

Sustainability Values, Attitudes and Behaviors: A review of multi-national and global trends

Anthony Leiserowitz, Robert Kates, and Tom Parris

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This review analyzes five efforts to define sustainability values, including the U.S. National Academy of Sciences, the Earth Charter, the U.N. Millennium Declaration, and the Global Scenario Group. It then summarizes empirical trends in sustainability values, attitudes and behaviors, as measured by multi-national and global-scale surveys, related to human and economic development, the environment, and driving forces (population, affluence, technology and entitlements). The review also summarizes empirical trends related to the values identified by the Millennium Declaration as essential to international relations (e.g., freedom and democracy, equality and shared responsibility), and broader contextual values (e.g., capitalism, globalization, institutional trust, and social change) that have sustainability implications. It then identifies several important attitude-behavior gaps and barriers. Finally this review draws several conclusions regarding future research needs and the value, attitude and behavioral change needed to achieve sustainability.

Please address all comments, criticisms or inquiries to:

Anthony Leiserowitz
Decision Research
1201 Oak Street, Suite 200
Eugene, OR 97401
(541) 485-2400
ecotone@uoregon.edu

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I. Introduction

Most advocates of sustainable development recognize the need for changes in human values, attitudes and behaviors in order to achieve a sustainability transition that will meet human needs and reduce hunger and poverty, while maintaining the life support systems of the planet (National Research Council, 1999). Values are expressions of, or beliefs in, the worth of objects, qualities, or behaviors. They often invoke strong feelings and are typically expressed in terms of good or bad, better or worse, and desirability or avoidance. Values define or direct us to goals, frame our attitudes, and provide standards against which the behavior of individuals and societies can be judged. Values are also relatively abstract and trans-situational. Attitudes, however, refer to the evaluation of a specific object, quality or behavior as good or bad, positive or negative. Attitudes often derive from and reflect abstract values. Finally, behavior refers to concrete decisions and actions taken by individuals and groups, which are often rooted in underlying values and attitudes. This paper focuses on individual and societal values, attitudes, and behaviors that will either support or discourage a global sustainability transition.

In Part II we begin with a summary of five major efforts to define guiding principles, goals and pathways toward a sustainable future, including two from a recent report on sustainable development by the U.S. National Academy of Sciences, followed by the Earth Charter, the United Nations Millennium Declaration, and finally the efforts of the Global Scenario Group to describe a “Great Transition” to global sustainability. In Part III we review empirical trends in international attitudes and behavior specifically related to environment and development, their nexus in sustainable development, and their driving forces of population, affluence/poverty/consumption, technology, and equity/entitlements. In Part IV, we examine empirical trends in important contextual values within which a sustainability transition will occur, including those stipulated by the UN Millennium Declaration and broader ones, such as capitalism, globalization, institutional trust, and social change.

In Part V of the review, we examine several gaps between professed attitudes and behaviors and summarize what is currently known about why such gaps persist, including individual and social obstacles and barriers to action. Finally, in Part VI we draw several conclusions regarding future research needs, values that support a sustainability transition, changes that are needed, and how to use our current understanding of values, attitudes, and behavior to support a sustainability transition.

II. Declared Values for Sustainable Development: 5 Efforts

What values are needed for a sustainable development transition? Here we draw upon five major efforts to define guiding principles, goals and pathways toward a sustainable future, including two from a recent report on sustainable development by the U.S. National Academy of Sciences, followed by the Earth Charter, the United Nations Millennium Declaration, and finally the efforts of the Global Scenario Group to describe a “Great Transition” to global sustainability.

1. HISTORICAL CHRONOLOGY

The National Academy of Sciences study identified four key values that emerged in the collective aspirations of the world's peoples following World War II: peace, freedom, development, and environment. In the post-war world of 1945, peace was thought to be secured, but was immediately threatened by the nuclear arms race. Throughout the cold war, peace was sustained globally, but fought locally, often by proxies for the superpowers. While the number of wars has diminished (Marshall and Gurr, 2003), peace is still sought, primarily in Africa and the Middle East. Freedom also emerged early in the post-war world in the struggle to end imperialism, to end totalitarian oppression, and later to extend human rights and the rights of women, indigenous peoples, and minorities. The success in attaining national independence was followed by a focus on economic development to provide basic necessities for the poorest two-thirds of the world and higher standards of living for the wealthy third. Finally, after a quarter century, a global value for nature and the environment emerged.

While reinterpreted over time, the values of peace, freedom, development, and environment remain prominent issues and aspirations as efforts are made to link them together. Internationally, world commissions (Brandt, Palme, Brundtland), major documents, and global conferences continue to make a moral and pragmatic case for such linked valuation. Sustainable development, with its dual emphasis on environment and development is the most recent of such efforts and its intermediate values are widely defined by variants of three "foundations," or "pillars," such as "ecology, economy, and equity" or "environmental protection, economic growth and social progress." There are also specific values for sustainable development that range from dozens to over a hundred as declared in the many efforts of representative groups to create global, national, regional, and local indicators of sustainable development. (Parris and Kates, 2003).

2. A TAXONOMY OF SUSTAINABLE DEVELOPMENT GOALS

Values that affect or reflect sustainable development are often described as goals to be attained. But these values and goals are as diverse as the differing definitions and perspectives of sustainable development. Indeed, some consider sustainable development an oxymoron that seeks to finesse the real conflicts between economy and environment and between the present and the future. To clarify these definitional ambiguities associated with sustainable development, the U.S. National Academy of Sciences review began with what seemed an inherent distinction between what advocates and analysts sought to sustain and what they sought to develop. Thus under the heading "what is to be sustained," they identified three major categories of objects to be valued: *nature*, *life support systems*, and *community* as well as a set of intermediate values for each (Table 1).

Table 1: Taxonomy of Sustainable Development Goals

What is to be sustained:	What is to be developed:
<i>Nature</i> Earth Biodiversity Ecosystems	People Child Survival Life Expectancy Education Equity Equal Opportunity
Life Support Ecosystem Services Resources Environment	Economy Wealth Productive Sectors Consumption
Community Cultures Groups Places	<i>Society</i> Institutions Social Capital States Regions

Drawing from the literature, the most common value to be sustained were life support systems, which defined nature or environment as a source of services for the utilitarian life support of humankind. The study of ecosystem services has strengthened this definition over time. In contrast, some of the literature valued nature for its intrinsic value rather than its utility for human beings. There were also parallel demands to sustain cultural diversity, including livelihoods, groups, and places that constitute distinctive and threatened communities. Similarly, there were three quite distinct values of what should be developed: *people*, *economy*, and *society*. Much of the early literature focused on economic development, with productive sectors providing employment, desired consumption and wealth. More recently, attention has shifted to human development, including an emphasis on values and goals such as increased life expectancy, education, equity and opportunity. Finally, there were also calls to develop society, emphasizing the values of the and security and well-being of national states, regions and institutions, and the social capital of relationships and community ties.

3. THE EARTH CHARTER

An important movement is the Earth Charter Initiative that declares a set of “fundamental principles for building a just, sustainable, and peaceful global society in the 21st century.” The Earth Charter originated in the call of the World Commission on Environment and Development (1987) for creation of "a universal declaration" that would "consolidate and extend relevant legal principles" creating "new norms...needed to maintain livelihoods and life on our shared planet" and "to guide state behavior in the transition to sustainable development." In 1994, the Earth Charter Initiative was launched and involved “the most open and participatory consultation process ever conducted in connection with an international document. Thousands of individuals

and hundreds of organizations from all regions of the world, different cultures, and diverse sectors of society...participated” (Earth Charter Initiative Handbook, 2004:4). Released in the year 2000, the Earth Charter has been endorsed by over 13,000 individuals and organizations representing millions of members, yet has thus far failed to attain its desired endorsement or adoption by the recent World Summit on Sustainable Development (2002) or the United Nations General Assembly.

The values of the Earth Charter are derived from “contemporary science, international law, the wisdom of the world’s great religions and philosophical traditions, the declarations and reports of the seven UN summit conferences held during the 1990s, the global ethics movement, numerous nongovernmental declarations and people’s treaties issued over the past thirty years, and best practices for building sustainable communities.” (Earth Charter Initiative, 2004).¹ These derived values are expressed in the Earth Charter as principles and are ordered in three levels of detail with four general-level values: community of life; ecological integrity; social and economic justice; and democracy, nonviolence, and peace. Sixteen intermediate-level principles expand on these, with an additional sixty-one specific-level values.

4. THE MILLENNIUM DECLARATION

To mark the millennium, heads of state gathered in New York at the United Nations in September 2000. There, the General Assembly of the United Nations adopted a set of fundamental general-level values essential to international relations: freedom, equality, solidarity, tolerance, respect for nature, and shared responsibility (see Part IV). To “translate these shared values into actions,” the declaration creates a set of intermediate-level goals related to peace, development, environment, human rights, the vulnerable, hungry, and poor, Africa, and the United Nations. These in turn were elaborated on by a set of sixty specific-level goals, many of which have specific targets, such as cutting poverty in half or insuring universal primary school education by 2015.²

5. THE GREAT TRANSITION SCENARIO

The impetus for this review of sustainable development values is derived from the work of the Global Scenario Group (www.gsg.org). The GSG brought together social scientists and modelers from different regions and backgrounds to construct five archetypal scenarios for the future: *Market Forces*, *Fortress World*, *Policy Reform*, *Eco-communalism*, and *The Great Transition* and to assess how a sustainable development transition would fare in each.

The *Market Forces* scenario projected current conditions and assumed rapid economic growth and globalization, but saw this as a reckless basis for world development. Social polarization,

¹ For example, over 50 international law instruments were surveyed and summarized in Rockefeller, 1996.

² Careful monitoring is under way for 8 goals with 18 targets and 48 indicators to measure progress by experts from the United Nations Secretariat and IMF, OECD and the World Bank (see United Nations, 2004).

economic instability, and environmental degradation could spiral into a general global crisis, leading to an authoritarian response of a *Fortress World* scenario. Indeed many already see a *Fortress World* emerging with gated communities that range from rich enclaves in poor countries to entire immigrant-resistant gated countries.

To counter the risks of a *Market Forces* or *Fortress World* scenario, the *Policy Reform* scenario envisioned comprehensive government programs to achieve an ambitious set of social and environmental goals. But such reformism accepted extreme inequality even as it sought to eradicate poverty. It did not challenge the consumerism of wealthy societies nor offer a compelling alternative vision of the “good life.”

The *Eco-communalism* scenario was rooted in a small-is-beautiful value and emphasized a highly decentralized social and economic organization in local places. The capacity, however, of such a fragmented world to contain tyranny and aggression was questioned. In contrast, the *Great Transition* scenario was global in orientation but shared values with eco-communalism. It sought a world where the quality of human knowledge, creativity and self-realization indicated development, not the quantity of goods and services, while providing material sufficiency for all. It embraced equality, empowerment, and deep respect for the intrinsic values of nature. While global in orientation, it recognized plural paths to modernity, and welcomed regional diversity in expressing such fundamental values as peace, freedom, development and environment.

The *Great Transition* scenario specifically declared value change as a major tool and requirement for attaining a sustainable world in 2050, but never adequately defined or assessed its prevalence or trends.³ Nevertheless, from our close reading of the scenario texts (Raskin *et al.*, 2002), we identify three general-level values: material sufficiency for human needs, a non-material realization of “the good life,” and shared responsibility for both human communities and nature. The first is to provide material sufficiency for human needs, through related intermediate-level values of equity, solidarity and the rejection of the values of material accumulation and consumerism. The second defines “the good life” with non-material measures and opportunities, with intermediate-level values of self-realization, spirit, and culture. The third takes responsibility for the wider community of life and nature and the obligations of future generations with the intermediate-level values of ecological sensibility, accountability, democracy, and participation.

VALUES: A COMPARATIVE ANALYSIS

Looking across the five analyses and documents, what can we conclude about sustainable development values? That these values come in many shapes, sizes, and guises; that they are ordered but not consistently so; and that at times their implications for sustainability are

³ Indeed, this limit has partly inspired this review, as Kates was a collaborative author of the scenarios. More recently, the Great Transition authors have helped foster an initiative (www.gti.org) to actively pursue the scenario both as a vision and as a movement. This initiative also struggles with the specifics of value change.

ambiguous and contradictory. Nonetheless, while participatory processes tend to produce lists of many values, three key value themes of sustainable development have emerged.

Values come in many shapes, sizes, and guises.

While values are important for sustainable development and are mentioned in all of the analyses and documents, surprisingly, little use is specifically made of the term. Only in the Millennium Declaration is there a specific set of declared values, identified as “fundamental values.” In the Earth Charter, values appear as “principles,” and in the other analyses, values need to be inferred from adopted goals, targets, or even indicators. The Great Transition Scenario, which posits value change as intrinsic to its success, has no clear exposition of the values that need to change. Yet this variety seems consistent with our working definition of values as expressions of, or beliefs in, the worth of objects, qualities, or behaviors.

Values are ordered, but not consistently so.

In all the analyses and documents, we have identified at least two levels of values and in several, three levels.⁴ The most explicit ordering is that of the Earth Charter along a spectrum from four general values to sixteen intermediate values to sixty-one specific valued actions or goals. But the large number of specific-level values found in the Earth Charter (61), Millennium Declaration (60), national and local indicator projects (≈40), seem to be products of consensual and participatory processes in which, to obtain consensus, “laundry lists” of values emerge reflecting the diverse interests of a broad set of involved stakeholders (Parris and Kates, 2003).

Greater specificity helps to clarify the meaning of abstract, general-level values, but at the same time it can introduce a tension or conflict between values. For example, in the Earth Charter, eradicating “non-native or genetically modified organisms harmful to native species,” a specific-level value, may at times conflict with the “food security” imperative of a different specific-level principle. As another example, the authors of the *Great Transition Scenario* argue that both individualism (e.g., freedom, self-realization, creativity, and empowerment) and collectivism (e.g., community, solidarity, cohesion, and cooperation) need to be encouraged. Yet rampant individualism can lead to self-gratifying consumerism, while narrowly defined collectivism can at times lead to jingoism and xenophobia, neither of which will advance the Great Transition.

Key value themes

Despite the large number and many shapes, sizes and guises of values, three key sustainable development values have emerged.

⁴ General-level values are sometimes identified as “core” or “fundamental” values, while intermediate and specific-level values are sometimes described as “proximate” to some desired attitude or behavior, as “terminal” when in the form of a valued goal, or “instrumental” when seen as a means to an end goal. But we find no consistent application of either these terms or concepts.

The great value concerns of the 20th century—*peace, freedom, development, and environment*—persist into the 21st. We have color-coded Table 2 (peace [blue], freedom [red], development [orange], environment [green], and other [black]) to illustrate how the great value concerns of the 20th century persist into sustainable development-oriented value discussions. While the central focus is on environment and development, peace and freedom are found both as valued end-states or goals and as instrumental values needed to achieve a sustainability transition. The nature of freedom values have shifted from concerns with colonialism or authoritarianism to human rights, gender and minority rights, and democracy, transparency, and participation, again both as valued end-states or goals and as instrumental values needed to achieve a sustainability transition.

The three pillars of sustainable development—*environment, economy, and equity*—have emerged as the key proximate or terminal goals and targets of a sustainability transition. When the National Academy of Sciences—Board on Sustainable Development first reviewed the complexity of the sustainable development literature, they concluded that: “The primary goals of a transition toward sustainability over the next two generations should be to meet the needs of a much larger stabilizing human population, to sustain the life support systems of the planet, and to substantially reduce hunger and poverty” (National Research Council, 1999:31). They arrived at this synthesis independently, but their choice mirrors the many versions of *environment, economy, and equity*.

However, the Board went on to define these in very specific ways based on existing international agreements, many of which served as the basis for the Millennium Declaration (Parris and Kates 2003). Indeed going beyond the ambiguities of the three pillars: *meeting human needs, reducing hunger and poverty, while preserving the life support systems of the planet* have emerged as major values of sustainable development. They are a major focus of the Millennium Declaration with its many targets that make specific what is to be achieved as well as in the targets of the *Policy Reform* and *Great Transition* scenarios of the Global Scenario Group.

III. Empirical Trends in Sustainability Values, Attitudes and Behaviors

Empirically, sustainability values are expressed through attitudes, actions, and behaviors. Here we review international attitudes and behavior specifically related to development and environment, their nexus in sustainable development and their driving forces of population, affluence/poverty, technology, and entitlements. Surprisingly, we found no data on public attitudes towards “sustainable development” as a holistic concept. As described below, however, we did find a diverse range of empirical data related to many of the subcomponents of sustainable development. In each section that follows, we begin with a brief summary of the current global state of the theme (e.g., the environment), followed by a synthesis of the value, attitudinal and behavioral findings of the few global-scale surveys that have been conducted (see Appendix A).

Development

Human Development

In aggregate, improved well-being has been one of the great success stories of the post World War II human enterprise. Worldwide, all of the components of the Human Development Index has dramatically improved. Life expectancy has been extended by almost 20 years since 1950 and is projected to increase another 8-9 years by 2050. Infant mortality has dropped from 157 deaths per 1,000 births in 1950 to 56 deaths in 2000, and is projected to drop further to between 21 and 25 deaths by 2050 (Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, *World Population Prospects: The 2002 Revision*). Adult literacy has risen from just under 53 percent as recently as 1970 to over 79 percent in 2000 (World Bank, 2004). Finally, gross domestic product per capita (purchasing power parity, constant 1995 international dollars) rose by well over a factor of 2 between 1975 and 2002 (World Bank, 2004).

We found very limited data on public attitudes toward issues of human development. It can be assumed, however, that there is near-universal support for increased child survival rates, adult life expectancies and educational opportunity. Despite the remarkable increases in human well-being since World War II, however, there appears to be a globally pervasive sense that human well-being has more recently been deteriorating. In 2002, the Pew Global Attitudes Project found that strong majorities worldwide said that a variety of conditions had worsened over the previous five years, including the availability of good paying jobs (58%), working conditions (59%), the spread of diseases (66%), the affordability of health care (60%), and the ability of old people to care for themselves in old age (59%) (Pew, 2004).

Likewise, large majorities worldwide were concerned about the living conditions of the elderly (61%) and the sick and disabled (56%), while a plurality was concerned about the living conditions of the unemployed (42%) within their own countries. By contrast, only 25 percent were concerned about the well-being of human kind as a whole (World Values Survey, 2004). These limited results suggest that people are generally much more concerned about well-being in their own countries than for people around the world.

Economic Development

As noted above, economic development, as measure by per capita GDP has more than doubled in the past quarter century and such development is widely viewed as a central priority and an essential component of sustainable development. The desire for economic development is assumed to be a human universal, transcending all cultural and national contexts. Although we were able to find almost no global-scale survey data on public attitudes towards economic development *per se*, this assumption appears to be supported by results from the 2002 Pew Global Attitudes Project, which found that 91 percent of respondents from developing countries, the United States and Germany said that it is very important (75%) or somewhat important (16%) to live in a country where there is economic prosperity (Pew, 2003:T72). 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, we know of no global-scale survey research that has tried to identify

public attitudes or preferences for particular levels or end-states of economic development (e.g., infinite growth vs. steady-state economies) and only limited or tangential data on the ideal distribution of wealth (see the section below on Affluence). On the other hand, some research suggests that there is not a linear relationship between economic development and human happiness. Data from the World Values Survey suggests that economic development does lead to greater human happiness as countries make the transition from subsistence to advanced industrial economies, but above a certain level of GNP per capita (approximately \$14k) the relationship between income level and subjective well-being disappears (Figure 1). This implies that infinite economic growth does not lead to greater human happiness, but this question deserves much more research attention.

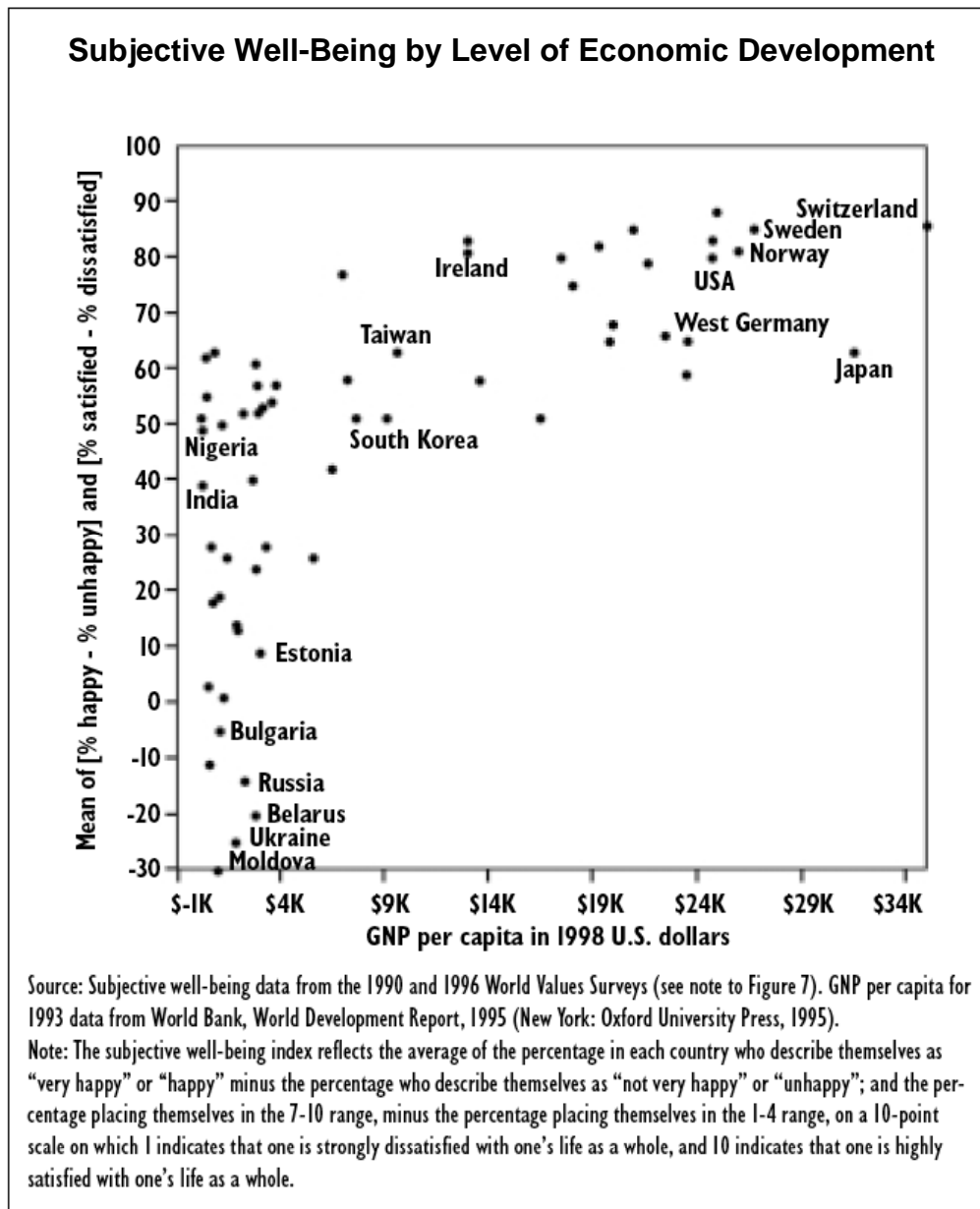


Figure 1 Source: Inglehart, 1999

Development Assistance

Despite the popular focus on development close to home, (see above) there is substantial evidence that there is strong popular support but less official support for development assistance to poor countries. After a dramatic increase in global development aid (official development assistance and official aid) from a total of \$19 billion (1995 US\$) in 1960 to a peak of \$85 billion in 1991, the trend reversed in the 1990s to a low of \$52 billion in 1997. By 2002, however, global development aid had recovered to a level of \$62 billion (World Bank, 2004).

The United Nations has set a target of 0.7 percent Official Development Aid/Gross National Income (ODA/GNI), which, as of 2001, only five countries had achieved (Denmark, Norway, the Netherlands, Luxembourg and Sweden), with all others ranging from a high of .37 percent (Belgium) to a low of .11 percent (the United States). Overall, the average ODA/GNI among the industrialized countries was only .22 percent – far below the UN target (OECD 2004).

In contrast to the lack of government action, over 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 (EnviroNics 2002b:3). Likewise, surveys in the thirteen OECD DAC countries have found that public support for the principle of giving aid to developing countries (81% in 2003) has remained high and stable for over twenty years (OECD 2003:17). Further, 45 percent said that the current (1999-2001) level of government expenditure on foreign aid in their country was too low, while only 10 percent said foreign aid was too high (OECD 2003:19). There is also little evidence that the public in OECD countries demonstrate “aid” or “donor fatigue” - public frustration and cynicism about the efficacy of aid suggested as an explanation for declining levels of official development assistance in the 1990s. 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.

The strong 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 overestimating the percentage of their national budget devoted to development aid. For example, recent polls have found that Americans believe their government spent 18 percent, while Europeans often estimated their governments spent 5 to 10 percent of the national budget on foreign assistance (OECD, 2003:25, 22). Second, development aid is almost always ranked low on lists of national priorities, well below more salient concerns about unemployment, education, health care, etc. Third, “the overwhelming support for foreign aid is based upon the perception that it will be spent on remedying humanitarian crises,” not other development-related issues like Third World debt, trade barriers, increasing inequality between rich and poor countries, or the use of development assistance for geopolitical aims (e.g., U.S. aid to Israel and Egypt). (OECD, 2003:20). Support for development assistance has thus been characterized as “a mile wide, but an inch deep” (Smillie, et al. 1999) – with large majorities supporting aid in principle and increasing budget allocations, but few understanding what development aid encompasses or giving it a high priority.

Overall, there is surprisingly little data available on global attitudes towards economic development, human development or development assistance. Methodologically, many results

are bedeviled by the use of relatively simple questions measuring the desire to live in economically prosperous countries, general levels of concern about life conditions, and abstract public support for development assistance, while providing little detail, context or explicit tradeoffs. The comparability of these findings is also limited by the different measures used in different countries at different times, as well as the sporadic nature of many of these surveys. Research on the role of public attitudes regarding economic and human development would be greatly improved with the establishment of an institutional structure to measure changes in these trends with more sophistication, consistency and regularity.

ENVIRONMENT

The earth system is an integral component of human enterprise. This ever-changing system provides a multitude of valuable services to humankind, including a livable climate, provision of clear air and water, and the production of food and fiber. While the earth system has always changed, the pace of environmental change has dramatically accelerated in the last half century (43), mostly due to the increasing scale of human activity. Flows of materials and energy that are removed from their natural settings or synthesized now rival the flows of such materials within nature itself. Overall estimates of the human modification, management, or appropriation of nature range up to one-half of the terrestrial ecosystems (44) and one-quarter of the freshwater supply (45).

Residents of poor nations are often the most vulnerable to local public health problems such as contaminated water supplies, poor sanitation, and indoor air pollution. As income increases, however, many of these problems are rectified by indoor plumbing and vented cook stoves. Thus, with economic development, the emphasis changes to local air and water pollution and the proper management of toxic substances. The richest countries have made significant progress on these issues. For example, in the United States, average concentrations of nitrogen dioxide, ozone, sulfur dioxide, carbon monoxide, and lead have all declined. Rapidly industrializing countries such as China and South Korea have also been successful in reducing emissions of some pollutants (e.g., SO_x), but emissions of others (e.g., NO_x, non-methane volatile organic compounds) continue to grow rapidly (14, 49–51). While they have been relatively successful in managing local environmental issues, however, rich countries have been the dominant contributors to global climate change, to which the poor are the most vulnerable. Consumer demand in rich countries also accelerates the over-use of nonrenewable and renewable resources. For example, the percentage of worldwide fish stocks exploited beyond maximum sustainable yield has nearly tripled from 10 percent in 1970 to 28 percent in 1999, while 75 percent of all stocks are either over-fished or at capacity (63). Similarly, tropical forests declined at an estimated rate of 12.3–14.2 million hectares per annum from 1990 to 2000 (68).

Compared to other sustainability values and attitudes, there has been somewhat more research attention on global attitudes towards the environment. Most of this research, however, has focused on anthropocentric concerns about environmental quality and natural resource use, with much less focus on ecocentric concerns about the intrinsic value of nature. In 1967, the historian Lynn White, Jr. published a 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 (White, 1967). Subsequent ecocentric, ecofeminist and social ecology theorists have also argued that a domination ethic towards people, women and nature runs deep in Western, patriarchal and capitalist culture (see Sessions, 1995; Merchant, 1980, 1992). In 1978, environmental sociologists Dunlap and Van Liere first developed a battery of survey questions and a scale to measure the hypothesized shift in environmental worldview towards an ecocentric New Environmental Paradigm (NEP). Despite extensive use of the NEP in the United States and a few other individual countries, we know of no effort to test or apply it worldwide. The 2000 World Values Survey, however, found that 76 percent of respondents globally said that human beings should “coexist with nature,” while only 19 percent said they should “master nature.” 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 and the Philippines did more than 40 percent say that human beings should master nature (World Values Survey, 2004). This very limited data suggests that large majorities worldwide reject a domination ethic as the basis of the human-nature relationship, at least at an abstract level.

Environmental Concern

At the most general level, Environics International (2000) found that 83 percent of the global public was concerned about environmental problems. This survey also asked respondents to rate the seriousness of several environmental problems (Figure 2). 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, both local problems like water and air pollution and global problems like ozone depletion and climate change.

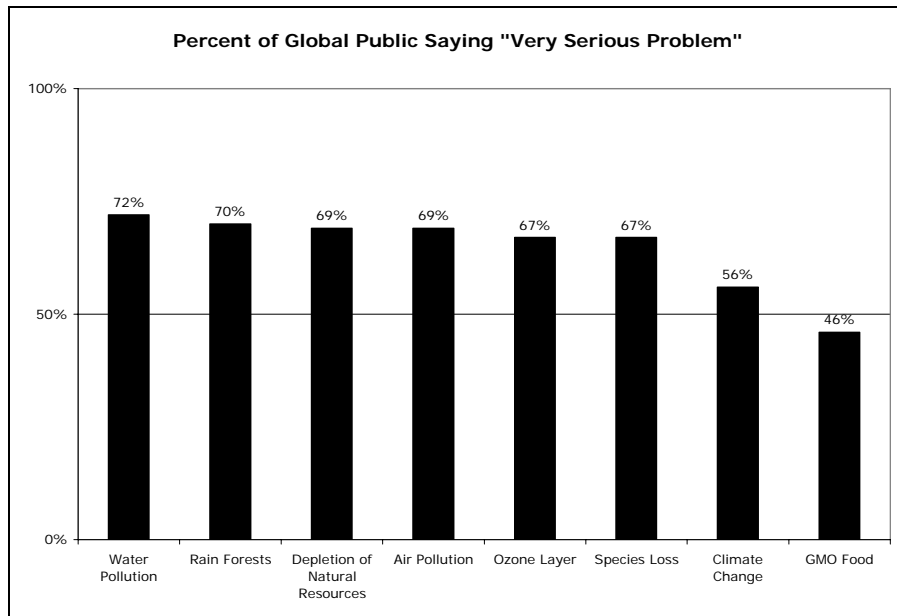


Figure 2

Environmental Protection vs. Economic Growth

To cope with environmental deterioration, all countries engage in some measure of environmental protection, the economic costs of which vary from country to country, but have been growing slowly over time. Within the OECD countries, public and business pollution abatement and control expenditures in the late 1990s ranged from 0.6%-2% of gross domestic product. Countries at the higher end of the scale included the Czech Republic (2%), The Netherlands (1.8%), Korea (1.7%), Austria (1.7%), the United States (1.6%), Japan (1.6%), and Switzerland (1.6%) (OECD Environmental Indicators: Towards Sustainable Development, 2001). Data on such expenditures is generally not available outside the OECD, but many countries, such as China, have adopted environmental protection goals between 1-2 percent of GDP (cite).

In two recent global-scale studies, 52 percent of respondents worldwide agreed that “protecting the environment should be given priority” over “economic growth and creating jobs” (World Values Survey, 2004), while 74 percent of respondents in the G7 countries prioritized environmental protection over economic growth, even if some jobs were lost (Pew, 2002:T-9). Unfortunately this by now standard survey question pits the environment against economic growth as an either-or dilemma. Rarely do these surveys allow respondents to choose an important alternative answer: that environmental protection can generate economic growth and create jobs (e.g., in new energy system development, tourism, manufacturing, etc.).

Attitudes towards Environmental Policies

Worldwide, a large majority (62%) in 1995 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 (Inglehart, 2000). Likewise, there is widespread global support for stronger environmental protection laws and regulations, with 69 percent saying that currently, their national laws and regulations do not go at all far enough (EnviroNics International, 2000). The 1992 Health of the Planet survey found that a very strong majority (78%) favored the idea of their own national government “contributing money to an international agency to work on solving global environmental problems.” However, attitudes towards international agreements were less favorable. Worldwide, 47 percent agreed that “our nation’s environmental problems can be solved without any international agreements,” while 43 percent disagreed, with respondents from low-income countries more likely to strongly agree (23%) than individuals from middle-income (17%) or high-income (12%) countries (Dunlap, 1993). We did not find any global-scale data on public support for particular international agreements to solve global problems (e.g., the Kyoto Protocol).

Environmental Behavior

Consumption is currently one of the primary mediums through which environmental values and attitudes get translated into behavior. As a share of gross domestic product, worldwide household consumption has hovered close to 60% from 1965 through 2002 (World Bank, 2004). However, in the least developed countries, household consumption accounted for 87% of gross domestic product in 1982 and fell steadily to 81% in 2002. Thus, gross household consumption roughly

mirrors affluence. It is an open question as to whether consumption can shift to less energy and material intensive products, a process known as “dematerialization” (Wernick, 1996). While intensities of use are indeed declining (e.g., energy and water use per unit gross domestic product), these trends have been outpaced by increases in population and affluence. The effect of various schemes intended to direct consumers to less environmentally damaging products, such as ecolabels, is hard to measure and thus far appears to be only moderately successful with individual consumers (OECD, 1996). Trends for specific, but environmentally important products are not encouraging. For example, automobile ownership increased from 86 per 1,000 people worldwide in 1993 to 113 in 1997 and the average fuel economy of all light vehicles in two major markets (the United States and the European Union) has either declined or held steady (<http://www.epa.gov/otaq/fetrends.htm>; <http://www1.oecd.org/cem/topics/env/CO2Cars.pdf>).

Environics International (2002a:44) reported that among the 20 developed and developing countries they surveyed, 36 percent of respondents stated that they had avoided a product or brand for environmental reasons, while 27 percent had refused packaging, 25 percent had gathered environmental information. Recycling also remains highly popular with six in ten people currently setting aside garbage for re-use, recycling or safe disposal. These rates, however, reach 91 percent in North America versus only 36-38 percent in Latin America, Eastern Europe and Central Asia (Environics International 2002a:49), which may be the result of structural barriers in these societies.

In 1995, 46 percent of worldwide respondents reported having chosen products thought to be better for the environment, 50 percent of respondents reported that they had tried to reduce their own water consumption while, 48 percent reported having reused or recycled something in the past 12 months, rather than throwing it away. Here there was a clear distinction between richer and poorer societies, with 67 percent of respondents from high-income countries reporting that they had chosen “green” products, compared to only 30 percent in low-income countries, and with 75 percent of respondents from high-income countries saying that they had reused or recycled something, compared only 27 percent in low-income countries (Inglehart, 2000). These results from low-income countries, however, are questionable. Many observers have noted that people in developing countries reuse things as part of everyday life (e.g., converting oil barrels into water containers) and that millions eek out an existence by reusing and recycling items from landfills and garbage dumps (cites). It is also probable that a term like “recycle” means different things in different cultural contexts – a fundamental concern that underlies all cross-cultural research.

Environics International (2002a:63) found that 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.⁵ These findings clearly mark the emergence of a global market for more energy-efficient and less-polluting automobiles. 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. This survey also found that among high-income countries, only 28 percent

⁵ Based on the subsample who own or have regular use of a car.

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 (EnviroNics International, 2002a:65). Generally, people appear to oppose higher gasoline prices in principle, and public attitudes are certainly affected, at least in part, by the prices extant at the time of the survey.

The worldwide public, however, 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 low-income countries (Inglehart, 2000). Finally, only 10 percent worldwide 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 (EnviroNics International, 2000).

DRIVERS OF DEVELOPMENT AND ENVIRONMENT

Common to most analyses of the human impact on life support systems are population, affluence or income, and technology – the so-called I=PAT identity. Most analysts, however, recognize that these variables are not fundamental driving forces in and of themselves and are not independent from one another (IPCC Special Report on Emissions Scenarios, 2000; Lambin, 2000) A similar approach has been applied to human development (D=PAE) with an expanded concept of affluence and institutional entitlements and equity substituting for technology (Parris and Kates, 2003). In addition to commonly cited economic measures of equity there are also institutional components difficult to measure in economic terms including access to and quality of health care, education, housing, and employment. Here we review empirical trends in attitudes and behavior related to each.

Population

While great efforts have been made to develop comprehensive measures of fertility behavior (childbearing, marriage, contraceptive use, etc.), the role of values and attitudes in fertility behavior has received relatively little focused attention by major international data collection efforts (e.g., the World Fertility Survey and the Demographic and Health Surveys) or by demographers in general (Casterline, 1999:366). As a result, there is as of yet relatively little empirical data on values and attitudes towards fertility at the multi-national scale.

The Demographic and Health Surveys, however, do measure attitudes towards ideal family size and have identified the emergence of a “small family norm” in many countries (Westoff and Bankole, 2002:1). These surveys have found that the ideal number of children desired is declining in most regions of the world, with the notable exception of western and middle Africa, where the mean (5.2) remains significantly higher than elsewhere in the developing world (2.9) (DHS STATCompiler, 2004). Most of these countries are not only among the least economically developed, but also demonstrate the largest gaps between male and female attitudes towards

ideal family size. In other words, men in these countries often desire significantly more children than their wives. Polygyny also remains a cultural norm in many of these societies and may help explain high total fertility rates. Throughout sub-Saharan Africa, husbands in polygynous marriages desire about 5 more children than their wives. In monogamous marriages, however, husbands want an average of only 1.4 more children than their wives (Westoff and Bankole 2002:25).

Globally, attitudes towards 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 (Pew, 2003:T17). The DHS surveys, however, have found a marked difference in support for family planning between sub-Saharan Africa and the rest of the world. Only 44 percent (approximately) of respondents in sub-Saharan Africa said that both couples approve of family planning, compared to 74 percent in the rest of the developing world (DHS STATCompiler, 2004).

Worldwide, these generally very positive attitudes toward family planning are reflected in the behavior of more than 62 percent of married women of reproductive age currently using contraception. Within the developing world, the United Nations reports that over the past 10 years, 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, and in Africa from 15 percent to 25 percent (United Nations, 2001). Although contraceptive use is increasing throughout the developing world, sub-Saharan Africa again exhibits both lower percentages of married women using birth control and lower rates of growth in contraceptive use than the rest of the developing world (U.S. Bureau of the Census, 1999:45). The developed world, however, shows little change in contraceptive use over the past 10 years, due to their already high rates, with over 70 percent of married women already using contraception (United Nations, 2001).

Affluence/Poverty/Consumerism

We have already noted the dramatic rise in aggregate affluence and the consumption that goes with it. However, the rising tide has not raised all boats. Worldwide, over 1.1 billion people lived on less than \$1 and 2.6 billion people lived on less than \$2 per day in 2000 – with little overall change from 1990 (Global Economic Prospects, 2004). There are also large regional differences. For example, Sub-Saharan Africa currently lags the worldwide gross domestic product per capita by \$5,441 (purchasing power parity, 1995 international dollars) (World Bank, 2004). As noted above, there is little global data on desired levels of affluence, however, there is some limited data on global attitudes towards poverty and consumerism.

Poverty

In 1995, 65 percent of worldwide respondents said that more people were living in poverty than 10 years prior, while 15 percent said fewer and 15 percent said conditions were about the same. Sixty-three percent said that poverty is primarily caused by unfair treatment by society, while 26 percent blamed the laziness of the poor themselves. At the national level, majorities blamed poverty on laziness and the lack of will power among the poor only in the United States (61%), Puerto Rico (72%), Japan (57%), China (59%), Taiwan (69%), and the Philippines (63%). In

almost all other countries, strong majorities blamed society (Figure 3). Finally, a worldwide majority (58%) said the poor have little to no chance to escape poverty. By contrast, large majorities in the United States (71%), Puerto Rico (76%), Norway (76%), Australia (61%), Taiwan (90%), China (88%), Japan (80%), and the Philippines (73%) believed the poor do have a chance to escape poverty (Inglehart, 2000).

Worldwide, 68 percent of respondents said that their own government was doing too little to help people in poverty within their own country, while only 4 percent said their own government was doing too much. At the national level, only in the United States (33%) and the Philippines (21%) did significant proportions say their own government was doing too much to help people in poverty (Inglehart, 2000).

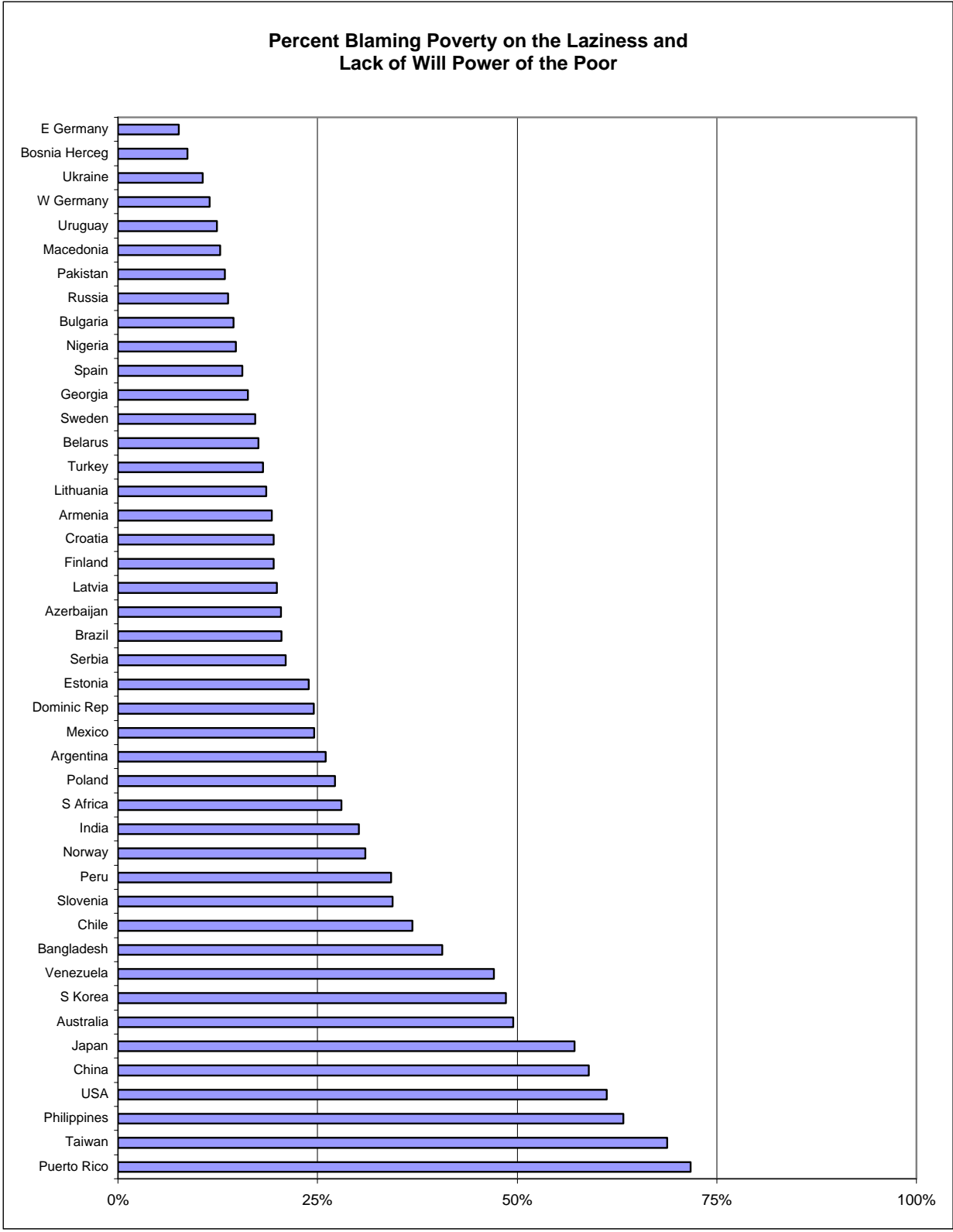


Figure 3

Consumerism

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 (Inglehart, 2000). Further, large majorities agreed that gaining more time for leisure activities or family life is their biggest goal in life (EnviroNics International, 2002c:6). At the same time, however, two thirds of respondents said that the spending of money on themselves and their family represents one of life’s greatest pleasures. Respondents from low-GDP countries were much more likely to agree (74%) than those from high-GDP countries (58%), which suggests that a post-materialist transition is underway in the developed world, with non-material values playing a larger role in human happiness. Nonetheless, majorities in almost all countries surveyed still derive great pleasure from material consumption (Figure 4) (EnviroNics 2002c:3-4).

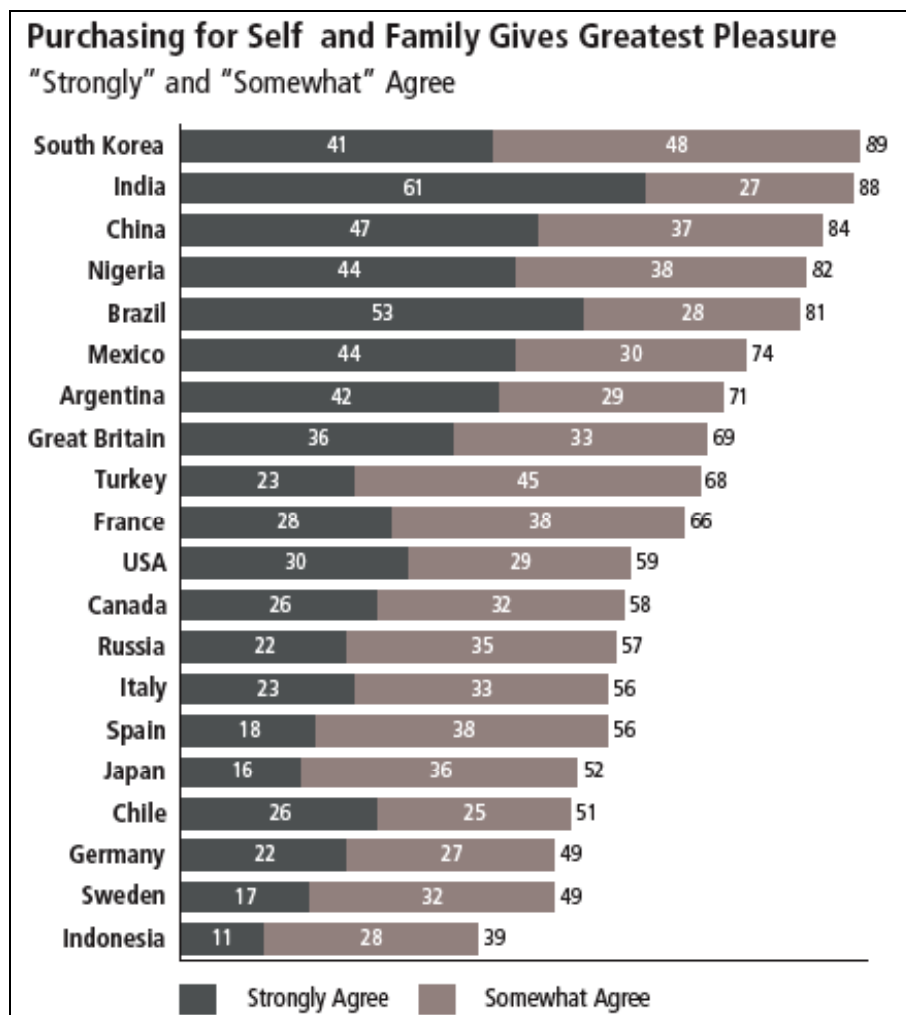


Figure 4

Likewise, there were large regional differences in attitudes towards status consumerism. Europeans and North Americans disagreed (78% and 76% respectively) that other people’s admiration for one’s possessions is important, while only 19% of Africans (Nigeria only)

disagreed (Enviroics International, 2002c:4). The European and North American results may partially reflect the post-materialist value shift posited by Inglehart (1997) and the influence of social desirability bias. 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 (e.g., Veblen, 1902).

More broadly, 45 percent worldwide saw consumerism and commercialism as a threat to their culture. Interestingly, more respondents from high income and upper middle income countries (approximately 51%) perceived consumerism as a threat than low middle and low income countries (approximately 43%), providing further support for the post-materialist value shift hypothesis. At the regional level, 56 percent of Latin Americans perceived consumerism as a threat, while at the other extreme, only 33 percent of respondents from the Middle East did (Pew, 2002). Unfortunately, the Pew study did not ask respondents whether they believed consumerism and commercialism were a threat to the environment. The 1992 Health of the Planet Survey, however, found that 41 percent said that consumption of the world's resources by industrialized countries contributed "a great deal" to environmental problems in developing countries" (Dunlap, 1993:57).

These different surveys paint a complicated and contradictory picture. On the one hand, majorities around the world agree that, at the societal level, money, material and status consumption are threats to human cultures and the environment. At the personal level, majorities also agree that gaining more family or leisure time is an important priority. On the other hand, strong majorities state that spending money on themselves or their family is one of the greatest sources of pleasure in their lives – a finding that is consistent with the global trends in actual consumption. Thus, there appear to be significant gaps between personal and social values relating to material consumption on the one hand, and between attitudes and behaviors on the other. While these global studies are a useful start, much more research is needed to unpack and explain the roles of conflicting values and attitudes in material consumption in different socioeconomic circumstances. For example, majorities in both developed and developing countries say that spending money is one of the greatest pleasures in their lives, yet the socio-economic content and context of this spending is radically different.

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 of the environmental and public health consequences of such technologies in advance. Future receptivity to such technologies may be indicated by prior responses to controversial technologies such as nuclear power and genetically modified organisms. Worldwide, almost 17 percent of all electricity was produced by nuclear power plants in 2000, and production has steadily increased from 684 billion kilowatt hours in 1980 to 2,560 in 2002 (International Energy Annual, 2002; <http://www.eia.doe.gov/emeu/iea/elec.html>). Alternative energy sources accounted for 13.5 percent of the world's total primary energy supply in 2001. Of this amount, 77.4 percent is from solid biomass or charcoal, 16.4 percent from hydropower, 3.2 percent from geothermal, 0.3 percent from solar or tidal, and 0.2 from wind. Over the 1990s, renewable energy production has

grown slightly faster than total primary energy overall. This is particularly true for solar, wind, and tidal power, which have grown at an overall rate of close to 20 percent annually since 1990 (see Renewables Information 2003, International Energy Agency, <http://www.iea.org/dbtw-wpd/Textbase/nppdf/free/2003/renew2003.pdf>). It has also been estimated that about 167 million acres of genetically engineered crops with herbicide tolerance and/or insect resistance traits were cultivated worldwide in 2003, a 15-percent increase over acreage in 2002. U.S. acreage accounts for 63 percent of this total (<http://www.ers.usda.gov/Briefing/biotechnology/chapter1.htm>).

Overall, the global public has very positive attitudes towards science and technology. The 1995 World Values Survey asked respondents whether “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 (Inglehart, 2000). Likewise, Environics International found that large majorities worldwide believed that the benefits of modern technology outweigh the risks. The support for technology, however, was significantly higher in countries with low GDP’s (69%) than in high-GDP countries (56%), indicating somewhat more skepticism among people in technologically advanced societies (Environics International, 2002a:133). 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 of respondents in high-GDP countries disagreed (Figure 5).

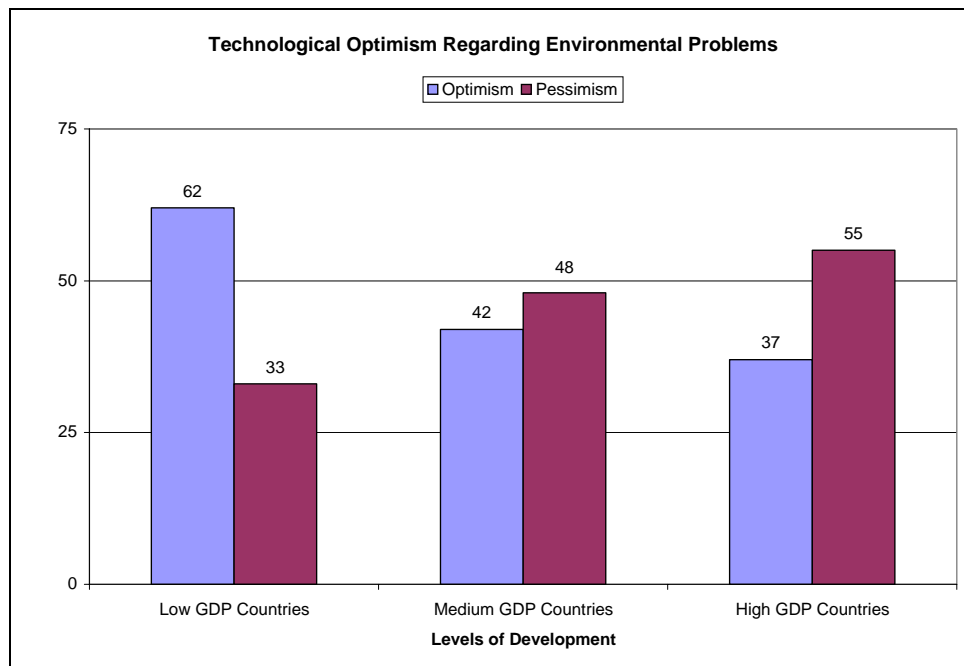


Figure 5

But what about specific technologies with sustainability implications? Do these also enjoy strong public support? We were able to find global-scale data on attitudes towards renewable energy, nuclear power, the agricultural use of chemical pesticides, and biotechnology.

Europeans were found to strongly prefer renewable energy technologies (solar, wind, biomass) over all other energy sources, including solid fuels (coal, peat, etc.), oil, natural gas, nuclear fission, nuclear fusion, and hydroelectric power, and believed that by the year 2050, renewable energies will be best for the environment (67%), be the least expensive (40%), and will provide the greatest amount of useful energy (27%) (Eurobarometer, 2002:70). Further, 37 percent of Europeans said they were willing to pay a 5 to 10 percent premium for renewable energy. Likewise, one-third of respondents in 16 developed and developing countries were willing to pay 10 percent more for electricity derived from renewable energy sources (GlobeScan 2000). Among Europeans, large majorities said they had or intended to reduce their use of heating, air conditioning, lighting, and domestic electrical appliances (Eurobarometer, 2002:96-99).

Nuclear power, however, remains highly stigmatized throughout much of the developed world (e.g., see Flynn et al., 2001). Among respondents from 18 countries (mostly developed), 62 percent considered nuclear power stations “very dangerous” to “extremely dangerous” for the environment (International Social Science Program, 2000:114). Additionally, nuclear power was rarely chosen (3% to 5%) as the energy source likely to be best for the environment in 2050 (Eurobarometer, 2002:70). 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%), while respondents in high-GDP countries (32%) were more suspicious (EnviroNics International, 2002a:139). 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 (EnviroNics International, 2002a:141).

Additionally, the use of biotechnology in agriculture remains controversial worldwide. Among the G7 countries (the United States, Canada, Great Britain, France, Italy, Germany and Japan) 70 percent were opposed to scientifically altered fruits and vegetables because of health and environmental concerns (Pew, 2002:T20), while 62 percent of Europeans and 45 percent of Americans opposed the use of biotechnology in agriculture (Chicago Council on Foreign Relations, 2002:26). More broadly, public understandings of biotechnology are still limited and that 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” (EnviroNics International, 2002a:156-57). 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 (EnviroNics International, 2002a:157). Development levels also appear to have a significant influence on public attitudes towards biotechnology. For example, majorities in

poorer countries (65%) believe the benefits of using biotechnology on food crops are greater than the risks, while majorities in high-GDP countries (51%) believe the risks outweigh the benefits (EnviroNics International, 2002a:163).

Income Equity and Entitlements

Income inequality between rich and poor countries has increased over time, with the notable exceptions of East and Southeast Asia (Baumol, Nelson, and Wolff, 1994). At the same time, within-country inequality 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 (Sen, 1982) – has also 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; and, International Monetary Fund recommended structural adjustment programs in developing countries. Critically, we also found no comparative data on global attitudes towards specific entitlements, although 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 of the global public said that the gap between rich and poor in their country had gotten worse 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 (excepting Ukraine) stating that the gap had gotten worse (Pew, 2003:37). Yet, 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” (World Values Survey, 2004) (see Figure 6).

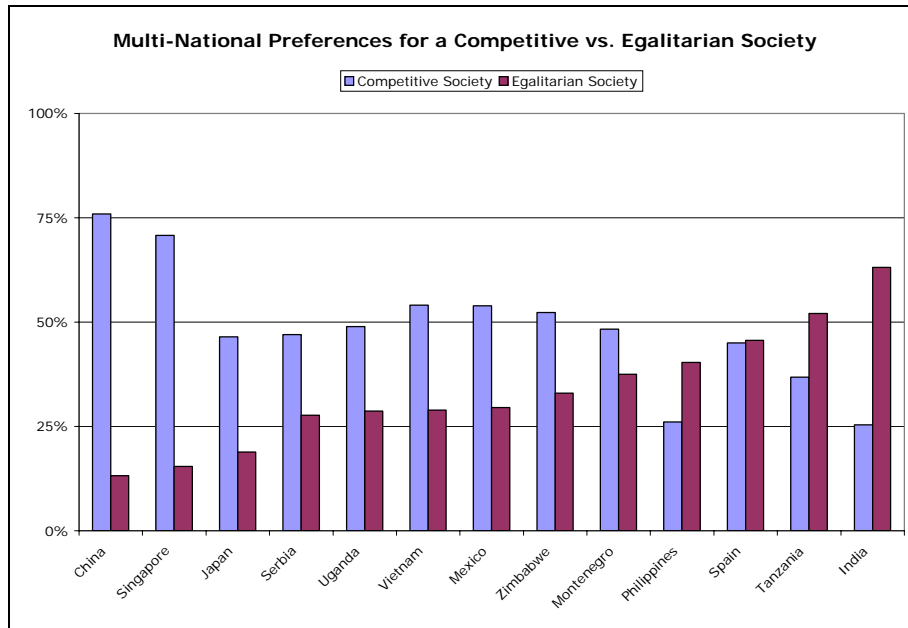


Figure 6

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” (World Values Survey, 2004). These results suggest that despite public perceptions of growing economic inequality, many may accept it as an important incentive in a more individualistic and competitive economic system. We caution, however, that these global results are limited to just a few variables and gloss over many countries that strongly prefer more egalitarian distributions of wealth (e.g., India). Much more research is needed to understand how important the principles of both income equality and equal economic opportunity are considered globally, either as global goals or as means to achieve other sustainability goals.

IV. Empirical Trends in Contextual Values

In Part II we sought to identify values declared by important analyses or documents as defining or supporting a sustainability transition. But such a transition will take place within the context of individual lives and societal actions, a context also marked by important values. We thus distinguish a set of “contextual” values and trends that are not directly related to sustainable development, yet will profoundly shape the physical and social environments within which the sustainability transition will take place. Contextual values and trends such as democracy or globalization will also shape people’s willingness and ability to adopt sustainability values, attitudes and behaviors. In this section we examine two sets of such contextual values: those identified by the United Nations in the Millennium Declaration and declared to be “essential to international relations” and those related to a set of larger contexts such as capitalism, globalization, institutional trust, and social change that we think will bear upon the success or failure of a sustainability transition.

Global Attitudes toward the Millennium Declaration Values

Freedom and Democracy

The Millennium Declaration uses a broad definition of freedom, stating that: “Men and women have the right to live their lives and raise their children in dignity, free from hunger and the fear of violence, oppression or injustice. Democratic and participatory governance based on the will of the people best assures these rights.” While these are self-evident values to many, we know of no global-scale survey data that has measured public attitudes towards these declared rights. Some data, however, does exist on worldwide attitudes towards the political systems of democracy and participatory governance (see Democracy below). Further, among 34 developing countries worldwide, very large majorities of respondents said it was important for them to live in a country with free elections (86%), free speech (87%), freedom of religion (91%), and freedom of the press (80%) (Pew, 2004). Freedom thus appears to be a nearly universal value.

With the fall of the Berlin Wall and the breakup of the former Soviet Union, democratic political systems have spread worldwide, although a number of communist and authoritarian regimes still exist. Likewise, global attitudes towards democracy are strongly positive. By the year 2000, 88 percent of respondents worldwide agreed that “Democracy may have problems, but it’s better than any other form of government” (Inglehart, 2004:E123). Likewise, 91 percent of the global public thought that “having a democratic political system” was important in their own country. Further, democracy is not seen as an exclusively Western system, inappropriate for other cultural contexts. For example, 67 percent of respondents from 14 African, Asian and Middle Eastern countries said that “democracy is not just for the West and can work well here,” with large majorities in almost all countries (Pew, 2003:T85).

Although large majorities worldwide think highly of democratic systems of government, the world public is evenly split when asked, “if you had to choose between a good democracy or a strong economy, which would you say is more important?” The Pew survey found that only 48 percent preferred a strong democracy, while 45 percent preferred a strong economy. In particular, very large majorities in the post-communist states of the Soviet Union, such as Russia and the Ukraine (81%), chose a strong economy over a good democracy, suggesting that democracy still has relatively shallow roots in these societies (Pew, 2003:86). In addition, large majorities were dissatisfied with democratic development in post-communist countries such as Russia (84%). In 2000, only 46 percent of respondents worldwide were satisfied with the way that democracy was developing in their country (World Values Survey, 2004).

These results demonstrate that the world has entered “a democratic age,” where democratic ideals and institutions are the preferred form of political organization and decision-making. Democracy, however, is still weakly rooted in a number of newly democratic societies, including the former Soviet bloc, and is potentially fragile in a number of societies where corruption, unemployment and civil strife are common. Further, while large majorities prefer democracy as an abstract ideal, many are also dissatisfied with democratic development in their countries and particularly dissatisfied with their principal democratic institutions as described below in the section on Institutions.

Equality

The Millennium Declaration states: “No individual and no nation must be denied the opportunity to benefit from development. The equal rights and opportunities of women and men must be assured.” At the most general level, 66 percent of respondents worldwide said eliminating inequality was a requirement of a “just society,” with clear majorities in 28 of 32 countries (Inglehart, 2004). We were unable to locate global-scale survey data on public attitudes towards the principle of equal economic opportunity for either individuals or nations, with the exception of limited data on the principle of equal opportunity for women (see below). The Millennium Declaration also skirts the issue of the growing gap between rich and poor, both within and between nations. Many argue that narrowing this gap is central to sustainable development, both as an intrinsic goal in itself and a means to support the achievement of many other values and goals (e.g., peace and social cohesion) (Raskin et al., 2002; Earth Charter, 2004).

But how much worldwide public support is there for the principle of more equal distribution of wealth and what are the preferred means to accomplish it? As described above in the section on Affluence: Economic Inequality, the limited data that exists suggests that while large majorities worldwide believe the gap between rich and poor is widening, many also prefer competitive economic systems that produce income inequalities, while rewarding individual incentive, over more egalitarian systems. Again, however, very little global-scale data exists on egalitarian attitudes, or the preferred balance between individualistic and egalitarian social systems. This is a particularly important area for more research, as some national-level studies have found positive correlations between egalitarian worldviews and environmental risk perception, policy preferences and sustainability-related behaviors (e.g., Leiserowitz 2003; Peters and Slovic 1996)

The Millennium Declaration also emphasizes the importance of equal rights and opportunity for both men and women. Greater gender equality is evident in the declining gap between male and female literacy which fell steadily from 20 percent in 1970 to 11 percent in 2000, and parallel trends in the gap between male and female primary school enrollment (16% in 1970, 5% in 2000). Although we found only limited data on global attitudes towards gender equality, they seem to support these trends. In 2000, only 24 percent worldwide agreed that “a university education is more important for a boy than for a girl” while 72 percent disagreed (World Values Survey, 2004). These results suggest great progress has been made in changing attitudes towards the principle of equal educational opportunity for women. Regarding gender roles, 68 percent worldwide thought that a marriage in which “the husband and wife both have jobs and both take care of the house and children” was more satisfying than one in which “the husband provides for the family and the wife takes care of the house and children.” At the regional level, only in the Middle East did a majority of respondents (52%) prefer a sharp differentiation in gender roles and responsibilities. Likewise, only 38 percent agreed with the statement that “when jobs are scarce, men should have more right to a job than women” while 50 percent disagreed (Pew, 2004). These limited results suggest substantial progress has been made in changing attitudes towards several important dimensions of gender equality.

On the other hand, while women have achieved great gains in voting rights around the world, they still remain quite underrepresented as political leaders, even in democratically elected governments (Inglehart and Norris, 2003). In part, this reflects attitudes about the leadership

abilities of women. For example, in 2000, 49 percent worldwide agreed with the statement that “on the whole, men make better political leaders than women do,” including 42 percent of all women (World Values Survey, 2004). Again, this attitude was especially prevalent in the Middle East. These results suggest that there are still strong attitudinal biases in many countries against the political empowerment of women, including, in some cases, by women themselves.

Solidarity

The Millennium Declaration defines solidarity in the following way: “Global challenges must be managed in a way that distributes the costs and burdens fairly in accordance with basic principles of equity and social justice. Those who suffer or who benefit least deserve help from those who benefit most.” This definition is confusing, as it seems to better describe the previous value of equality and the subsequent value of shared responsibility. According to the Oxford English Dictionary, solidarity refers instead to “the fact or quality, on the part of communities, etc., of *being perfectly united* or at one in some respect, esp. in interests, sympathies, or aspirations” (emphasis added). This ideal of global unity, standing shoulder to shoulder, or working together as a team toward common goals, transcends this particular focus on equal distribution of costs and burdens or the responsibility of the rich and powerful to help those in need. Assumedly, global solidarity should be an important means to support the achievement of all the other Millennium Declaration values, including freedom, equality, tolerance, respect for nature and shared responsibility.

Fair and equitable distribution of the costs and burdens of global challenges is nonetheless a very important value as is shared responsibility. Unfortunately, we found no international survey data on public attitudes towards the equitable distribution of the costs and burdens of global challenges, none regarding the value of shared responsibility, and none regarding the value of global unity.

Tolerance

The Millennium Declaration states that, “Human beings must respect one other, in all their diversity of belief, culture and language. Differences within and between societies should be neither feared nor repressed, but cherished as a precious asset of humanity. A culture of peace and dialogue among all civilizations should be actively promoted.”

We were able to locate only limited worldwide survey data on tolerance as a value. As an abstract value, 70 percent of respondents and majorities in all countries agreed that “tolerance and respect for other people” was an especially important quality to teach children at home (World Values Survey, 2004). More specific questions, however, asked whether there were any groups of people that respondents would not like to have as neighbors. Worldwide, many said they would not like homosexuals (43%), Gypsies (38%), or people with AIDS (37%) as neighbors. Smaller proportions said they would oppose Muslims (19%), immigrants (18%), people of another race (16%), or Jews (14%) (World Values Survey, 2004). Likewise, the Pew Global Attitudes Project found a strong geographical split in tolerance of homosexuality around the world. In general, strong majorities in North America, Latin America and Europe agreed that

“homosexuality is a way of life that should be accepted by society” while very strong majorities disagreed in Africa and much of Asia (Pew, 2003:65). These limited data demonstrate that although tolerance is a widely shared value at the abstract level, many people continue to stigmatize particular groups.

Finally, the 2000 World Values Survey measured attitudes towards moral absolutism vs. moral relativism. They found that worldwide, 38 percent said that “there are clear guidelines about what is good and evil,” while 52 percent said that good and evil “depends upon circumstances at the time.” Of developed countries, only the United States had a plurality (49%) voicing moral absolutism, while large majorities in all other industrial countries preferred a more contextual view of good and evil (World Values Survey, 2004). These differing perspectives on morality influence not only attitudes towards tolerance, but can also have significant implications for unilateral behavior and international governance in a multi-cultural world.

Respect for Nature

The Millennium Declaration states that, “Prudence must be shown in the management of all living species and natural resources, in accordance with the precepts of sustainable development. Only in this way can the immeasurable riches provided to us by nature be preserved and passed on to our descendants. The current unsustainable patterns of production and consumption must be changed in the interest of our future welfare and that of our descendants.” We were able to find some international survey data on global public attitudes towards the environment, production and consumption, which we described in detail above.

Shared Responsibility

The Millennium Declaration states that, “Responsibility for managing worldwide economic and social development, as well as threats to international peace and security, must be shared among the nations of the world and should be exercised multilaterally. As the most universal and most representative organization in the world, the United Nations must play the central role.”

We know of no global scale data on public attitudes towards the value of shared responsibility and only limited data on multilateralism as a preferred means to achieve this goal. We did, however, find data on public attitudes towards the United Nations and other multilateral organizations. Overall, several global-scale surveys have found strong public trust, confidence in and evaluations of the United Nations. Public reaction to other multilateral institutions such as the World Trade Organization, the World Bank and the International Monetary Fund, however, has been more mixed.

The Voice of the People survey found that worldwide, 55 percent of respondents trusted the United Nations “to operate in society’s best interests” while 34 percent did not (World Economic Forum, 2002). Further, 64 percent of respondents worldwide said the UN was having a good influence on the way things were going in their own country (Pew, 2004). By contrast, surveys have found lesser global trust in the World Trade Organization (44%) and the World Bank (43%), while the International Monetary Fund was distrusted by a slight plurality (41%) (World

Economic Forum:3). Nonetheless, 58 percent of respondents worldwide said these international institutions were also having a good influence on the way things were going in their own country, with pluralities or majorities in all countries sampled, with the exceptions of Argentina, Brazil, Turkey and Jordan, where strong majorities rated these organizations negatively (Pew, 2004).

Finally, the 2000 World Values Survey asked whether national governments, the United Nations, or national governments coordinated by the UN should make policy decisions regarding several critical problems. Overall, pluralities preferred that the UN coordinate national policymaking for human rights, refugees, aid to developing countries and international peacekeeping (Figure 7).

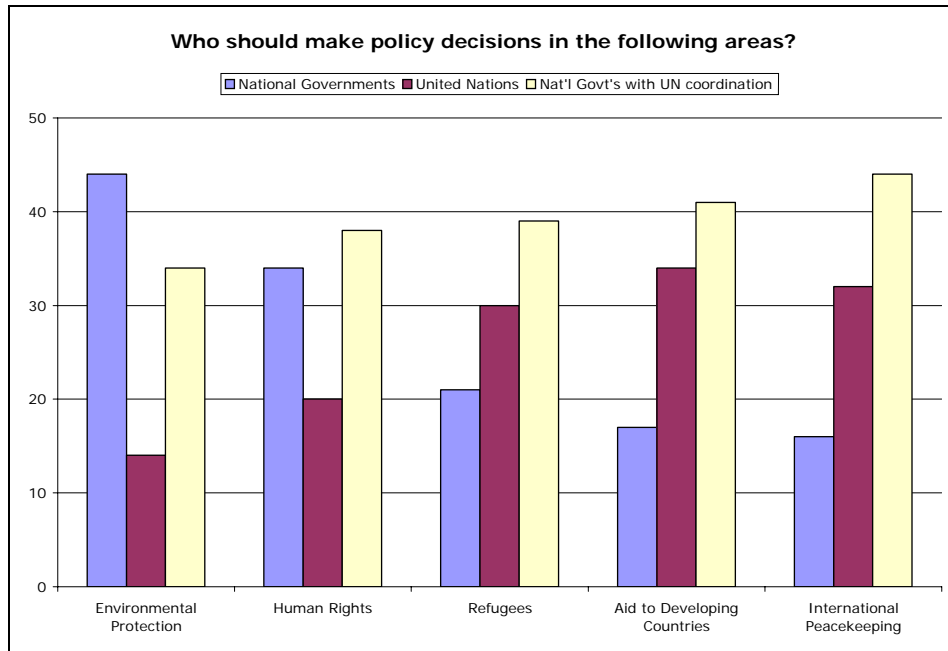


Figure 7

A strong plurality (46%), however, preferred that national governments alone make policy decisions regarding environmental protection (World Values Survey, 2004). Significantly, there was a distinct split between developed and developing countries regarding this issue. Developed countries strongly preferred UN coordination, while developing countries strongly preferred national control. This may reflect the desire of developing countries to maintain control over natural resources, especially within post-colonial countries, or concern that global policymaking led by the UN may restrict national economic development. This is a critical issue because sustainable development must also address global environmental problems (e.g. climate change, overfishing, etc.) that require international coordination.

Capitalism

Worldwide, 58 percent of respondents agreed with the statement “most people are better off in a free market economy, even though some people are rich and some are poor.” Strong majorities agreed in almost all countries, with a few notable exceptions (e.g., Argentina, Japan and Bulgaria) (Pew, 2003:T6). Likewise, 63 percent of respondents agreed with the statement “the free enterprise system and free market economy is the best system on which to base the future of the world” (Environics International, 2002d). Further, 39 percent said “private ownership of business and industry should be increased” versus 27 percent who said instead that “government ownership of business and industry should be increased” (World Values Survey, 2004). Sixty-one percent agreed that “Competition is good. It stimulates people to work hard and develop new ideas” while 13 percent said instead that “Competition is harmful, it brings out the worst in people.” As mentioned above, 48 percent of respondents in 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 Table 6). All of these results indicate that a strong preference has emerged worldwide for the free market economic system. For better or for worse, the free market system will be the primary economic system within which global sustainable development must be achieved.

Globalization

Globalization “...in its simplest sense ... refers to the widening, deepening and speeding up of global interconnectedness....” (Held et al., 1999). Trade, a major form of such interconnectedness, has grown at more than twice the rate of the economy since 1950 and 20 percent of the world’s goods and services pass over a border. Trade in money and capital moves almost instantly and is 100 times the volume of world trade. Ideas, images, songs and words also outpace the flow of products and penetrate many different linguistic, cultural, and political barriers. People and jobs also move rapidly and the rate of increase in refugees has been even more rapid than that of world trade. Further, as people and products move more rapidly, they bring along infectious diseases of people, crops, and livestock and other invasive biota.

As a process, globalization has a mixed impact on a sustainability transition. Using hunger as a proxy for meeting human needs, globalization has not helped reduce the numbers of chronically hungry in the world that have stayed the same for about two decades. While globalization encourages favorable shifts in investment, income, and job opportunities to some parts of the world, these are matched by increasing hunger elsewhere. Further, globalized financial crises have created new sources of instability for poor people. On the other hand, globalized assistance programs have expanded to provide famine relief, to address the special needs of children, and to reduce major micronutrient diseases.

Regarding life support systems, globalization leads to increased production and consumption of energy and materials that are environmentally degrading and resource depleting. So far, the

absolute growth in consumption has overwhelmed the steady progress in global technological capability. On the positive side, however, the globalization of environmental ideas has been truly remarkable and has been greatly facilitated by global interconnections. Likewise, globalization has also facilitated improvements in environmental governance, some multinational corporate behavior, and vibrant local and international civic societies (Kates, 2003).

In 2002, 57 percent worldwide thought that globalization is “a good thing,” while only 17 percent said it is “a bad thing” and 25 percent said they didn’t know (Pew, 2004). Likewise, large majorities worldwide thought that globalization defined as “increased trade between countries in goods, services and investment” (62%) and “the worldwide flow of information, culture and technology” (72%) were positive things for themselves and their family’s interests (Environics International, 2002d). But globalization is a catchall term that includes a number of different trends occurring simultaneously, sometimes synergistically and sometimes in opposition to one another. These include not only economic globalization through the integration of world markets and capital flows, but also the growth in communications technologies worldwide (e.g., cell phones and computers), the global reach of cultural products like movies, television and music, and the emergence of global networks of non-governmental organizations, such as those devoted to the advancement of human rights, environmental protection and even anti-globalization itself. How are each of these trends viewed by the global public?

Very large majorities worldwide thought that faster international communication and greater travel (87%), a world more connected by greater economic trade and faster communications (84%), international trade and business ties (83%), foreign products (78%), and foreign movies, TV and music (73%) are good things for their own countries. More personally, over 76 percent of respondents thought that growing trade and business ties and foreign movies, TV and music are good things for themselves and their families (Pew, 2004).

Regarding the recent past, the Pew study also found that of those respondents who said the availability of good-paying jobs had gotten better over the past 5 years, more than 60 percent credited globalization, while of those who said availability had gotten worse, only 32 percent blamed globalization. Likewise, of those who thought that working conditions had worsened or that the gap between rich and poor had grown wider over the past 5 years, only 28 percent and 30 percent respectively blamed globalization (Pew, 2004).

On the other hand, Environics found that future expectations of globalization were more mixed. Worldwide, majorities or pluralities said that globalization will make the following things better: human rights (57%); the economy in my country (56%); economic development in poor countries (51%); workers rights, working conditions and wages in the world (47%); peace and stability in the world (47%); and economic equality among people in the world (45%). Conversely, pluralities said that future globalization will make the following things worse: environmental quality (47%); the number of jobs in my country (46%); and poverty and homelessness in the world (45%). Further, majorities worldwide agreed that “when it comes to globalization, there is too much focus on increasing trade and investment and not enough on protecting human rights and the environment (72%),” agreed that globalization threatens their unique culture (49%), and believed that poor countries will not benefit as much from

globalization as rich countries (50%) (Environics International, 2002d). These results demonstrate that worldwide attitudes toward globalization are divided and are as diverse as the subcomponent trends making up globalization as whole. While the global public generally views both past and current globalization as a good thing, they are much more skeptical about its potential future impacts on unique cultures, the environment, peace, economic equality, employment, and global poverty.

Trust in Institutions

The achievement of global sustainability will require the coordinated action of strong, committed and credible institutions, at multiple levels. Public trust in these institutions is critical to their diverse missions. Public trust can only be earned, yet can be lost in a single betrayal and rarely fully regained. Once mistrust becomes pervasive, “mistrust engenders a vicious descending spiral. The more mistrust by the public, the less effective government becomes at delivering what people want and need; the more government bureaucrats in turn respond with enmity towards the citizens they serve, the more ineffective government becomes, the more people mistrust it, and so on, down and down.” (Ruckelshaus 1996, quoted in Kasperson et al. 2003:31)

The Voice of the People survey measured global trust in a variety of institutions, from the national to the global levels, that will be essential players in the quest for a sustainable future. Worldwide, the principal democratic institution in each country (e.g., parliament, congress, etc.) was trusted by only 38 percent of respondents; lower than all other 17 institutions evaluated and that “fully two-thirds of those surveyed worldwide disagreed that their country is ‘governed by the will of the people’” (World Economic Forum, 2002). These findings raise very troubling questions about the effectiveness and viability of democratic institutions worldwide, as the very institutions with some of the greatest influence and control over future economic and social development are viewed with great skepticism worldwide. Joining national legislative bodies at the bottom were global and large domestic companies who will also play a pivotal role in sustainable development (trusted by only 39% and 42% respectively). By contrast, the single most trusted institution globally was the military (69%), with non-governmental organizations (including environmental and social advocacy groups) coming in second (59%) (World Economic Forum, 2002). The low trust for national legislative bodies and large companies suggests that government or industry-led sustainability initiatives will be viewed with great suspicion by a skeptical public.

Social Change

The 2000 World Values Survey asked respondents to choose between three types of social change: “(1) The entire way our society is organized must be radically changed by revolutionary action; (2) Our society must be gradually improved by reforms; and, (3) Our present society must be valiantly defended against all subversive forces.” Worldwide, 63 percent chose gradual reform, 12 percent preferred radical change, and 16 percent said the status quo should be defended. At the national level, a plurality preferred radical change only in Vietnam, while pluralities preferred a staunch defense of current society only in Jordan and Tanzania (World Values Survey, 2004). These results demonstrate a progressive attitude toward social change in

most of the world. While suggestive, however, this is only a single question, cast at an abstract level. Global opinions about social change might well be different if examined within particular domains with important sustainability implications, like the need to move beyond fossil fuel based economies, addressing the AIDS epidemic, equal educational access for women and minorities, etc. It is also possible that the phrasing of the question itself influenced the results, as some arguably may desire radical change, but not via “revolutionary action,” which can connote violent means.

V. The Attitude-Behavior Gap

It has become clear that values and attitudes, despite their importance, often do not translate directly into actual behavior and many research studies have identified critical gaps and barriers between expressed values or attitudes and actual behaviors, both at the individual and collective levels (e.g., Blake, 1999; Kollmuss and Agyeman, 2002; Stern, 2000). Three broad classes of barriers have been identified. The first is the intensity or priority of different values and attitudes themselves. People may agree that values such as security, freedom, economic prosperity, tolerance, responsibility, respect for nature, etc. are all important. The critical question, however, is which values are prioritized and what tradeoffs, implicit or explicit, between values are made. For example, in the United States surveys have found strong concern about and value for environmental protection in general and for specific issues, including global climate change in particular (e.g., Program on International Policy Attitudes, 2004; Leiserowitz, 2003). Yet other surveys have found that the environment consistently ranks lower in priority than all other national issues (e.g., the economy, health care, terrorism, etc.), while among environmental issues, climate change ranks 12th out of 13 (Dunlap and Saad, 2001). Americans generally have very positive environmental attitudes, yet their aggregate trends of consumption, including the emission of greenhouse gases, are clearly unsustainable. Likewise, many subcomponent values of long-term, global sustainable development may be embraced by the world public, especially in the abstract, but may not be prioritized over more pressing current concerns at the local level.

A second kind of barrier between expressed attitudes and behavior relates to the personal capabilities of the decision-maker or actor. Barriers of this type include the lack of behavior-specific knowledge and skills, illiteracy, low social status, the lack of resources (both time and money), the lack of empowerment, and mere habit or routine. A third kind of barrier relates to external contextual obstacles, such as the lack of practical choices, material costs and rewards, laws and regulations, available technologies, social norms and expectations, advertising, and the broader social, economic and political context (e.g., the price of oil, interest rates, currency fluctuations, etc.). Explaining sustainable or unsustainable behavior is therefore “dauntingly complex, both in its variety and in the causal influences on it” (Stern, 2000:421). Each individual attitude-behavior gap may have different causes, thus most targeted behaviors should be examined separately.

In our review, we found a number of attitude-behavior gaps. To illustrate, we highlight an example related to each of the major drivers of development and environment: population, consumption, technology, and entitlements. Under Population, we found that the high rates of contraceptive use worldwide suggest that positive attitudes towards birth control and family planning are important contributors to fertility behavior (see the above section on Population).

In many countries, however, an attitude-behavior gap remains, with many women expressing a desire to control their fertility, yet unable to do so. An estimated 120 million married women worldwide have an unmet need for birth control and family planning services (U.S. Bureau of the Census, 1999:2). Approximately 20 percent to 25 percent of births in the developing world are unwanted, according to recent surveys (Bongaarts, 1997). While married women in all regions report an unmet need for contraception, for either birth spacing or limiting fertility reasons, sub-Saharan Africa exhibits particularly high levels of unmet need, with a median value of 28 percent of all married women. In absolute numbers, however, India has by far the largest number of women with unmet need: approximately 39.6 million in 1992-93 (U.S. Bureau of the Census, 1999:47, 49).

But why does this gap between attitudes toward contraception and fertility behavior persist? In a review of unmet need for family planning in the developing world, Casterline and Sinding (2000) summarize the main obstacles to contraceptive adoption and use as identified by both quantitative cross-national and qualitative, in-depth research. Three obstacles are particularly important:

1. lack of necessary knowledge about contraceptive methods (e.g., awareness of contraceptive methods, knowledge of where to obtain them, how much they cost, and how to properly use them). For example, in sub-Saharan Africa “substantial fractions of women are simply not aware of any modern methods of contraception (Casterline and Sinding, 2000:710);
2. health concerns about possible side effects; and,
3. social opposition to their use, by husbands, parents-in-law (especially mothers-in-law), neighbors and local community leaders. Social opposition, however, can take many different forms, depending on cultural context. In northern Ghana, for example, both husbands and wives report uncertainty about whether their immediate social networks approve of contraceptive use, and “this uncertainty makes them hesitant to adopt a radically new technology (Casterline and Sinding, 2000:711).

Inadequate access to family planning services, however, has not been found to be a predominant cause of unmet need, except in particularly rural areas (e.g., Pakistan). Other researchers argue that there are also important structural obstacles like legal barriers in some countries that constrain the use of contraceptives and family planning (Potts, 1999:90-91). Additionally, other structural obstacles, like the international “gag rule” imposed by the United States on the discussion of abortion by family planning agencies (a rule that itself reflects particular value commitments) also restrict funding and availability of family planning worldwide.

Looking at a different issue, we found that worldwide studies provide some evidence of conflicting attitudes about material consumption. On the one hand, majorities around the world agree that, at the societal level, money, material and status consumption are threats to human cultures and the environment, and that less emphasis on money and material possessions would be a good thing. At the personal level, majorities also agree that gaining more family or leisure time is an important priority. Further, at the aggregate level, research demonstrates that subjective well-being does not correlate with increasing per capita income past a moderate level

of development (Figure 1). On the other hand, strong majorities in both developed and developing countries state that spending money on themselves or their family is one of the greatest sources of pleasure in their lives – a finding that is consistent with upward trends in the global consumption of materials and energy. A revolution in materialistic attitudes and behaviors is central to the goals of the *Great Transition*, which calls for a transformation of human societies toward the goal of increasing the quality of life, rather than the quantity of things. Much more research, however, is needed to unpack and explain the roles of conflicting values and attitudes in material consumption as well as the individual and structural barriers that inhibit more sustainable consumption practices.

We also found two important gaps between public attitudes and behaviors regarding technology. First, although 44 percent of respondents from high income countries said they would be willing to spend up to 10% more for a fuel-efficient car, the average fuel economy of all light vehicles in two major markets (the United States and the European Union) has either declined or held steady. This implies that despite substantial consumer interest in fuel-efficient cars, this interest has not influenced aggregate consumer behavior. This may partly be due to structural barriers, such as the reluctance of automakers to build more fuel-efficient cars, but also due to personal factors, such as many individuals who ultimately prioritize size, comfort, speed, or status over environmental values in their purchase decisions. Second, Europeans were found to strongly prefer renewable energy technologies (solar, wind, biomass) over all other energy sources and 37 percent said they were willing to pay a 5 to 10 percent premium for renewable energy. Yet renewable energy (not including nuclear) accounts for only a tiny proportion of European energy use. Renewable energy is an excellent example of structural barriers that prevent individuals from putting their values and attitudes into action. Until energy from wind, solar, geothermal or other renewable sources is actually available for consumers to purchase, these positive attitudes and desires will remain unfulfilled and a large potential market remains relatively untapped. In fact it is the market demand for renewable energy that has helped drive and maintain annual growth rates of 20% since 1990.

Finally, as described above, despite strong support for development assistance programs among the publics of the OECD countries and general concern about helping poor and hungry people worldwide, development assistance remains a very low priority compared to all other national and international issues. Further, critical gaps exist at the aggregate level, with public support for development aid at much higher levels than currently provided by OECD countries. The first gap is related to the relatively low priority for the values of human development, while the second is driven by both low public priority and political structural barriers.

Overall, these examples demonstrate that attitude-behavior gaps are complex and in many cases particular to the behavior in question. The barriers operating in contraceptive use worldwide are quite different from the barriers operating in consumer choice or development assistance. Further, the barriers to sustainable behavior can vary by cultural, political, economic and geographical context. Identifying and addressing these critical barriers between extant values and particular behaviors *in situ* is a critical research need.

VI. Conclusions

THE NEED FOR MORE RESEARCH

“Most advocates of sustainable development recognize that for it to be realized would require changes in human values, attitudes and behaviors...Despite the importance of such value changes, however, relatively little is known about the long-term global trends in values, attitudes, and behaviors that will both help or hinder a sustainability transition” (Mabogunje 2004).

This review of global sustainability values, attitudes and behaviors has summarized findings from the handful of global-scale surveys with relevant data. Each international survey measured a different part of the sustainability “elephant” and none had sustainable development as their primary research focus. Likewise most studies were not theory-driven, with the goal of explaining, rather than describing, global trends in values, attitudes and behaviors. Some of this data is proprietary and each survey has sampled a different set of countries (see Appendix A), making it difficult to do comparative meta-analysis. Further, few efforts, with the exception of the World Values Survey and the Environics International Monitor surveys, measured trends over multiple years. Finally, this review found, in most cases, only limited data available and in many other cases, no data at all. Clearly, much work remains to be done, at multiple scales and using multiple methodologies, to identify and understand the key relationships between sustainability values, attitudes and behaviors and to further apply that knowledge in the effort to “bend the trends” or accelerate the transition toward sustainability.

In the course of this review, a number of important research questions have emerged:

1. What influence do each of the values described above (or others) exert over sustainability behavior? Which of these values is more important in any given context?
2. What are the values and attitudes that drive material consumption and consumerism?
3. How are the attitudes associated with the drivers of environment and development (e.g., population, affluence, technology and entitlements) influenced by changes in contextual values (e.g., freedom and democracy, tolerance, etc.)?
4. What explains the large differences in values, attitudes and behaviors (e.g., regarding poverty, consumerism, equality) across different nations, regions or levels of economic development?
5. What are the most critical attitude-behavior gaps and what can be done to bridge them?
6. What are the primary individual and contextual barriers that constrain sustainable behavior in particular social, economic, political, cultural and geographic contexts?
7. What can we learn from retrospective studies of past successful and unsuccessful efforts to change public attitudes and behaviors (e.g., smoking, littering, drug abuse)?
8. What value and life style changes will be required to achieve the *Great Transition* scenario?

What steps should we take to acquire such knowledge? We encourage the establishment of a global collaboration to identify, measure and track changes in key sustainability values, attitudes and behaviors. Such collaboration could include:

- Global surveys on sustainability values, attitudes and behaviors with both broad publics and selected decision-makers, such as corporate, governmental and NGO leaders, repeated at regular intervals to track current and emerging trends.
- An effort to model the key variables that link and drive sustainability values, attitudes, barriers and behaviors at different spatial and temporal scales.
- An effort to research methods and techniques to achieve behavioral change, including experiments and educational outreach.
- A methodological research component. Cross-cultural research on VABs raises many methodological questions and concerns regarding reliable measures, issues of different cross-cultural meanings and interpretations of key terms and concepts (e.g., “sustainability” “freedom” “nature” etc.), and ethical concerns.
- The active participation and training of scientists and local experts (widely defined) from both developed and developing countries.

Initial steps toward such a system could include an analysis of past cross-cultural measurement efforts. What can we learn about what works and what doesn't from the past experience of the World Values Survey, the Pew Global Attitudes Survey, GlobeScan, etc.? Further, while repeated global coverage might be the ultimate goal, what sustainability “hotspots” could we identify as the most in need of immediate study?

THE NEED FOR CHANGE IN VALUES, ATTITUDES AND BEHAVIOR

We began this review noting that most advocates of sustainable development recognize the need for changes in human values, attitudes and behaviors in order to achieve a sustainability transition. Now, having reviewed an extensive body of values statements, attitude surveys, and individual and collective actions, we conclude that there is surely need for behavioral change but that many of the values and the attitudes that reflect them are already in place. Indeed, the degree of change required differs by the benchmark goals of sustainable development, but for two major sets of goals the required values are already in place.

The three different sets of benchmark goals are: 1. the short-term (2015) goals of the Millennium Declaration, 2. the two-generation goals (2050) of the Sustainability Transition, and the 3. (beyond 2050) goals of the Great Transition. We choose these three because they offer clear definition of widespread views of sustainable development, have concrete benchmarked goals related to each other, but offer different insights and challenges for changes in values, attitudes and behaviors.

VABs Needed for the Millennium Goals

A major short-term benchmark for sustainable development is the millennium goals adopted by the General Assembly of the United Nations in September 2000. In all, some sixty goals addressed peace, development, environment, human rights, the vulnerable, hungry, and poor, Africa, and the United Nations. Many of these contained specific targets such as cutting poverty in half or insuring universal primary school education by 2015 and for eight of the major goals

progress is monitored by international agencies. In 2003, they concluded that at existing rates of progress many countries will fall short of these goals, particularly in Africa. Yet the goals seemed attainable by collective action both by the world community and by national governments. A 2002 estimate of the additional financial resources which would be required to enable nations to work energetically to meet the Millennium Development Goals is in the range of \$40-\$70 billion per year. This would roughly represent a doubling of official aid flows over 2000 levels but would still be less than the UN goal of 0.7% of GNP for industrialized countries (Devarajan et al., 2002).

The values as reflected in surveyed public attitudes for such aid disbursements are in place (see section on Development Aid above) although the public attitudes indicate low salience and poor understanding of aid amounts and issues. Yet only five small countries provide their share of the funds needed to meet the MD goals. Thus we conclude that it is the collective (societal not individual) attitudes-behavior gap that needs to be bridged rather than fundamental value change in order to meet this short-term benchmark.

VABs needed for a Sustainability Transition

In 1995, the Board on Sustainable Development of the National Academy of Sciences-National Research Council sought to make sustainable development more meaningful to scientific analysis and contributions. To do so, the Board decided to focus on a two-generation time horizon and to address the needs of a global population with half as many more people as there are today – needs that if met successfully, are not likely to be repeated within the next century or two because of the demographic transition. In that time period, they suggested that a minimal sustainability transition would be one in which the world provides the energy, materials, and information to feed, nurture, house, educate, and employ the many more people of 2050—while reducing hunger and poverty and preserving the basic life support systems of the planet.” To define the specific goals of meeting human needs, reducing hunger and poverty, and preserving the basic life support systems of the planet, the Board turned to the then existing agreements and goals of global conferences, world summits, and international environmental treaties and assessments. In so doing, the Board anticipated the Millennium Declaration goals, many of which it incorporated into its analysis of goals and targets. Less sanguine than the UN, the board determined it would take a generation to reach the 2015 goals of the declaration and another generation to achieve the Declaration’s goals to reduce hunger and poverty.

The Board undertook with the assistance of the Global Scenario Group a scenario analysis of the proposed *Sustainability Transition*, focusing specifically on hunger and the emission of greenhouse gasses. That analysis served as the basis of the policy reform scenario of the Global Scenario Group and concluded that a sustainability transition is clearly possible without positing either a social revolution or a technological miracle. But it is “just” possible, and the technological and social requirements to move from business as usual without changing lifestyles, values or economic system is daunting. Most daunting of all is the governmental commitment required to achieve it and the political will to do so.

Again, one can argue that the values needed are already in place, but it is the attitude-behavior gap, both individual and collective, that needs to be bridged. The gaps between attitudes and

behavior are especially noteworthy in the persistence of hunger in Africa and the rapid growth in energy and materials consumption in developed countries and the mega cities of newly industrializing countries. It is difficult to see how this can be reversed without some significant change, not only in the attitude-behavior gap, but in individual lifestyles as well. But here again some of the values that will support such a lifestyle change, such as worldwide respect for nature, are already widely held, though not prioritized over other, competing values.

VABs needed for the Great Transition

But what if instead of the minimal goals and reformist actions of the *Sustainability Transition/Policy Reform* scenario, one adopted a benchmark that required changes in lifestyles, values, and economic and social institutions in order to achieve not only the minimalist goals, but a compelling alternative vision of the “good life?” The *Great Transition* scenario specifically declared value change as a major tool and requirement in attaining a sustainable world in 2050, not only as an instrumental necessity, but also as a major goal. To achieve material sufficiency for meeting human needs will require equity, solidarity and rejection of the values of material accumulation and consumerism, but these values are also goals in themselves. Similarly to achieve the “the good life” with non-material measures and opportunities, the values of self-realization, spirit, and culture are required as both ends and means. Finally, in order to take responsibility for the wider community of life and nature and the obligations of future generations, the values of ecological sensibility, accountability, democracy, and participation are also required.

To what extent are the value changes necessary for the *Great Transition* apparent and underway? We find support as noted above for some of the values expressed in the minimal goals of the Millennium Declaration or the *Sustainability Transition*, but found weak evidence of a rejection of consumerism, weak support of equity, and no empirical data on solidarity. Addressing another general value—nonmaterial realization for the good life—when we search the limited data on global values and attitudes we do not find coherent views as to what constitutes “the good life.” What we do find is limited data that suggests strong support for economic prosperity in the abstract and widespread pleasure in material consumption for oneself and one’s family, yet only moderate support for the concept of less emphasis on money and material possessions. Regarding the shared responsibility for community and nature, we find strong and positive environmental attitudes worldwide, no data one whether or how these attitudes are linked to the value of community, and considerable support for the values of accountability, democracy, and participation.

Moreover, many values can potentially either support or discourage a *Great Transition*. For example the values of individualism identified by the *Great Transition* scenario (freedom, self-realization, creativity, and empowerment) while important for “the good life,” can also lead to a self-satisfying consumerism. Likewise, the values of collectivism (community, solidarity, cohesion, and cooperation) support the *Great Transition*, but also underlie much pernicious nationalism and ethnic conflict, which both restrict the circle of inclusion and define an “us” vs. “them.” More clarity regarding sustainability values and value change is needed to both define the goals of the *Great Transition* and its realization.

Overall, we find existing global values and the attitudes that reflect them sufficient for the achievement of the Millennium Goals, although the collective attitude-behavior gaps need to be bridged. By contrast, existing global values and attitudes will require some limited change to achieve the *Sustainability Transition* scenario, and will likely need significant change to achieve the *Great Transition*.

Acting on values, attitudes, and behaviors

These conclusions lead to three judgments on how to use our current understanding of values, attitudes, and behavior to support a sustainability transition. We suggest in order of importance a simple ABC— Accelerating action, Bridging barriers, and Choosing values.

Accelerating action

We find that many requisite values and attitudes are already in place to meet the Millennium Goals, but action, especially collective action, lags behind. Large, long term trends (economic, demographic, political) are often the underlying drivers of policy action, but responses to these trends tend to be relatively slow, incremental and piecemeal. There are also, however, many noteworthy examples of non-linear, abrupt and accelerated action in response to particular events. For example, the discovery of the ozone hole, the Exxon Valdez oil spill, the Three Mile Island nuclear accident, and the 9/11 terrorist attacks are all examples of powerful, focusing and galvanizing events that led to abrupt shifts in national and international policies, priorities and actions. Even long-term, broad social movements, like civil rights in the United States, were greatly catalyzed by defining moments like the “I have a dream” speech of Martin Luther King, Jr. and televised images of dogs and water cannons attacking peaceful marchers in Birmingham, Alabama.

These accelerations in collective action often derive from at least four conditions: public values and attitudes, vivid imagery (focusing events), ready institutions and organizations, and available solutions. The American Civil Rights movement, for example, was galvanized by dramatic televised images of overt racism, which offended widely-held values of justice, fairness and equality. The movement was spearheaded by variety of organizations, especially African-American churches, and individual leaders (such as Martin Luther King, Jr.), that skillfully forced long-ignored issues of race relations onto the national agenda. Finally, structural solutions were relatively quickly constructed and passed by government, including the repeal of Jim Crow laws, the Civil Rights Act (1964), and the Voting Rights Act (1965). Another example is the relatively quick international adoption and implementation of the Montreal Protocol. Global publics already had strong values and attitudes favoring the protection of human and environmental health. The discovery of ozone depletion and perhaps more importantly, the identification of the ozone “hole” provided a vivid image and metaphor, that carried strongly negative connotative meanings. CFCs were quickly identified as the cause. Further, a broad set of health, environmental, and industry non-governmental organizations were already poised and ready to respond to the crisis. Finally, the companies that produced CFCs were able to quickly develop substitutes and were positioned to take advantage of a regulatory environment that phased CFCs out of production and created a new market in the alternatives. These and many other examples demonstrate that social, political and economic change, while

often slow and incremental, can occasionally experience rapid accelerations or “punctuated equilibriums” (Baumgarnter and Jones, 1993; 2002).

An acceleration of individual action for sustainability is also important. Again, history suggests that long-term trends in individual behavior occasionally experience dramatic change. Smoking, drunk driving, seat belts and littering are all examples of individual behaviors that have undergone relatively rapid changes, at least in some countries. These changes in individual behavior both contribute to and respond to structural change. On the one hand, growing public pressures contributed to the adoption of stricter laws, penalties and enforcement measures related to these individual behaviors. In turn, the implementation of these structural changes led to significant reductions in smoking, drunk driving and littering, and significant increases in seat belt use. Structural and individual behavioral change are both crucial and often mutually supportive, creating positive feedback and accelerating the rate of social change.

It appears we could be nearing such a takeoff for sustainable development. Many requisite public value and attitudes are already in place. Thousands of non-governmental organizations are dedicated or partially focused on various aspects of sustainable development, global summits dedicated to the subject have been held, and sustainability has become an important agenda item for many governments and industries, including corporations, cities, states and provinces, individual countries, multilateral organizations and the United Nations. Further, many of the solutions are already at hand. Sustainability, however, still lacks a defining, vivid image or particular focusing event. Of course, sustainability encompasses many diverse problems, each of which may or may not have a defining, compelling image. For example, ozone depletion does, while global climate change still does not. The global issues of famine, poverty, genocide, workers rights, and gender equality all receive episodic attention from the global media, as new crises erupt, but are soon displaced by other stories. The term “sustainability” lacks either a strong negative or positive image and some argue that the term itself is problematic. For example, a marriage described as “sustainable” might lead many to predict that it will soon end in divorce. “Sustainable” development can thus imply a merely bearable or tolerable situation, which is hardly a rallying cry to move mass opinion or behavior. *The Great Transition* scenario, however, represents at least one attempt to articulate a partly utopian and partly pragmatic vision of a better world to inspire and motivate individual and collective behavioral change.

Two important markers might signal a takeoff for a sustainability transition. The first would be accelerated action on global climate change. Climate change is almost unique because it is a systemic global problem that involves or will affect most of the subcomponents of sustainable development. For example, the primary cause of climate change is the burning of fossil fuels, which provide the energy foundations for almost all economic development, and which are linked to a host of environmental and human health problems (air pollution, sprawl, traffic, etc.). Another important source of greenhouse gas emissions is deforestation, which is intimately bound with issues of economic growth in both developed and developing countries. Likewise, climate change is projected to have significant impacts on a wide variety of human and ecological systems. Accelerating action on climate change will thus have profound implications for sustainability as a whole. A second marker would be accelerated action on African population, food security, poverty, health, and institutions, which are the prototype of the development problem. While there are positive signs of improvement throughout the developing

world, sub-Saharan Africa uniquely lags the progress evident on other continents. On a number of major indicators, such as agricultural production, mortality, and conflict, sub-Saharan Africa has actually worsened while improvement has been the norm elsewhere. A significant improvement of life conditions in this region would indicate an important shift in world priorities and the acceleration of human development, not only in Africa but throughout the developing world.

Bridging barriers

We also find that widely shared sustainability values and attitudes are a necessary, but insufficient condition for the achievement of sustainability goals. There are a number of critical gaps or barriers that obstruct the translation of abstract values and attitudes into concrete actions. These include at least three main types of barriers. First are the existence, direction, and strength of particular values and attitudes. For example, despite a remarkable global public consensus regarding the value of environmental protection, the current human-nature relationship is clearly unsustainable. In this case, global environmental values exist and are heading in the right direction, but remain low priorities relative to other values (e.g., economic growth). As another example, the Millennium Declaration declares democratic values essential to international relations. Yet democracy, despite roots deep in Western culture, is a relative newcomer to many parts of the world. Democracy is highly valued by large majorities worldwide, yet in many societies (e.g., many countries of the former Soviet Union), democratic values remain relatively weak with shallow roots, and are perhaps easily sacrificed to contrary desires for increased security and authoritarian leadership.

A second type of barrier to sustainable behaviors can be found at the level of the individual. Individuals often lack the time, money, access, literacy, knowledge, skills, power, or perceived efficacy to translate their values into action. Clearly, if one does not know about modern contraception, it is much more difficult to translate the desire for fewer children into action. Alternatively, one may wish to buy organic produce to satisfy the values of personal or environmental health, yet be unable to afford to pay higher prices for these products. Likewise, one may desire increased accountability in government, yet feel powerless to effect changes in the larger system. Finally, mere habit and routine are important barriers in the lives of many individuals – it takes time and energy to overcome bad habits, even habits as simple as leaving the lights on in an unoccupied room.

A third type of barrier between values, attitudes and behaviors is structural, including laws, regulations, perverse subsidies, infrastructure, available technology, social norms and expectations, and the broader social, economic and political context (e.g., the price of oil, interest rates, currency exchange rates, etc.). For example, one may wish to use mass transit, such as high-speed rail as an alternative to the automobile, but if the infrastructure is not available, this value cannot be implemented. As described above, structural barriers, including laws, available technology, and social norms, may constrain individuals who wish to use contraception or family planning services to reduce fertility. Finally, macroeconomic contextual factors like oil prices and interest rates can have large impacts on sustainability behaviors. For example, as oil and gasoline prices rise, consumer demand for more fuel-efficient vehicles increases.

Thus, each particular sustainability behavior may confront a unique set of barriers between values, attitudes and behaviors. Further, even the same behavior (e.g., contraceptive use) may confront different barriers across society, space and scale, with different values, or individual and structural barriers operating in developed vs. developing countries, secular vs. religious societies, or at different levels of decision-making (e.g., individuals vs. legislatures). Achieving consensus goals, like those of the Millennium Declaration, will require a focus on the barriers operating in any specific situation as well as barriers that seem to obstruct sustainability across multiple contexts (e.g., gender equality).

Choosing values

Finally, we live in a world of limited resources, including time, energy, money and attention. In this context, human beings are forced to choose, consciously or unconsciously, between competing values. Individuals and societies may unanimously support abstract values like economic growth, security, freedom, and environmental protection in isolation, but in the realm of concrete decision-making, these values are often incommensurate, thus tradeoffs have to be made. For example, large majorities worldwide value both environmental protection and economic prosperity. Yet these two values often conflict in particular situations, as difficult choices have to be made between species protection vs. commercial exploitation, forest protection vs. logging, or shifting to cleaner, but more expensive energy sources vs. the exploitation of polluting, but cheap fossil fuels like coal. It is typically only in the concrete decisions that the tensions between different values, or the existence of hidden attitudes becomes apparent. Almost all choices involve some explicit or implicit system of weighting or prioritizing different values, ranging from the individual choice of which vehicle to buy (power vs. comfort vs. safety vs. fuel-efficiency) to collective choices about whether or how to reduce greenhouse gas emissions (economic growth vs. environmental protection vs. equity). Further, these collective decisions are often made even more difficult because some decision makers are willing to compromise and tradeoff particular values, while others consider certain values absolute and view any effort to compromise them as “taboo” (Tetlock, 2003). Thus, most debates over social policies, decisions and actions are fundamentally disagreements over the relevance and priority of particular values.

Sustainable development, at the most abstract level, emphasizes the values of economic development, environmental protection and social progress/equity. While nearly all participants may agree in the abstract about the importance of each of these three “pillars,” there are clearly very strong tensions between these values, which often underlie the heated debates over concrete decisions and actions. Yet divergent value commitments or priorities are rarely openly or explicitly discussed, a situation that often leads to greater misunderstanding, intensified conflict and gridlock. The Millennium Declaration and The Earth Charter, however, represent two global efforts to explicitly identify and reach a consensus on essential values and attitudes to guide future sustainable development. Further, the achievement of long-term sustainability goals, like *The Great Transition* will require an open, inclusive, and continuing global dialogue about what “the good life” should look like, how to live it, and the values, attitudes and behaviors, both individual and collective, that will support it. This paper contributes to this effort by documenting the worldwide existence and acceptance of many sustainability values, attitudes

and behaviors, barriers standing between these values and action, and the continued need to discuss what the good life means for the varied peoples and places of the Earth.

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Appendix A: Multi-National to Global-Scale Surveys

Organization	Acronym	Year(s)	Conducted
Health of the Planet	HOP	1992	once
Enviroics International Environment Monitor	EI	1997-2003	annually
Demographic and Health Survey	DHS	1986-2002	occasionally
Organization for Economic Co-operation and Development	OECD	1990-2002	occasionally
World Values Survey	WVS	1981-1998	waves
Pew Global Attitudes Project	PEW	2002	once
International Social Science Program	ISSP	2000	once
Eurobarometer	EU	2002	once

Country	WVS				PEW	EI	HOP	DHS	OECD	ISSP	EU
	1981	1990-91	1995-98	1999-2002	2002	2000-2002	1992	1986-2002	1990-2002	2000	2002
Albania				yes							
Algeria				yes							
Angola					yes						
Argentina	yes	yes	yes	yes	yes	yes					
Armenia			yes								
Australia	yes		yes			yes			yes		
Austria		yes		yes					yes	yes	yes
Azerbaijan			yes								
Bangladesh			yes	yes	yes			yes			
Belarus		yes	yes	yes							
Belgium	yes	yes		yes					yes		yes
Bolivia					yes			yes			
Bosnia Herzegovina			yes	yes							
Brazil		yes	yes		yes	yes	yes	yes			
Bulgaria		yes	yes	yes	yes					yes	
Canada	yes	yes		yes		yes	yes		yes	yes	
Chile		yes	yes	yes		yes	yes			yes	
China		yes	yes	yes	yes	yes					
Colombia			yes			yes		yes			
Croatia			yes	yes							
Cuba						yes					
Czech Republic		yes		yes	yes					yes	
Denmark	yes	yes		yes			yes		yes	yes	yes
Dominican Republic			yes			yes		yes			
Egypt				yes	yes			yes			
Estonia		yes	yes	yes							

Appendix A: Multi-National to Global-Scale Surveys

Country	WVS				PEW	EI	HOP	DHS	OECD	ISSP	EU
	1981	1990-91	1995-98	1999-2002	2002	2000-2002	1992	1986-2002	1990-2002	2000	2002
Finland	yes	yes	yes	yes			yes		yes	yes	yes
France	yes	yes		yes	yes	yes			yes		yes
Georgia			yes								
East Germany		yes	yes	yes	yes	yes			yes	yes	yes
West Germany	yes	yes	yes	yes	yes	yes	yes		yes	yes	yes
Ghana			yes		yes			yes			
Greece				yes		yes			yes		yes
Guatemala					yes			yes			
Honduras					yes						
Hungary	yes	yes		yes			yes				
Iceland	yes	yes		yes							
India		yes	yes	yes	yes	yes	yes				
Indonesia				yes	yes	yes		yes			
Iran				yes							
Ireland	yes	yes		yes			yes		yes	yes	yes
Israel				yes						yes	
Italy	yes	yes		yes	yes	yes			yes		yes
Ivory Coast					yes						
Japan	yes	yes	yes	yes	yes	yes	yes		yes	yes	
Jordan				yes	yes						
Kazakhstan						yes					
Kenya					yes			yes			
South Korea	yes	yes	yes	yes	yes	yes	yes				
Latvia		yes	yes	yes						yes	
Lebanon					yes						
Lithuania		yes	yes	yes							
Luxembourg				yes					yes		yes
Macedonia			yes	yes							
Mali					yes			yes			
Malta				yes							
Mexico	yes	yes	yes		yes	yes	yes			yes	
Moldova			yes	yes							
Montenegro			yes	yes							
Morocco				yes							
Netherlands	yes	yes		yes		yes	yes		yes	yes	yes
New Zealand									yes	yes	
Nigeria		yes	yes	yes	yes	yes	yes				

Appendix A: Multi-National to Global-Scale Surveys

Country	WVS				PEW	EI	HOP	DHS	OECD	ISSP	EU
	1981	1990-91	1995-98	1999-2002	2002	2000-2002	1992	1986-2002	1990-2002	2000	2002
Northern Ireland	yes	yes		yes							
Norway	yes	yes	yes				yes		yes	yes	
Pakistan			yes	yes	yes						
Panama						yes					
Peru			yes	yes	yes	yes		yes			
Philippines			yes	yes	yes	yes	yes			yes	
Poland		yes	yes	yes	yes	yes	yes				
Portugal		yes		yes			yes		yes	yes	yes
Puerto Rico			yes	yes							
Romania		yes		yes							
Russia		yes	yes	yes	yes	yes	yes			yes	
Senegal					yes			yes			
Serbia			yes	yes							
Singapore				yes							
Slovak Republic		yes		yes	yes						
Slovenia		yes	yes	yes						yes	
South Africa	yes	yes	yes	yes	yes	yes					
Spain	yes	yes	yes	yes		yes			yes	yes	yes
Sweden	yes	yes	yes	yes					yes	yes	yes
Switzerland		yes	yes				yes		yes	yes	
Taiwan			yes								
Tambov	yes	yes									
Tanzania				yes	yes			yes			
Thailand						yes					
Turkey		yes	yes	yes	yes	yes	yes				
Uganda				yes	yes			yes			
Ukraine			yes	yes	yes						
United Kingdom	yes	yes	yes	yes	yes	yes	yes		yes	yes	yes
United States	yes	yes	yes	yes	yes	yes	yes		yes	yes	
Uruguay			yes			yes	yes				
Uzbekistan					yes						
Venezuela			yes	yes	yes	yes					
Vietnam				yes	yes						
Zambia								yes			
Zimbabwe				yes				yes			

Table 2. Comparison of Sustainable Development Values

Specific-level values shown by number only [N]

Historical Chronology (US NAS)		Sustainable Development Taxonomy (US NAS)		The Earth Charter		The UN Millennium Declaration		The Great Transition Scenario	
General	Intermediate	General	Intermediate	General	Intermediate	General	Intermediate	General	Intermediate
Peace				Nonviolence, Peace	<ul style="list-style-type: none"> •peace culture [6] •sustainability education [4] •protect living beings [3] 	Tolerance	<ul style="list-style-type: none"> •peace, security & disarmament 		
Freedom				Democracy	<ul style="list-style-type: none"> •transparent, accountable, participatory institutions [6] 	Freedom	<ul style="list-style-type: none"> •human rights, democracy & good governance [7] 	Shared Responsibility for Community & Nature	<ul style="list-style-type: none"> •ecological sensibility •accountability •democracy •participation
Development	<ul style="list-style-type: none"> •economy •equity/society •environment [≈40] 	Develop Economy	<ul style="list-style-type: none"> •wealth •productive sectors •consumption 	Social & Economic Justice	<ul style="list-style-type: none"> •equitable economy [4] •eradicate poverty [3] 	Equality	<ul style="list-style-type: none"> •development & poverty eradication [18] 	Material Sufficiency	<ul style="list-style-type: none"> •reject consumerism •equity •global solidarity
		Develop Society	<ul style="list-style-type: none"> •institutions •social capital •states •regions 			Shared Responsibility	<ul style="list-style-type: none"> •Africa [4] •strengthen the UN [11] 	Nonmaterial Realization for Good Life	<ul style="list-style-type: none"> •self-realization •spirituality •culture
		Develop People	<ul style="list-style-type: none"> •child survival •life expectancy •education •equity •equal opportunity 		<ul style="list-style-type: none"> •gender equality [3] •indigenous, minority rights [4] 	Solidarity	<ul style="list-style-type: none"> •protect the vulnerable [3] 		
		Sustainable Development	Sustain Nature	<ul style="list-style-type: none"> •Earth •biodiversity •ecosystems 	Ecological Integrity	<ul style="list-style-type: none"> •biological diversity and life support [6] •precautionary approach [5] •supportive production, consumption & reproduction [6] •ecological sustainability knowledge [3] 			
Environment		Sustain Life Support	<ul style="list-style-type: none"> •ecosystem services •resources •environment 	Community of Life	<ul style="list-style-type: none"> •respect life diversity [2] •care for life community [2] •build democratic societies [2] •future generations [2] 	Respect for Nature	<ul style="list-style-type: none"> •protect common environment [6] 		
		Sustain Community	<ul style="list-style-type: none"> •cultures •groups •places 						