lives and improve environmental quality. Reshaping the way people live and how their communities are structured will undoubtedly be a slow process. But we need not fear that life in a more sustainable society would be less happy or fulfilling.
