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# Do Global Attitudes and Behaviors Support Sustainable Development?

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Many advocates of sustainable development recognize that a transition to global sustainability—meeting human needs and reducing hunger and poverty while maintaining the life-support systems of the planet—will require changes in human values, attitudes, and behaviors.<sup>1</sup> A previous article in *Environment* described some of the values used to define or support sustainable development as well as key goals, indicators, and practices.<sup>2</sup> Drawing on the few multinational and quasi-global-scale surveys that have been conducted,<sup>3</sup> this article synthesizes and reviews what is currently known about global attitudes and behavior that will either support or discourage a global sustainability transition.<sup>4</sup> (Table 1 on page 24 provides details about these surveys.)

None of these surveys measured public attitudes toward “sustainable development” as a holistic concept. There is, however, a diverse range of empirical data related to many of the subcomponents of sustainable development: development and environment; the driving forces of population, affluence/poverty/consumerism, technology, and entitlement programs; and the gap between attitudes and behavior.

## Development

Concerns for environment and development merged in the early concept of sustainable development, but the meaning of these terms has evolved over time. For example, global economic development is widely viewed as a central priority of sustainable development, but development has come to mean human and social development as well.

## Economic Development

The desire for economic development is often assumed to be universal, transcending all cultural and national contexts. Although the surveys in Table 1 have no global-scale data on public attitudes toward economic development per se, this assumption appears to be supported by 91 percent of respondents from 35 developing countries, the United States, and Germany, who said that it is very important (75 percent) or somewhat important (16 percent) to live in a country where there is economic prosperity.<sup>5</sup> What level of affluence is desired, how that economic prosperity is to be achieved, and how economic wealth should ideally be

distributed within and between nations, however, are much more contentious questions. Unfortunately, there does not appear to be any global-scale survey research that has tried to identify public attitudes or preferences for particular levels or end-states of economic development (for example, infinite growth versus steady-state economies) and only limited or tangential data on the ideal distribution of wealth (see the section on affluence below).

Data from the World Values Survey suggest that economic development leads to greater perceived happiness as countries make the transition from subsistence to advanced industrial economies. But above a certain level of gross national product (GNP) per capita—approximately \$14,000—the relationship between income level and subjective well-being disappears (see Figure 1 on page 25). This implies that infinite economic growth does not lead to greater human happiness. Additionally, many of the unhappiest countries had, at the time of these surveys, recently experienced significant declines in living standards with the collapse of the Soviet Union. Yet GNP per capita remained higher in these ex-Soviet countries than in developing countries like India and Nigeria.<sup>6</sup> This suggests that relative trends in living standards influence happiness more than absolute levels of affluence, but the relationship between economic development and subjective well-being deserves more research attention.

## Human Development

Very limited data is available on public attitudes toward issues of human development, although it can be assumed that there is near-universal support for increased child survival rates, adult life expectancies, and educational opportunities. However, despite the remarkable increases in these indicators of human well-being since World War II,<sup>7</sup> there appears to be a globally pervasive sense that human well-being has been deteriorating in recent years. In 2002, large majorities worldwide said that a variety of conditions had worsened over the previous five years, including the availability of well-paying jobs (58 percent); working conditions (59 percent); the spread of diseases (66 percent); the affordability of health care (60 percent); and the ability of old people to care for themselves in old age (59

percent). Likewise, thinking of their own countries, large majorities worldwide were concerned about the living conditions of the elderly (61 percent) and the sick and disabled (56 percent), while a plurality was concerned about the living conditions of the unemployed (42 percent).<sup>8</sup>

### Development Assistance

One important way to promote development is to extend help to poorer countries and people, either through national governments or nongovernmental organizations and charities. There is strong popular support but less official support for development assistance to poor countries. In 1970, the United Nations General Assembly resolved that each economically advanced country would dedicate 0.7 percent of its gross national income (GNI) to official development assistance (ODA) by the middle of the 1970s—a target that has been reaffirmed in many subsequent international agreements.<sup>9</sup> As of 2004, only five countries had achieved this goal (Denmark, Norway, the Netherlands, Luxembourg, and Sweden). Portugal was close to the target at 0.63, yet all other countries ranged from a high of 0.42 percent (France) to lows of 0.16 and 0.15 percent (the United States and Italy respectively). Overall, the average ODA/GNI among the industrialized countries was only 0.25 percent—far below the UN target.<sup>10</sup>

By contrast, in 2002, more than 70 percent of respondents from 21 developed and developing countries said they would support paying 1 percent more in taxes to help the world's poor.<sup>11</sup> Likewise, surveys in the 13 countries of the Organisation for Economic Co-operation and Development's Development Assistance Committee (OECD-DAC) have found that public support for the principle of giving aid to developing countries (81 percent in 2003) has remained high and stable for more than 20 years.<sup>12</sup> Further, 45 percent said that their government's current (1999–2001) level of expenditure on foreign aid was too low, while only 10 percent said foreign

aid was too high.<sup>13</sup> There is also little evidence that the public in OECD countries has developed “donor fatigue.” Although surveys have found increasing public concerns about corruption, aid diversion, and inefficiency, these surveys also continue to show very high levels of public support for aid.

Public support for development aid is belied, however, by several factors. First, large majorities demonstrate little understanding of development aid, with most unable to identify their national aid agencies and greatly overestimating the percentage of their national budget devoted to development aid. For example, recent polls have found that Americans believed their government spent 24 percent (mean estimate) of the national budget on for-

eign assistance, while Europeans often estimated their governments spent 5 to 10 percent.<sup>14</sup> In reality, in 2004 the United States spent approximately 0.81 percent and the European Union member countries an average of approximately 0.75 percent of their national budgets on official development assistance, ranging from a low of 0.30 percent (Italy) to a high of 1.66 percent (Luxembourg).<sup>15</sup> Second, development aid is almost always ranked low on lists of national priorities, well below more salient concerns about (for example) unemployment, education, and health care. Third, “the overwhelming support for foreign aid is based upon the perception that it will be spent on remedying humanitarian crises,” not used for other development-related issues like Third World debt, trade

**Table 1. Multinational surveys**

One-time surveys		
Name	Year(s)	Number of countries
Pew Global Attitudes Project	2002	43
Eurobarometer	2002	15
International Social Science Program	2000	25
Health of the Planet	1992	24
Repeated surveys		
GlobeScan International Environmental Monitor	1997–2003	34
World Values Survey	1981–2002	79
Demographic and Health Surveys	1986–2002	17
Organisation for Economic Co-operation and Development	1990–2002	22

NOTE: Before November 2003, GlobeScan, Inc. was known as Environics International. Surveys before this time bear the older name.

SOURCE: For more detail about these surveys and the countries sampled, see Appendix A in A. Leiserowitz, R. W. Kates, and T. M. Parris, *Sustainability Values, Attitudes and Behaviors: A Review of Multi-national and Global Trends*, CID Working Paper No. 113 (Cambridge, MA: Science, Environment and Development Group, Center for International Development, Harvard University, 2004), <http://www.cid.harvard.edu/cidwp/113.htm>.

barriers, or increasing inequality between rich and poor countries—or for geopolitical reasons (for example, U.S. aid to Israel and Egypt).<sup>16</sup> Support for development assistance has thus been characterized as “a mile wide, but an inch deep” with large majorities supporting aid (in principle) and increasing budget allocations but few understanding what development aid encompasses or giving it a high priority.<sup>17</sup>

## Environment

Compared to the very limited or nonexistent data on attitudes toward economic and human development and the overall concept of sustainable development, research on global environmental attitudes is somewhat more substantial. Several surveys have measured attitudes regarding the intrinsic value of nature, global environmental concerns, the trade-offs between environmental protection and economic growth, government policies, and individual and household behaviors.

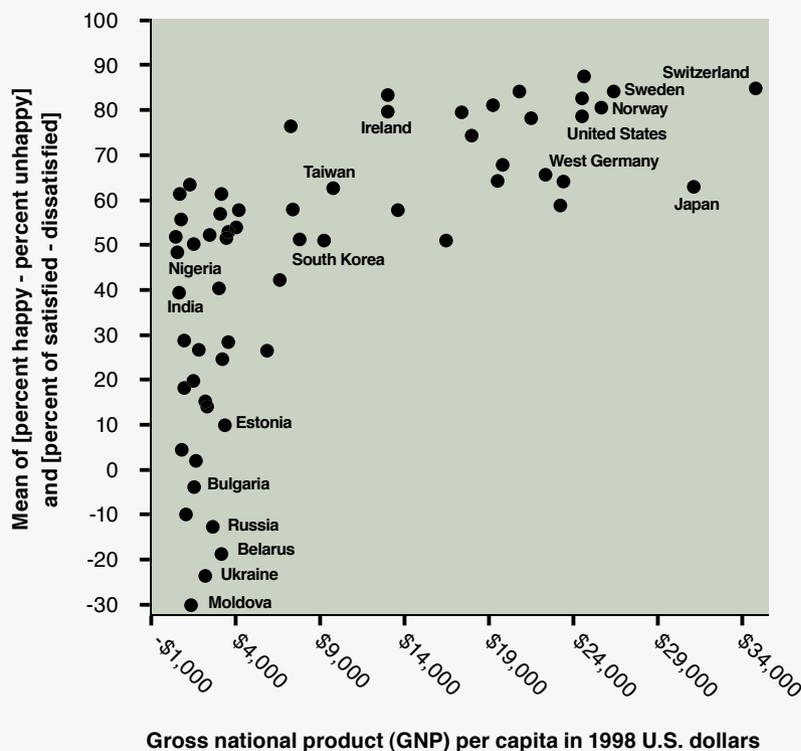
### Human-Nature Relationship

Most research has focused on anthropocentric concerns about environmental quality and natural resource use, with less attention to ecocentric concerns about the intrinsic value of nature. In 1967, the historian Lynn White Jr. published a now-famous and controversial article arguing that a Judeo-Christian ethic and attitude of domination, derived from Genesis, was an underlying historical and cultural cause of the modern environmental crisis.<sup>18</sup> Subsequent ecocentric, ecofeminist, and social ecology theorists have also argued that a domination ethic toward people, women, and nature runs deep in Western, patriarchal, and capitalist culture.<sup>19</sup> The 2000 World Values Survey, however, found that 76 percent of respondents across 27 countries said that human beings should “coexist with nature,” while only 19 percent said they should “master nature” (see Figure 2 on page 27). Overwhelming majorities of

Europeans, Japanese, and North Americans said that human beings should coexist with nature, ranging from 85 percent in the United States to 96 percent in Japan. By contrast, only in Jordan, Vietnam, Tanzania, and the Philippines did more than 40 percent say that human beings should master nature.<sup>20</sup> In 2002, a national survey of the United States explored environmental values in more depth and found that Americans strongly agreed that nature has intrinsic value and that humans have moral duties and obligations to animals, plants,

and non-living nature (such as rocks, water, and air). The survey found that Americans strongly disagreed that “humans have the right to alter nature to satisfy wants and desires” and that “humans are not part of nature” (see Figure 3 on page 28).<sup>20</sup> This very limited data suggests that large majorities in the United States and worldwide now reject a domination ethic as the basis of the human-nature relationship, at least at an abstract level. This question, however, deserves much more cross-cultural empirical research.

**Figure 1. Subjective well-being by level of economic development**



NOTE: The subjective well-being index reflects the average of the percentage in each country who describe themselves as “very happy” or “happy” minus the percentage who describe themselves as “not very happy” or “unhappy”; and the percentage placing themselves in the 7–10 range, minus the percentage placing themselves in the 1–4 range, on a 10-point scale on which 1 indicates that one is strongly dissatisfied with one’s life as a whole, and 10 indicates that one is highly satisfied with one’s life as a whole.

SOURCE: R. Inglehart, “Globalization and Postmodern Values,” *Washington Quarterly* 23, no. 1 (1999): 215–228. Subjective well-being data from the 1990 and 1996 World Values Surveys. GNP per capita for 1993 data from *World Bank, World Development Report, 1995* (New York: Oxford University Press, 1995).

## Environmental Concern

In 2000, a survey of 11 developed and 23 developing countries found that 83 percent of all respondents were concerned a fair amount (41 percent) to a great deal (42 percent) about environmental problems. Interestingly, more respondents from developing countries (47 percent) were “a great deal concerned” about the environment than from developed countries (33 percent), ranging from more than 60 percent in Peru, the Philippines, Nigeria, and India to less than 30 percent in the Netherlands, Germany, Japan, and Spain.<sup>22</sup>

climate change.<sup>23</sup> Further, 52 percent of the global public said that if no action is taken, “species loss will seriously affect the planet’s ability to sustain life” just 20 years from now.<sup>24</sup>

## Environmental Protection versus Economic Growth

In two recent studies, 52 percent of respondents worldwide agreed that “protecting the environment should be given priority” over “economic growth and creating jobs,” while 74 percent of respondents in the G7 countries prioritized

## Attitudes toward Environmental Policies

In 1995, a large majority (62 percent) worldwide said they “would agree to an increase in taxes if the extra money were used to prevent environmental damage,” while 33 percent said they would oppose them.<sup>26</sup> In 2000, there was widespread global support for stronger environmental protection laws and regulations, with 69 percent saying that, at the time of the survey, their national laws and regulations did not go at all far enough.<sup>27</sup> The 1992 Health of the Planet survey found that a very large majority (78 percent) favored the idea of their own national government “contributing money to an international agency to work on solving global environmental problems.” Attitudes toward international agreements in this survey, however, were less favorable. In 1992, 47 percent worldwide agreed that “our nation’s environmental problems can be solved without any international agreements,” with respondents from low-income countries more likely to strongly agree (23 percent) than individuals from middle-income (17 percent) or high-income (12 percent) countries.<sup>28</sup> In 2001, however, 79 percent of respondents from the G8 countries said that international negotiations and progress on climate change was either “not good enough” (39 percent) or “not acceptable” (40 percent) and needed faster action. Surprisingly, this latter 40 percent supported giving the United Nations “the power to impose legally-binding actions on national governments to protect the Earth’s climate.”<sup>29</sup>



*Children play in a polluted creek near Calcutta, India. Global public opinion holds that environmental problems such as water pollution are very serious problems—but such attitudes have not always translated into action.*

This survey also asked respondents to rate the seriousness of several environmental problems (see Figure 4 on page 29). Large majorities worldwide selected the strongest response possible (“very serious”) for seven of the eight problems measured. Overall, these results demonstrate very high levels of public concern about a wide range of environmental issues, from local problems like water and air pollution to global problems like ozone depletion and

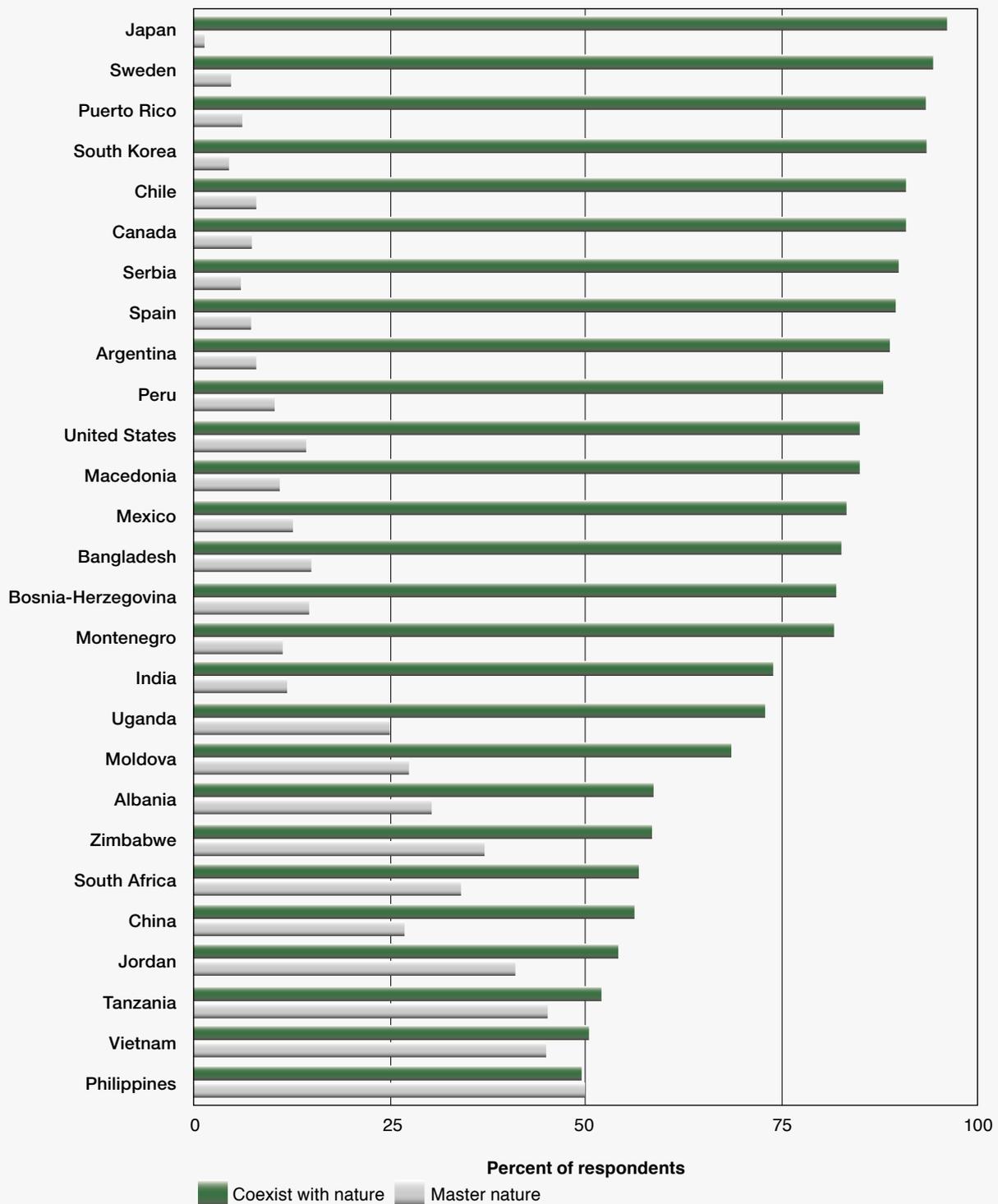
environmental protection over economic growth, even if some jobs were lost.<sup>25</sup> Unfortunately, this now-standard survey question pits the environment against economic growth as an either/or dilemma. Rarely do surveys allow respondents to choose an alternative answer, that environmental protection can generate economic growth and create jobs (for example, in new energy system development, tourism, and manufacturing).

## Environmental Behavior

Material consumption is one of the primary means by which environmental values and attitudes get translated into behavior. (For attitudes toward consumption per se, see the section on affluence, poverty, and consumerism below.)

In 2002, Environics International (GlobeScan) found that 36 percent of respondents

**Figure 2. Human-nature relationship**



NOTE: The question asked, "Which statement comes closest to your own views: human beings should master nature or humans should coexist with nature?"

SOURCE: A. Leiserowitz, 2005. Data from World Values Survey, *The 1999–2002 Values Surveys Integrated Data File 1.0*, CD-ROM in R. Inglehart, M. Basanez, J. Diez-Medrano, L. Halman, and R. Luijckx, eds., *Human Beliefs and Values: A Cross-Cultural Sourcebook Based on the 1999–2002 Values Surveys*, first edition (Mexico City: Siglo XXI, 2004).

from 20 developed and developing countries stated that they had avoided a product or brand for environmental reasons, while 27 percent had refused packaging, and 25 percent had gathered environmental information.<sup>30</sup> Recycling was highly popular, with 6 in 10 people setting aside garbage for reuse, recycling, or safe disposal. These rates, however, reached 91 percent in North America versus only 36–38 percent in Latin America, Eastern Europe, and Central Asia,<sup>31</sup> which may be the result of structural barriers in these societies (for example, inadequate infrastructures, regulations, or markets). There is less survey data regarding international attitudes toward energy consumption, but among Europeans, large majorities said they had reduced or intended to reduce their use of heating, air conditioning, lighting, and domestic electrical appliances.<sup>32</sup>

In 1995, 46 percent of respondents worldwide reported having chosen products thought to be better for the environment, 50 percent of respondents said they had tried to reduce their own water consumption, and 48 percent reported that in the 12 months prior to the survey, they reused or recycled something rather than throwing it away. There was a clear distinction between richer and poorer societies: 67 percent of respondents from high-income countries reported that they had chosen “green” products, while only 30 percent had done so in low-income countries. Likewise, 75 percent of respondents from high-income countries said that they had reused or recycled something, while only 27 percent in low-income countries said this.<sup>33</sup> However, the latter results contradict the observations of researchers who have noted that many people in developing countries reuse things as part of everyday life (for example, converting oil barrels into water containers) and that millions eke out an existence by reusing and recycling items from landfills and garbage dumps.<sup>34</sup> This disparity could be the result of inadequate survey representation of the very poor, who are the most likely to reuse and recycle as part of survival, or, alternatively,

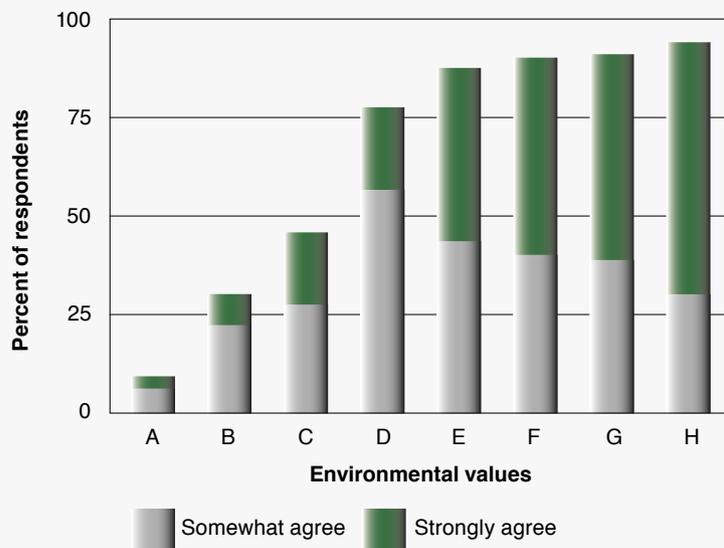
different cultural interpretations of the concepts “reuse” and “recycle.”

In 2002, 44 percent of respondents in high-income countries were very willing to pay 10 percent more for an environmentally friendly car, compared to 41 percent from low-income countries and 29 percent from middle-income countries.<sup>35</sup> These findings clearly mark the emergence of a global market for more energy-efficient and less-polluting automobiles. However, while many people appear willing to spend more to buy an environmentally friendly car, most do not appear willing to pay more for gasoline to reduce air pollution. The same 2002 survey found that among high-income countries, only 28 percent of respondents were very willing to pay 10 percent more for gasoline if the money was used to reduce air pollution, compared

to 23 percent in medium-income countries and 36 percent in low-income countries.<sup>36</sup> People appear to generally oppose higher gasoline prices, although public attitudes are probably affected, at least in part, by the prices extant at the time of a given survey, the rationale given for the tax, and how the income from the tax will be spent.

Despite the generally pro-environment attitudes and behaviors outlined above, the worldwide public is much less likely to engage in political action for the environment. In 1995, only 13 percent of worldwide respondents reported having donated to an environmental organization, attended a meeting, or signed a petition for the environment in the prior 12 months, with more doing so in high-income countries than in low-income countries.<sup>37</sup> Finally, in 2000, only 10 percent worldwide

**Figure 3. American (U.S.) environmental values**



- A: Humans are not part of nature.
- B: Humans have the right to subdue and control nature.
- C: Humankind was created to rule over nature.
- D: Humans should adapt to nature rather than modify it to suit them.
- E: Humans have moral duties and obligations to non-living nature.
- F: Humans have moral duties and obligations to plants and trees.
- G: Humans have moral duties and obligations to other animal species.
- H: Nature has value within itself regardless of any value humans place on it.

SOURCE: A. Leiserowitz, 2005.

reported having written a letter or made a telephone call to express their concern about an environmental issue in the past year, 18 percent had based a vote on green issues, and 11 percent belonged to or supported an environmental group.<sup>38</sup>

## Drivers of Development and Environment

Many analyses of the human impact on life-support systems focus on three driving forces: population, affluence or income, and technology—the so-called I=PAT identity.<sup>39</sup> In other words, environmental impact is considered a function of these three drivers. In a similar example, carbon dioxide (CO<sub>2</sub>) emissions from the energy sector are often considered a function of population, affluence (gross domestic product (GDP) per capita), energy intensity (units of energy per GDP), and technology (CO<sub>2</sub> emissions per unit of energy).<sup>40</sup> While useful, most analysts also recognize that these variables are not fundamental driving forces in and of themselves and are not independent from one another.<sup>41</sup> A similar approach has also been applied to human development (D=PAE), in which development is considered a function of population, affluence, and entitlements and equity.<sup>42</sup> What follows is a review of empirical trends in attitudes and behavior related to population, affluence, technology, and equity and entitlements.

## Population

Global population continues to grow, but the rate of growth continues to decline almost everywhere. Recurrent Demographic and Health Surveys (DHS) have found that the ideal number of children desired is declining worldwide. Globally, attitudes toward family planning and contraception are very positive, with 67 percent worldwide and large majorities in 38 out of 40 countries agreeing that birth control and

family planning have been a change for the better.<sup>43</sup> Worldwide, these positive attitudes toward family planning are reflected in the behavior of more than 62 percent of married women of reproductive age who are currently using contraception. Within the developing world, the United Nations reports that from 1990 to 2000, contraceptive use among married women in Asia increased from 52 percent to 66 percent, in Latin American and the Caribbean from 57 percent to 69 percent, but in Africa from only 15 percent to 25 percent.<sup>44</sup> Notwithstanding these positive attitudes toward contraception, in 1997, approximately 20 percent to 25 percent of births in the developing world were unwanted, indicating that access to or the use of contraceptives remains limited in some areas.<sup>45</sup>

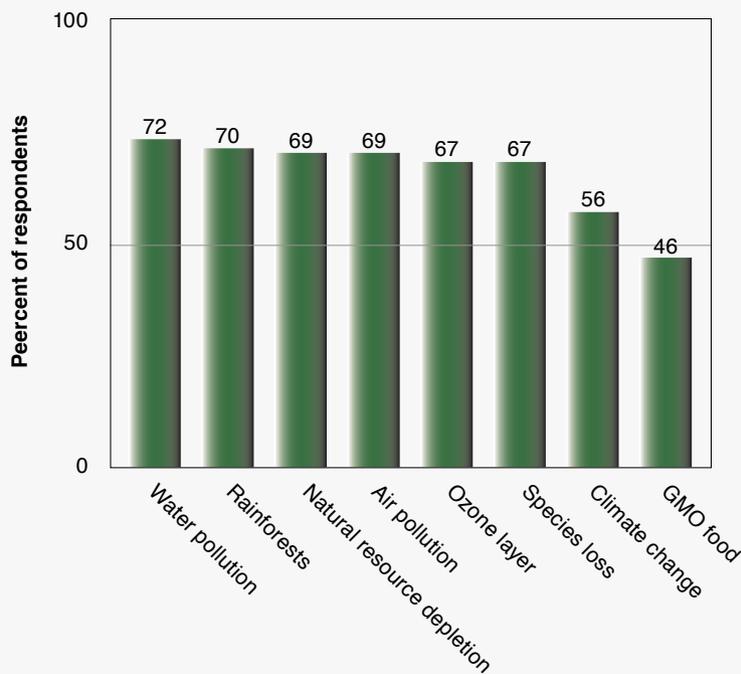
DHS surveys have found that ideal family size remains significantly larger in west-

ern and middle Africa (5.2) than elsewhere in the developing world (2.9).<sup>46</sup> They also found that support for family planning is much lower in sub-Saharan Africa (44 percent) than in the rest of the developing world (74 percent).<sup>47</sup> Consistent with these attitudes, sub-Saharan Africa exhibits lower percentages of married women using birth control as well as lower rates of growth in contraceptive use than the rest of the developing world.<sup>48</sup>

## Affluence, Poverty, and Consumerism

Aggregate affluence and related consumption have risen dramatically worldwide with GDP per capita (purchasing-power parity, constant 1995 international dollars) more than doubling between 1975

**Figure 4. Percent of global public calling environmental issues a “very serious problem”**



SOURCE: A. Leiserowitz, 2005. Data from Environics International (Globe Scan), *Environics International Environmental Monitor Survey Dataset* (Kingston, Canada: Environics International, 2000), <http://jeff-lab.queensu.ca/poadata/info/iem/iemlist.shtml> (accessed 5 October 2004).

and 2002.<sup>49</sup> However, the rising tide has not lifted all boats. Worldwide in 2001, more than 1.1 billion people lived on less than \$1 per day, and 2.7 billion people lived on less than \$2 per day—with little overall change from 1990. However, the World Bank projects these numbers to decline dramatically by 2015—to 622 million living on less than \$1 per day and 1.9 billion living on less than \$2 per day. There are also large regional differences, with sub-Saharan Africa the most notable exception: There, the number of people living on less than \$1 per day rose from an estimated 227 million in 1990 to 313 million in 2001 and is projected to increase to 340 million by 2015.<sup>50</sup>

### Poverty

Poverty reduction is an essential objective of sustainable development.<sup>51</sup> In 1995, 65 percent of respondents worldwide said that more people were living in poverty than had been 10 years prior. Regarding the root causes of poverty, 63 percent blamed unfair treatment by society, while 26 percent blamed the laziness of the poor themselves. Majorities blamed poverty on the laziness and lack of willpower of the poor only in the United States (61 percent), Puerto Rico (72 percent), Japan (57 percent), China (59 percent), Taiwan (69 percent), and the Philippines (63 percent) (see Figure 5 on page 31).<sup>52</sup> Worldwide, 68 percent said their own government was doing too little to help people in poverty within their own country, while only 4 percent said their government was doing too much. At the national level, only in the United States (33 percent) and the Philippines (21 percent) did significant proportions say their own government was doing too much to help people in poverty.<sup>53</sup>

### Consumerism

Different surveys paint a complicated and contradictory picture of attitudes toward consumption. On the one hand, majorities around the world agree that,

at the societal level, material and status-related consumption are threats to human cultures and the environment. Worldwide, 54 percent thought “less emphasis on money and material possessions” would be a good thing, while only 21 percent thought this would be a bad thing.<sup>54</sup> Further, large majorities agreed that gaining more time for leisure activities or family life is their biggest goal in life.<sup>55</sup>

More broadly, in 2002 a global study sponsored by the Pew Research Center for the People & the Press found that 45 percent worldwide saw consumerism and

On the other hand, 65 percent of respondents said that spending money on themselves and their families represents one of life’s greatest pleasures. Respondents from low-GDP countries were much more likely to agree (74 percent) than those from high-GDP countries (58 percent), which reflects differences in material needs (see Figure 6 on page 34).<sup>58</sup>

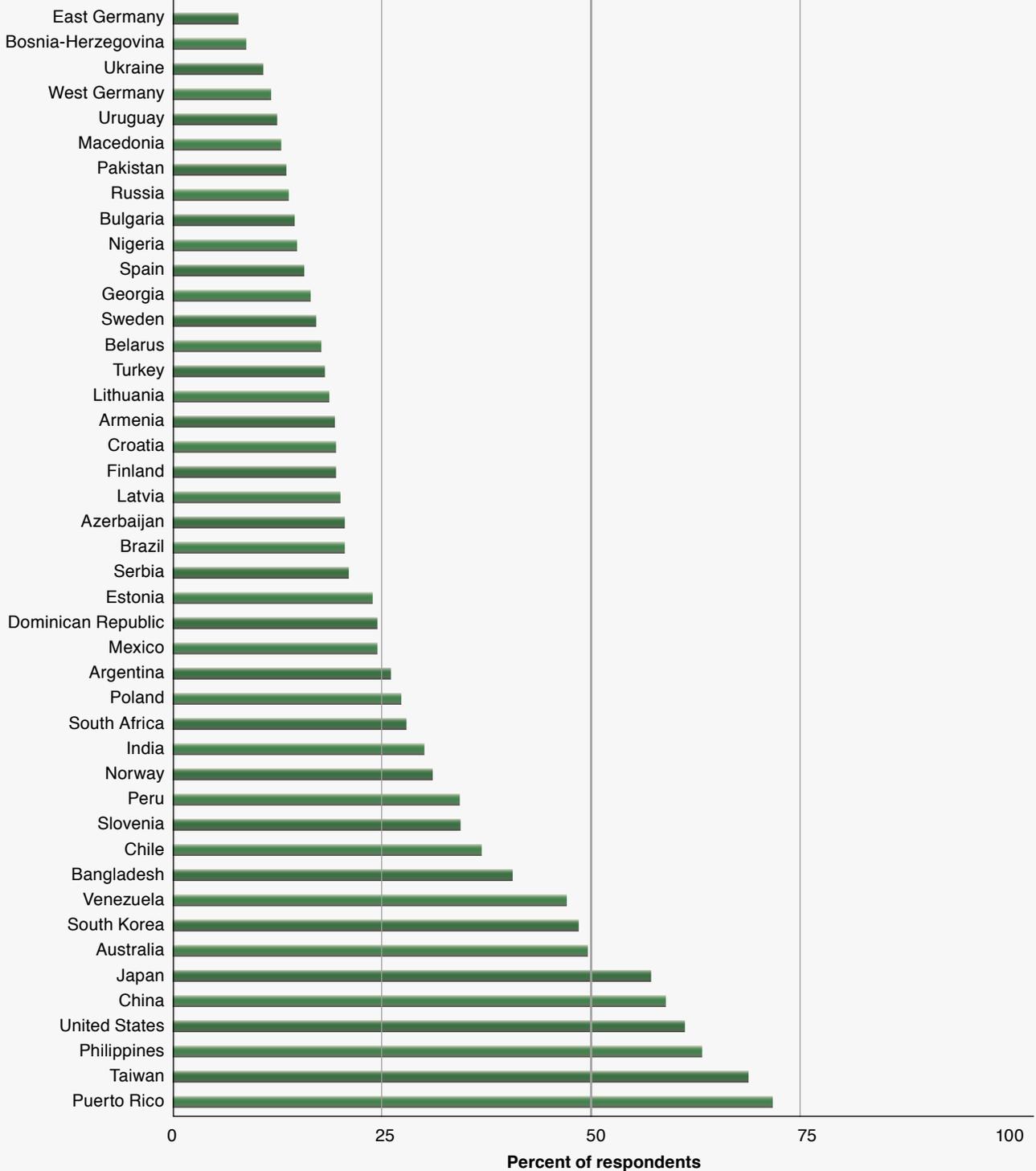
Likewise, there may be large regional differences in attitudes toward status consumerism. Large majorities of Europeans and North Americans disagreed (78 percent and 76 percent respectively) that



commercialism as a threat to their own culture. Interestingly, more respondents from high-income and upper middle-income countries (approximately 51 percent) perceived consumerism as a threat than low-middle- and low-income countries (approximately 43 percent).<sup>56</sup> Unfortunately, the Pew study did not ask respondents whether they believed consumerism and commercialism were a threat to the environment. In 1992, however, 41 percent said that consumption of the world’s resources by industrialized countries contributed “a great deal” to environmental problems in developing countries.<sup>57</sup>

other people’s admiration for one’s possessions is important, while 54 to 59 percent of Latin American, Asian, and Eurasian respondents, and only 19 percent of Africans (Nigeria only), disagreed.<sup>59</sup> There are strong cultural norms against appearing materialistic in many Western societies, despite the high levels of material consumption in these countries relative to the rest of the world. At the same time, status or conspicuous consumption has long been posited as a significant driving force in at least some consumer behavior, especially in affluent societies.<sup>60</sup> While these studies are a useful start, much more research

**Figure 5. Percent blaming poverty on the laziness and lack of willpower of the poor**



SOURCE: A. Leiserowitz, 2005. Data from R. Inglehart, et al., *World Values Surveys and European Values Surveys, 1981–1984, 1990–1993, and 1995–1997* [computer file], Inter-university Consortium for Political and Social Research (ICPSR) version (Ann Arbor, MI: Institute for Social Research [producer], 2000; Ann Arbor, MI: ICPSR [distributor], 2000).

is needed to unpack and explain the roles of values and attitudes in material consumption in different socioeconomic circumstances.

## Science and Technology

Successful deployment of new and more efficient technologies is an important component of most sustainability strategies, even though it is often difficult to assess all the environmental, social, and public health consequences of these technologies in advance. Overall, the global public has very positive attitudes toward science and technology. The 1995 World Values Survey asked respondents, “In the long run, do you think the scientific advances we are making will help or harm mankind?” Worldwide, 56 percent of respondents thought science will help mankind, while 26 percent thought it will harm mankind. Further, 67 percent said an increased emphasis on technological development would be a good thing, while only 9 percent said it would be bad.<sup>61</sup> Likewise, in 2002, GlobeScan found large majorities worldwide believed that the benefits of modern technology outweigh the risks.<sup>62</sup> The support for technology, however, was significantly higher in countries with low GDPs (69 percent) than in high-GDP countries (56 percent), indicating more skepticism among people in technologically advanced societies. Further, this survey found dramatic differences in technological optimism between richer and poorer countries. Asked whether “new technologies will resolve most of our environmental challenges, requiring only minor changes in human thinking and individual behavior,” 62 percent of respondents from low-GDP countries agreed, while 55 percent from high-GDP countries disagreed (see Figure 7 on page 35).

But what about specific technologies with sustainability implications? Do these also enjoy strong public support? What follows is a summary of global-scale data on attitudes toward renewable energy,

nuclear power, the agricultural use of chemical pesticides, and biotechnology.

Europeans strongly preferred several renewable energy technologies (solar, wind, and biomass) over all other energy sources, including solid fuels (such as coal and peat), oil, natural gas, nuclear fission, nuclear fusion, and hydroelectric power. Also, Europeans believed that by the year 2050, these energy sources will be best for the environment (67 percent), be the least expensive (40 percent), and will provide the greatest amount of useful energy (27 percent).<sup>63</sup> Further, 37 percent of Europeans and approximately 33 percent of respondents in 16 developed and developing countries were willing to pay 10 percent more for electricity derived from renewable energy sources.<sup>64</sup>

Nuclear power, however, remains highly stigmatized throughout much of the developed world.<sup>65</sup> Among respondents from 18 countries (mostly developed), 62 percent considered nuclear power stations “very dangerous” to “extremely dangerous” for the environment.<sup>66</sup> Whatever its merits or demerits as an alternative energy source, public attitudes about nuclear power continue to constrain its political feasibility.

Regarding the use of chemical pesticides on food crops, a majority of people in poorer countries believed that the benefits are greater than the risks (54 percent), while respondents in high-GDP countries were more suspicious, with only 32 percent believing the benefits outweigh the risks.<sup>67</sup> Since 1998, however, support for the use of agricultural chemicals has dropped worldwide. Further, chemical pesticides are now one of the top food-related concerns expressed by respondents around the world.<sup>68</sup>

Additionally, the use of biotechnology in agriculture remains controversial worldwide, and views on the issue are divided between rich and poor countries. Across the G7 countries, 70 percent of respondents were opposed to scientifically altered fruits and vegetables because of health and environmental concerns,<sup>69</sup>

while 62 percent of Europeans and 45 percent of Americans opposed the use of biotechnology in agriculture.<sup>70</sup> While majorities in poorer countries (65 percent) believed the benefits of using biotechnology on food crops are greater than the risks, majorities in high-GDP countries (51 percent) believed the risks outweigh the benefits.<sup>71</sup>

More broadly, public understanding of biotechnology is still limited, and slight variations in question wordings or framings can have significant impacts on support or opposition. For example, 56 percent worldwide thought that biotechnology will be good for society in the long term, yet 57 percent also agreed that “any attempt to modify the genes of plants or animals is ethically and morally wrong.”<sup>72</sup> Particular applications of biotechnology also garnered widely different degrees of support. While 78 percent worldwide favored the use of biotechnology to develop new medicines, only 34 percent supported its use in the development of genetically modified food. Yet, when asked whether they supported the use of biotechnology to produce more nutritious crops, 61 percent agreed.<sup>73</sup>

## Income Equity and Entitlements

Equity and entitlements strongly determine the degree to which rising population and affluence affect human development, particularly for the poor. For example, as global population and affluence have grown, income inequality between rich and poor countries has also increased over time, with the notable exceptions of East and Southeast Asia—where incomes are on the rise on a par with (or even faster than) the wealthier nations of the world.<sup>74</sup> Inequality within countries has also grown in many rich and poor countries. Similarly, access to entitlements—the bundle of income, natural resources, familial and social connections, and societal assistance that are key determinants of hunger and poverty<sup>75</sup>—has recently declined with the

emergence of market-oriented economies in Eastern and Central Europe, Russia, and China; the rising costs of entitlement programs in the industrialized countries, including access to and quality of health care, education, housing, and employment; and structural adjustment programs in developing countries that were recommended by the International Monetary Fund. Critically, it appears there is no comparative data on global attitudes toward specific entitlements; however, there is much concern that living conditions for the elderly, unemployed, and the sick and injured are deteriorating, as cited above in the discussion on human development.

In 2002, large majorities said that the gap between rich and poor in their country had gotten wider over the previous 5 years. This was true across geographic regions and levels of economic development, with majorities ranging from 66 percent in Asia, 72 percent in North America, and 88 percent in Eastern Europe (excluding Ukraine) stating that the gap had gotten worse.<sup>76</sup> Nonetheless, 48 percent of respondents from 13 countries preferred a “competitive society, where wealth is distributed according to one’s achievement,” while 34 percent preferred an “egalitarian society, where the gap between rich and poor is small, regardless of achievement” (see Figure 8 on page 35).<sup>77</sup>

More broadly, 47 percent of respondents from 72 countries preferred “larger income differences as incentives for individual effort,” while 33 percent preferred that “incomes should be made more equal.”<sup>78</sup> These results suggest that despite public perceptions of growing economic inequality, many accept it as an important incentive in a more individualistic and competitive economic system. These global results, however, are limited to just a few variables and gloss over many countries that strongly prefer more egalitarian distributions of wealth (such as India). Much more research is needed to understand how important the principles of income equality and equal eco-

nomic opportunity are considered globally, either as global goals or as means to achieve other sustainability goals.

### Does the Global Public Support Sustainable Development?

Surprisingly, the question of public support for sustainable development has never been asked directly, at least not globally. (The box on page 36 details research limits and needs.) But two important themes emerge from the multinational data and analysis above. First, in general, the global public supports the main tenets of sustainable development. Second, however, there are many contra-

They express attitudes and have taken modest actions consonant with support for sustainable development, including support for environmental protection; economic growth; smaller populations; reduced poverty; improved technology; and care and concern for the poor, the marginal, the young, and the aged.

• *Amid the positive attitudes, however, are many contradictions.* Worldwide, all the components of the Human Development Index—life expectancy, adult literacy, and per capita income—have dramatically improved since World War II.<sup>79</sup> Despite the remarkable increases in human well-being, however, there appears to be a globally pervasive sense that human well-being has more recently



*This sign announces a new development in Beijing’s Central Business District. Significant majorities in such key nations as China, Japan, and the United States lay the blame for poverty on laziness and lack of willpower among the poor.*

dictions, including critical gaps between what people say and do—both as individuals and in aggregate. From these themes emerge a third finding: Diverse barriers stand between sustainability attitudes and action.

• *Large majorities worldwide appear to support environmental protection and economic and human development—the three pillars of sustainable development.*

been deteriorating. Meanwhile, levels of development assistance are consistently overestimated by lay publics, and the use of such aid is misunderstood, albeit strongly supported. Overall, there are very positive attitudes toward science and technology, but the most technologically sophisticated peoples are also the most pessimistic about the ability of technology to solve global problems.

Likewise, attitudes toward biotechnology vary widely, depending on how the question is asked.

Further, there are serious gaps between what people believe and what people do, both as individuals and as polities. Worldwide, the public strongly supports

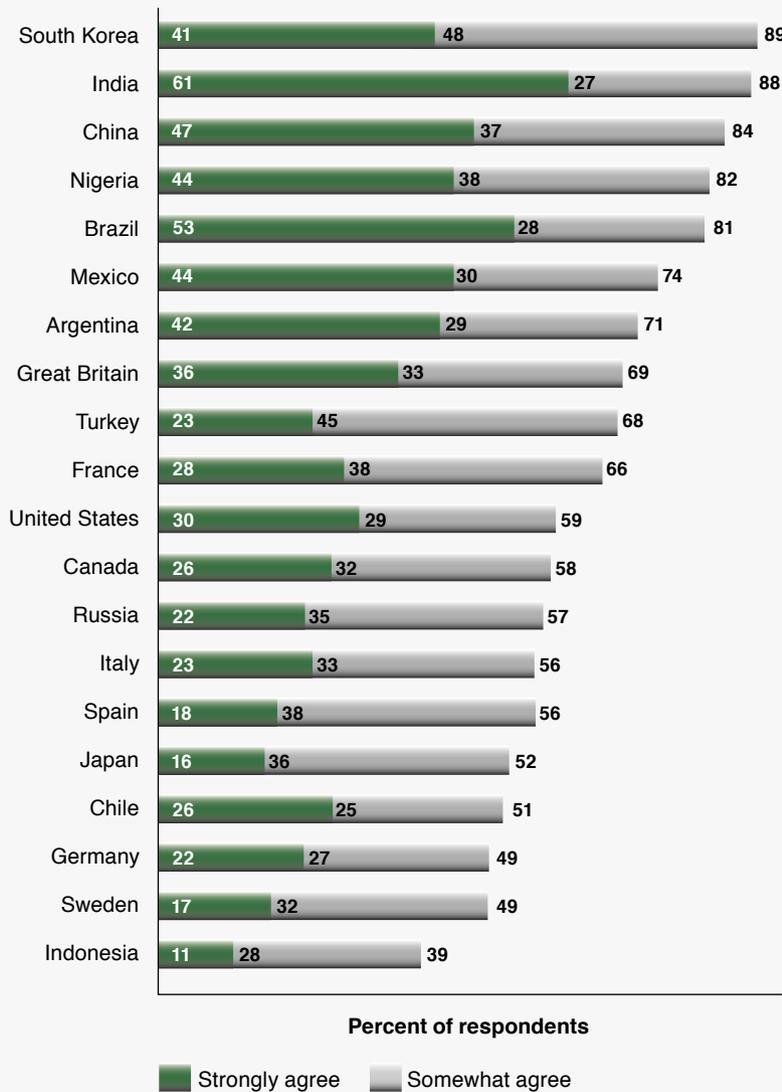
significantly larger levels of development assistance for poor countries, but national governments have yet to translate these attitudes into proportional action. Most people value the environment—for anthropocentric as well as ecocentric reasons—yet many ecological

systems around the world continue to degrade, fragment, and lose resilience. Most favor smaller families, family planning, and contraception, but one-fifth to one-quarter of children born are not desired. Majorities are concerned with poverty and think more should be done to alleviate it, but important regions of the world think the poor themselves are to blame, and a majority worldwide accepts large gaps between rich and poor. Most people think that less emphasis on material possessions would be a good thing and that more time for leisure and family should be primary goals, but spending money often provides one of life's greatest pleasures. While many would pay more for fuel-efficient cars, fuel economy has either stagnated or even declined in many countries. Despite widespread public support for renewable energy, it still accounts for only a tiny proportion of global energy production.

• *There are diverse barriers standing between pro-sustainability attitudes and individual and collective behaviors.*<sup>80</sup> These include at least three types of barriers. First are the direction, strength, and priority of particular attitudes. Some sustainability attitudes may be widespread but not strongly or consistently enough relative to other, contradictory attitudes. A second type of barrier between attitudes and behavior relates to individual capabilities. Individuals often lack the time, money, access, literacy, knowledge, skills, power, or perceived efficacy to translate attitudes into action. Finally, a third type of barrier is structural and includes laws; regulations; perverse subsidies; infrastructure; available technology; social norms and expectations; and the broader social, economic, and political context (such as the price of oil, interest rates, special interest groups, and the election cycle).

Thus, each particular sustainability behavior may confront a unique set of barriers between attitudes and behaviors. Further, even the same behavior (such as contraceptive use) may confront different barriers across society, space, and scale—

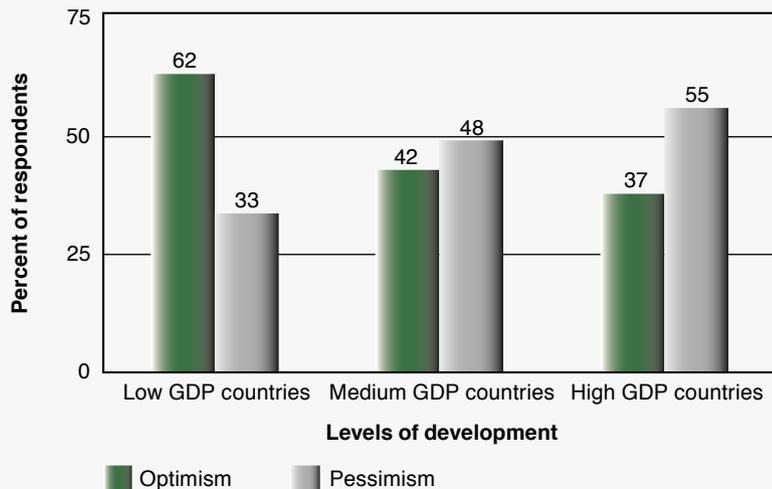
**Figure 6. Purchasing for self and family gives greatest pleasure (“strongly” and “somewhat” agree)**



NOTE: The question was, “To spend money, to buy something new for myself or my family, is one of the greatest pleasures in my life.”

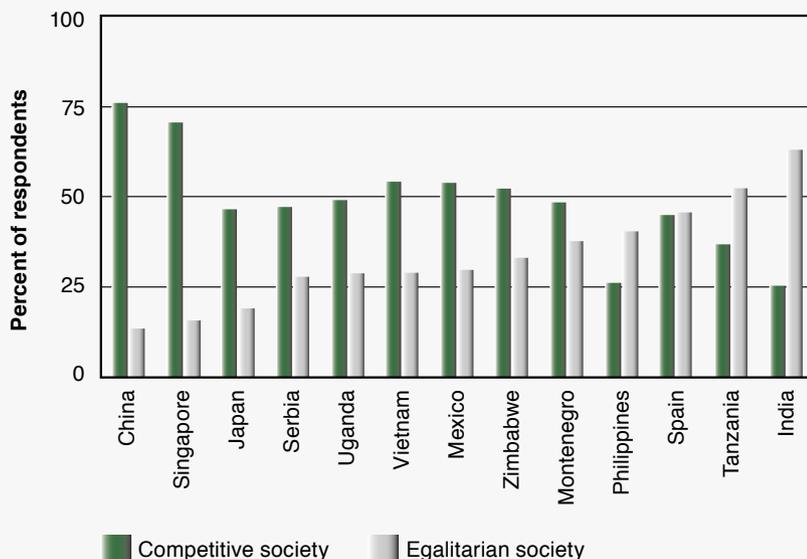
SOURCE: Environics International (GlobeScan), *Consumerism: A Special Report* (Toronto: Environics International, 2002), 6.

**Figure 7. Technological optimism regarding environmental problems**



SOURCE: A. Leiserowitz, 2005. Data from Environics International (GlobeScan), *International Environmental Monitor* (Toronto: Environics International, 2002), 135.

**Figure 8. Multinational preferences for a competitive versus egalitarian society**



SOURCE: A. Leiserowitz, 2005. Data from World Values Survey, *The 1999–2002 Values Surveys Integrated Data File 1.0*, CD-ROM in R. Inglehart, M. Basanez, J. Diez-Medrano, L. Halman, and R. Luijckx, eds., *Human Beliefs and Values: A Cross-Cultural Sourcebook Based on the 1999–2002 Values Surveys*, first edition (Mexico City: Siglo XXI, 2004).

with different attitudes or individual and structural barriers operating in developed versus developing countries, in secular versus religious societies, or at different levels of decisionmaking (for example, individuals versus legislatures). Explaining unsustainable behavior is therefore “dauntingly complex, both in its variety and in the causal influences on it.”<sup>81</sup> Yet bridging the gaps between what people believe and what people do will be an essential part of the transition to sustainability.

### Promoting Sustainable Behavior

Our limited knowledge about global sustainability values, attitudes, and behaviors does suggest, however, that there are short and long-term strategies to promote sustainable behavior. We know that socially pervasive values and attitudes are often highly resistant to change. Thus, in the short term, leveraging the values and attitudes already dominant in particular cultures may be more practical than asking people to adopt new value orientations.<sup>82</sup> For example, economic values clearly influence and motivate many human behaviors, especially in the market and cash economies of the developed countries. Incorporating environmental and social “externalities” into prices or accounting for the monetary value of ecosystem services can thus encourage both individual and collective sustainable behavior.<sup>83</sup> Likewise, anthropocentric concerns about the impacts of environmental degradation and exploitative labor conditions on human health and social well-being remain strong motivators for action in both the developed and developing worlds.<sup>84</sup> Additionally, religious values are vital sources of meaning, motivation, and direction for much of the world, and many religions are actively re-evaluating and reinterpreting their traditions in support of sustainability.<sup>85</sup>

In the long term, however, more fundamental changes may be required, such

as extending and accelerating the shift from materialist to post-materialist values, from anthropocentric to ecological worldviews, and a redefinition of “the good life.”<sup>86</sup> These long term changes may be driven in part by impersonal forces, like changing economics (globalization) or technologies (for example, mass media and computer networks) or by broadly based social movements, like those that continue to challenge social attitudes about racism, environmental degradation, and human rights. Finally, sustainability science will play a critical role, at multiple scales and using multiple methodologies, as it works to identify and explain the key relationships between

sustainability values, attitudes, and behaviors—and to apply this knowledge in support of sustainable development.

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## RESEARCH LIMITS AND NEEDS

*Most advocates of sustainable development recognize that for it to be realized would require changes in human values, attitudes, and behaviours. . . . Despite the importance of such value changes, however, relatively little is known about the long-term global trends in values, attitudes, and behaviours that will both help or hinder a sustainability transition.<sup>1</sup>*

Currently there are relatively few global-scale survey datasets. Each survey listed in Table 1 measured a different part of the “sustainability elephant,” and none had sustainable development as their primary research focus. Likewise, many of these studies were not theory-driven and therefore aimed merely to describe, not explain, global trends in values, attitudes, and behaviors. Some of this data is proprietary, and each survey sampled a different set of countries, making it difficult to do comparative analysis. Further, few efforts, with the exception of the World Values Survey and the GlobeScan Monitor surveys, have measured trends over time. Finally, a review of these surveys found that in most cases, only limited data about sustainable development were available and in many other cases, there were no data at all.

Thus, there is a great need for collaborative research to identify, measure, and explain trends and changes in global sustainability values, attitudes, and behaviors over time. This research should integrate survey, ethnographic, historical, and experimental methods leading to global-scale surveys repeated at regular intervals and local-scale, intensive studies to identify and overcome critical barriers to sustainable behavior. These collaborations should involve the active participation and training of scientists and local experts from developing as well as developed countries. A useful initial step would be sponsorship of an international workshop to draw the methodological lessons learned from past global-scale studies (for example, the World Values Survey, the Pew Global Attitudes Survey, GlobeScan, and Demographic and Health Surveys), identify key research questions, and develop collaborative research efforts.

1. A. L. Mabogunje, *Framing the Fundamental Issues of Sustainable Development*. Center for International Development at Harvard University (CID) Working Paper No. 104 (Cambridge, MA: Sustainable Development Program, CID, 2004), [http://www.start.org/links/cap\\_build/advanced\\_institutes/institute3/p3\\_documents\\_folder/Mabogunje.doc](http://www.start.org/links/cap_build/advanced_institutes/institute3/p3_documents_folder/Mabogunje.doc) (accessed 5 October 2004).

## NOTES

1. For example, see U. S. National Research Council, Policy Division, Board on Sustainable Development, *Our Common Journey: A Transition toward Sustainability* (Washington, DC: National Academy Press, 1999); and P. Raskin et al., *Great Transition: The Promise and Lure of the Times Ahead* (Boston: Stockholm Environment Institute, 2002).

2. R. W. Kates, T. M. Parris, and A. Leiserowitz, “What Is Sustainable Development? Goals, Indicators, Values, and Practice,” *Environment*, April 2005, 8–21.

3. For simplicity, the words “global” and “worldwide” are used throughout this article to refer to survey results. Please note, however, that there has never been a truly representative global survey with either representative samples from every country in the world or in which all human beings worldwide had an equal probability of being selected. Additionally, some developing country results are taken from predominantly urban samples and are thus not fully representative.

4. For more detail about these surveys and the countries sampled, see Appendix A in A. Leiserowitz, R. W. Kates, and T. M. Parris, *Sustainability Values, Attitudes and Behaviors: A Review of Multi-national and Global Trends* (No. CID Working Paper No. 113) (Cambridge, MA: Science, Environment and Development Group, Center for International Development, Harvard University, 2004), <http://www.cid.harvard.edu/cidwp/113.htm>.

5. Pew Research Center for the People & the Press, *Views of a Changing World* (Washington, DC: The Pew Research Center for the People & the Press, 2003), T72.

6. See R. Inglehart, “Globalization and Postmodern Values,” *Washington Quarterly* 23, no. 1 (1999): 215–28.

7. Leiserowitz, Kates, and Parris, note 4 above, page 8.

8. Pew Research Center for the People & the Press, *The Pew Global Attitudes Project Dataset* (Washington, DC: The Pew Research Center for the People & the Press, 2004).

9. Gross national income (GNI) is “[t]he total market value of goods and services produced during a given period by labor and capital supplied by residents of a country, regardless of where the labor and capital are located. [GNI] differs from GDP primarily by including the capital income that residents earn from investments abroad and excluding the capital income that nonresidents earn from domestic investment.” Official development assistance (ODA) is defined as “[t]hose flows to developing countries and multilateral institutions provided by official agencies, including state and local governments, or by their executive agencies, each transaction of which meets the following tests: (a) it is administered with the promotion of the economic development and welfare of developing countries as its main objective; and (b) it is concessional in character and conveys a grant element of at least 25 per cent.” UN Millennium Project, *The 0.7% Target: An In-Depth Look*, <http://www.unmillenniumproject.org/involved/action07.htm> (accessed 24 August 2005). Official development assistance (ODA) does not include aid flows from private voluntary organizations (such as churches, universities, or foundations). For example, it is estimated that in 2000, the United States provided more than \$4 billion in private grants for development assistance, versus nearly \$10 billion in ODA. U.S. Agency for International Development (USAID), *Foreign Aid in the National Interest* (Washington, DC, 2002), 134.

10. Organisation for Economic Co-operation and Development (OECD), *Official Development Assistance*

*Increases Further—But 2006 Targets Still a Challenge* (Paris: OECD, 2005), [http://www.oecd.org/document/3/0,2340,en\\_2649\\_34447\\_34700611\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/document/3/0,2340,en_2649_34447_34700611_1_1_1_1,00.html) (accessed 30 July 2005).

11. Environics International (GlobeScan), *The World Economic Forum Poll: Global Public Opinion on Globalization* (Toronto: Environics International, 2002), [http://www.globescan.com/brochures/WEF\\_Poll\\_Brief.pdf](http://www.globescan.com/brochures/WEF_Poll_Brief.pdf) (accessed 5 October 2004), 3. Note that Environics International changed its name to GlobeScan Incorporated in November 2003.

12. OECD, *Public Opinion and the Fight Against Poverty* (Paris: OECD Development Centre, 2003), 17.

13. *Ibid.*, page 19.

14. Program on International Policy Attitudes (PIPA), *Americans on Foreign Aid and World Hunger: A Study of U.S. Public Attitudes* (Washington, DC: PIPA, 2001), <http://www.pipa.org/OnlineReports/BFW> (accessed 17 November 2004); and OECD, note 12 above, page 22.

15. See OECD Development Co-operation Directorate, *OECD-DAC Secretariat Simulation of DAC Members' Net ODA Volumes in 2006 and 2010*, <http://www.oecd.org/dataoecd/57/30/35320618.pdf>; and Central Intelligence Agency, *The World Factbook*, <http://www.cia.gov/cia/publications/factbook/>.

16. OECD, note 12 above, page 20.

17. I. Smillie and H. Helmich, eds., *Stakeholders: Government-NGO Partnerships for International Development* (London: Earthscan, 1999).

18. L. White Jr., "The Historical Roots of Our Ecologic Crisis," *Science*, 10 March 1967, 1203–07.

19. See C. Merchant, *The Death of Nature: Women, Ecology, and the Scientific Revolution* (1st ed.) (San Francisco: Harper & Row 1980); C. Merchant, *Radical Ecology: The Search for a Livable World* (New York: Routledge, 1992); and G. Sessions, *Deep Ecology for the Twenty-First Century* (1st ed.) (New York: Shambhala Press 1995).

20. World Values Survey, *The 1999–2002 Values Surveys Integrated Data File 1.0*, CD-ROM in R. Inglehart, M. Basanez, J. Diez-Medrano, L. Halman, and R. Luijckx, eds., *Human Beliefs and Values: A Cross-Cultural Sourcebook Based on the 1999–2002 Values Surveys*, first edition (Mexico City: Siglo XXI, 2004).

21. These results come from a representative national survey of American climate change risk perceptions, policy preferences, and behaviors and broader environmental and cultural values. From November 2002 to February 2003, 673 adults (18 and older) completed a mail-out, mail-back questionnaire, for a response rate of 55 percent. The results are weighted to bring them in line with actual population proportions. See A. Leiserowitz, "American Risk Perceptions: Is Climate Change Dangerous?" *Risk Analysis*, in press; and A. Leiserowitz, "Climate Change Risk Perception and Policy Preferences: The Role of Affect, Imagery, and Values," *Climatic Change*, in press.

22. These results support the argument that concerns about the environment are not "a luxury affordable only by those who have enough economic security to pursue quality-of-life goals." See R. E. Dunlap, G. H. Gallup Jr., and A. M. Gallup, "Of Global Concern: Results of the Health of the Planet Survey," *Environment*, November 1993, 7–15, 33–39 (quote at 37); R. E. Dunlap, A. G. Mertig, "Global Concern for the Environment: Is Affluence a Prerequisite?" *Journal of Social Issues* 51, no. 4 (1995): 121–37; S. R. Brechin and W. Kempton, "Global Environmentalism: A Challenge to the Postmaterialism Thesis?" *Social Science Quarterly* 75, no. 2 (1994): 245–69.

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*set* (Kingston, Canada: Environics International, 2000), <http://jeff-lab.queensu.ca/poadata/info/iem/iemlist.shtml> (accessed 5 October 2004). These multinational levels of concern and perceived seriousness of environmental problems remained roughly equivalent from 1992 to 2000, averaged across the countries sampled by the 1992 Health of the Planet and the Environics surveys, although some countries saw significant increases in perceived seriousness of environmental problems (India, the Netherlands, the Philippines, and South Korea), while others saw significant decreases (Turkey and Uruguay). See R. E. Dunlap, G. H. Gallup Jr., and A. M. Gallup, *Health of the Planet: Results of a 1992 International Environmental Opinion Survey of Citizens in 24 Nations* (Princeton, NJ: The George H. Gallup International Institute, 1993); and R. E. Dunlap, G. H. Gallup Jr., and A. M. Gallup, "Of Global Concern: Results of the Health of the Planet Survey," *Environment*, November 1993, 7–15, 33–39.

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27. Environics International (GlobeScan), note 23 above.

28. Dunlap, Gallup Jr., and Gallup, *Health of the Planet: Results of a 1992 International Environmental Opinion Survey of Citizens in 24 Nations*, note 23 above.

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32. The European Opinion Research Group, *Eurobarometer: Energy: Issues, Options and Technologies. Science and Society*, EUR 20624 (Brussels: European Commission, 2002), 96–99.

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49. World Bank, *World Development Indicators CD-ROM 2004* [computer file] (Washington, DC: International Bank for Reconstruction and Development (IBRD) [producer], 2004).

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51. For more information on poverty reduction strategies, see T. Banuri, review of *Investing in Development: A Practical Plan to Achieve the Millennium Goals*, by UN Millennium Project, *Environment*, November 2005 (this issue), 37.

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61. Inglehart, note 26 above.

62. Environics International (GlobeScan), note 30 above, page 133.

63. The European Opinion Research Group, note 32 above, page 70.

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65. For example, see J. Flynn, P. Slovic, and H. Kunreuther, *Risk, Media and Stigma: Understanding Public Challenges to Modern Science and Technology* (London: Earthscan, 2001).
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68. Environics International (GlobeScan), note 30 above, page 141.
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79. The human development index (HDI) measures a country's average achievements in three basic aspects of human development: longevity, knowledge, and a decent standard of living. Longevity is measured by life expectancy at birth; knowledge is measured with the adult literacy rate and the combined primary, secondary, and tertiary gross enrollment ratio; and standard of living is measured by gross domestic product per capita (purchase-power parity US\$). The UN Development Programme (UNDP) has used the HDI for its annual reports since 1993. UNDP, *Questions About the Human Development Index (HDI)*, <http://www.undp.org/hdr2003/faq.html#21> (accessed 25 August 2005).
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