

# SUSTAINABLE DEVELOPMENT AND THE US

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**ABSTRACT:** *In the late 1980s, the United Nations recognized that industrial activities of the 19<sup>th</sup> and 20<sup>th</sup> centuries were responsible for global pollution-related problems, and presented a future threat to life-sustaining qualities of the environment. While difficult to document in a perfectly quantifiable and defensible case, the evidence was sufficiently strong for the UN to create a global initiative for sustainable development. Many countries around the world now have institutionalized programs for sustainable development. Target projects and procedures to implement incremental changes in the way the natural elements necessary for life are sustained for their support of, and use by, future generations by managing growth and pollution are underway. The United States has a number of initiatives in various agencies that primarily consist of discrete government-government or government-industry partnerships. Nonetheless, the concept of sustainable development in the US remains ambiguous in terms of its widespread understanding and adoption by the public and private sectors, which are responsible for activities that can cause pollution, or indirectly affect the ability of the environment to sustain future human populations, lifestyles, and the economy. The US Environmental Protection Agency refers to some of its sustainable development initiatives as "Smart Growth" to more clearly and positively convey the focus of these activities. It has been observed that sustainable development will not make a significant difference in the US, relative to the strides made in other countries, unless sustainable development programs become regulatory in nature. The US sustainable development initiatives are discretionary and essentially implemented according to the prevailing political will. Since the US economy is based on capitalism, and growth in profits is a pre-requisite to economic success, sustainable development programs will only be implemented if program managers in industry and government believe that these programs somehow tangibly benefit "the bottom line." While exhibiting pioneering leadership in many areas, with regard to innovative and across-the-board programs for sustainable development, the US in fact may lag behind the rest of the world.*

## Introduction

The Industrial Revolution of the nineteenth century wrought orders-of-magnitude changes in economic growth and in the way people use and affect natural resources. Accompanying this phase of human development were significant changes in the

environment, sometimes invisible, e.g., groundwater pollution, but nonetheless ecologically harmful. The resulting water, air, and soil pollution became severe by the 1960s. It was hallmarked in the US by such examples as the burning Cuyahoga River and the smoke-contaminated atmosphere in Pittsburgh.

Rachel Carson's book, Silent Spring (1962), laid the groundwork to challenge the notion that the environment has an infinite capacity to absorb pollutants. Scientists began to assess the notion of a "carrying capacity" in the 1960s, that is, how much capacity does the earth have to carry the impacts of human development before we pass the point that the earth can't recover. The work of several authors, institutes and conferences from the late 1960s – 1980s were significant milestones in laying the groundwork for a movement that would come to be known as sustainable development. By definition, sustainable development is "a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are made consistent with future as well as present needs" (WCED, 1987). Sustainable development requires an outlook that embraces the entire planet

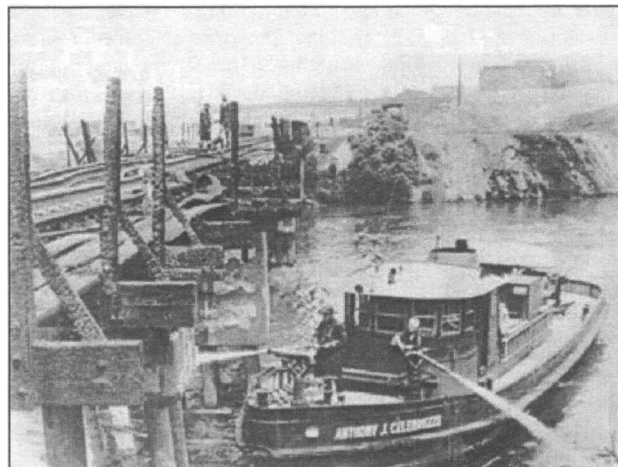


Figure 1. The Cuyahoga River on fire. June 22, 1969. (Source: [www.cwru.edu/atrsi/engl/marling/60s/pages/richoux](http://www.cwru.edu/atrsi/engl/marling/60s/pages/richoux), August 29, 2002.)

and accepts the need for international cooperation to protect elements of the “global commons,” such as the atmosphere, species diversity, international waters, and the alleviation of poverty (Biagini, 2002). However, many believe that economically successful countries deny their impact on the global commons, and are using more than their fair share of the global natural resources for their economic benefit, to the environmental and economic detriment of other countries.

Sustainable development programs and plans are now being implemented in many countries throughout the world. In 1992, the United Nations Conference on Environment and Development (UNCED) took place in Rio de Janeiro, Brazil, also referred to as The Earth Summit. Output from this event included two global environmental treaties (the Climate Change and Biodiversity Conventions), a 40-chapter action plan for sustainable development (Agenda 21), and the Rio Declaration, which was designed to balance the priorities of industrialized countries, which focused on “environment first,” and developing countries, who advocated “development first” (Biagini, 2002). Johannesburg, South Africa was the site for the second Earth Summit, the World Summit on Sustainable Development, and was held from August 26-September 4, 2002. Attended by an estimated 60,000, this event was a reality check for the vision that was defined in the 1992 Earth Summit encompassing five main areas: water, energy, health, agricultural productivity, and biodiversity and ecosystem management.

Clearly, in addition to global government acceptance, sustainable development can only be achieved through the buy-in and implementation of sustainable development principles and practices in industry by the world’s business community. The World Business Council for Sustainable Development (WBCSD), formed in 1991, is composed of 160 international companies, a coalition drawn from 30 countries across 20 industrial sectors. Shell, BP, and Conoco are members of the WBCSD and the organization is currently chaired by the CEO of an American company, Charles Holliday, Jr. of DuPont. Each member company has substantial efforts underway in their business located in both developing and wealthy countries worldwide. The WBCSD recently examined the concept of sustainable consumption and how it must be integrated into the business innovation process. Members of the WBCSD now subscribe to the notion that companies whose products and services deliver solutions to environmental and social problems will gain consumer acceptance and succeed in the market (Wales, 2002; Bonda, 2002). Many of these companies are adopting the concept of “sustainable growth,” growing business that meets the human needs of societies around the world, and provides a strong return for shareholders, while simultaneously reducing the environmental footprint of industry operations and products (Bonda 2002).

The United States participated in the first Earth Summit and then President Bush, along with other heads of state, signed the Climate Change Convention, a framework of action to reduce emissions of greenhouse gases. A cornerstone for implementing this convention is the Kyoto Climate Protocol, which sets targets to reduce greenhouse gas emissions. In 2001, this treaty was rejected by the US, which angered government leaders in the European Union and environmental activists, asserting that such accords should bind signatory countries of the Climate Change Convention and also developing nations (Swarns, 2002). Developing nations refuse, saying that the wealthy nations are the prime polluters. To come into force, the treaty must be ratified by 55 nations that together account for 55% of the total carbon dioxide emissions. Had the US signed the treaty, ratification of

the protocol would have been possible in the near term. The United States is viewed as the world biggest polluter (Swarns, 2002) and consumes more energy than any other country in the world, on the order of a quarter of the world’s consumption (BP, 2002). There are definite correlations among industrial development, environmental degradation, and poverty. Determining how to define and measure relevant correlations as they enhance or diminish sustainability is important in evaluating the progress among countries as they strive to be more sustainable.

### Environmental sustainability index (ESI)

The Global Leaders of Tomorrow Environment Task Force of the World Economic Forum developed an environmental sustainability index (ESI) to provide a means to analyze and measure progress toward achieving sustainability in 142 countries. Like the environmental sensitivity index for shoreline sensitivity oil spills, this ESI provides a way to synthesize data on multiple parameters to yield an overall relative ranking. For the ESI, environmental sustainability is measured through 20 indicators, e.g., air quality and reducing greenhouse gas emissions, that are grouped into five core components (Yale, 2002). The core components include: (1) the state of Environmental Systems, such as air, water, soil, ecosystems; (2) reducing Stresses on those systems in the form of pollution and exploitation levels; (3) Human Vulnerability to environmental change in the form of lack of food and nutrition; (4) Social and Institutional Capacity to foster effective responses to environmental challenges; and (5) the ability of a country to participate in Global Stewardship, e.g., cooperate in international conservation efforts. The ESI tracks relative success and provides an overall ranking for each country based on the five components. The ranking is converted into a single score. If Country “A” has an ESI score that is higher than Country “B”, then Country “A” is considered to be better positioned than Country “B” to maintain favorable environmental conditions for the future.

Table 1 displays the ESI scores and rankings of the 142 countries for which data sets were adequate for evaluation. Based on the 2002 ESI, Finland was the highest-ranking country with a score of 73.9 and the lowest was the Kuwait with a score of 23.9. Table 2 displays the scores of the 20 indicators for five sample countries: Finland, Canada, Netherlands, Mexico, and the United States.

A significant finding in evaluating the results of the 2002 ESI scores is that no country is above average in all 20 indicators, nor is any country below average for all 20 indicators. This means that all 142 countries evaluated have room for improvement and no country is solidly on the path toward sustainable development. A noteworthy finding in the ESI analysis is that at a very broad level, there is a significant positive correlation between per capita income and the ESI. In general, wealthy countries have higher scores on social and institutional capacity measures, reducing ambient stresses (except land and biodiversity) and on reducing human vulnerability. On the other hand, less wealthy countries generate lower environmental stress, producing better scores on the waste and emissions indicators, as well as protecting the global commons.

**Finland, Canada, and the Netherlands.** In 1993 the Finnish National Commission on Sustainable Development (FNCSO) was established to coordinate measures on sustainable development at different levels. Finland ranks at the top of the ESI because of its success in minimizing air and water pollution, its high

**Table 1. 2002 Environmental sustainability index (ESI) (CIEN, 2002).**

Rank	Country	ESI	Rank	Country	ESI	Rank	Country	ESI
1	Finland	73.9	48	Venezuela	53.0	95	Benin	45.7
2	Norway	73.0	49	Belarus	52.8	96	Chad	45.7
3	Sweden	72.6	50	Germany	52.5	97	Cambodia	45.6
4	Canada	70.6	51	Papua N G	51.8	98	Guinea	45.3
5	Switzerland	66.5	52	Nicaragua	51.8	99	Nepal	45.2
6	Uruguay	66.0	53	Jordan	51.7	100	Indonesia	45.1
7	Austria	64.2	54	Thailand	51.6	101	Burkina Faso	45.0
8	Iceland	63.9	55	Sri Lanka	51.3	102	Sudan	44.7
9	Costa Rica	63.2	56	Kyrgyzstan	51.3	103	Gambia	44.7
10	Latvia	63.0	57	Bosnia and Herze.	51.3	104	Iran	44.5
11	Hungary	62.7	58	Cuba	51.2	105	Togo	44.3
12	Croatia	62.5	59	Mozambique	51.1	106	Lebanon	43.8
13	Botswana	61.8	60	Greece	50.9	107	Syria	43.6
14	Slovakia	61.6	61	Tunisia	50.8	108	Ivory Coast	43.4
15	Argentina	61.5	62	Turkey	50.8	109	Zaire	43.3
16	Australia	60.3	63	Israel	50.4	110	Tajikistan	42.4
17	Panama	60.0	64	Czech Republic	50.2	111	Angola	42.4
18	Estonia	60.0	65	Ghana	50.2	112	Pakistan	42.1
19	New Zealand	59.9	66	Romania	50.0	113	Ethiopia	41.8
20	Brazil	59.6	67	Guatemala	49.6	114	Azerbaijan	41.8
21	Bolivia	59.4	68	Malaysia	49.5	115	Burundi	41.6
22	Colombia	59.1	69	Zambia	49.5	116	India	41.6
23	Slovenia	58.8	70	Algeria	49.4	117	Philippines	41.6
24	Albania	57.9	71	Bulgaria	49.3	118	Uzbekistan	41.3
25	Paraguay	57.8	72	Russia	49.1	119	Rwanda	40.6
26	Namibia	57.4	73	Morocco	49.1	120	Oman	40.2
27	Lithuania	57.2	74	Egypt	48.8	121	Trinidad and Tob	40.1
28	Portugal	57.1	75	El Salvador	48.7	122	Jamaica	40.1
29	Peru	56.5	76	Uganda	48.7	123	Niger	39.4
30	Bhutan	56.3	77	South Africa	48.7	124	Libya	39.3
31	Denmark	56.2	78	Japan	48.6	125	Belgium	39.1
32	Laos	56.2	79	Dominican Rep.	48.4	126	Mauritania	38.9
33	France	55.5	80	Tanzania	48.1	127	Guinea-Bissau	38.8
34	Netherlands	55.4	81	Senegal	47.6	128	Madagascar	38.8
35	Chile	55.1	82	Malawi	47.3	129	China	38.5
36	Gabon	54.9	83	Macedonia	47.2	130	Liberia	37.7
37	Ireland	54.8	84	Italy	47.2	131	Turkmenistan	37.3
38	Armenia	54.8	85	Mali	47.1	132	Somalia	37.1
39	Moldova	54.5	86	Bangladesh	46.9	133	Nigeria	36.7
40	Congo	54.3	87	Poland	46.7	134	Sierra Leone	36.5
41	Ecuador	54.3	88	Kazakhstan	46.5	135	South Korea	35.9
42	Mongolia	54.2	89	Kenya	46.3	136	Ukraine	35.0
43	Central Af. ep.	54.1	90	Myanmar (Burma)	46.2	137	Haiti	34.8
44	Spain	54.1	91	United Kingdom	46.1	138	Saudi Arabia	34.2
45	United States	53.2	92	Mexico	45.9			
46	Zimbabwe	53.0	93	Cameroon	45.9			
47	Honduras	53.1	94	Vietnam	45.7			

**Table 2. Indicator and ESI for Finland, Netherlands, and the United States.**

institutional capacity to handle environmental problems, and its comparatively low levels of greenhouse gas emissions.

Canada ranks fourth on the ESI and the country's Department of Foreign Affairs and International Trade (DFAIT) has a department specifically devoted to sustainable development. In addition, more than two-dozen federal departments in Canada are required to prepare sustainable development strategies. In September of 2000, Canada's National Roundtable on the Environment and the Economy (NRTEE) launched its Environment and Sustainable Development Indicators Initiative. This is a three-year program to develop and promote a focused set of national indicators that are credible, relevant, and well accepted.

The Netherlands ranks 34<sup>th</sup> in the 2002 ESI report. Unlike Finland and Canada, the Netherlands is a small country that deals with complex environmental issues such as high population density (1,191 individuals per mi<sup>2</sup>), an economy dependent on industry, the use of intensive agriculture practices, and a location along the Rhine River, which is the transportation hub for Europe. The Netherlands' National Environmental Policy Plan (NEPP) has developed a list of target groups that are the sources of environmental degradation along with policies, and in many cases specific pollution reduction requirements, that each group must follow.

**United States.** Overall, the US ranks 45<sup>th</sup> in the ESI. In eight of the twenty indicators, the US was ranked outside the top 100

(of 142) countries, including global stewardship (134<sup>th</sup>), reducing environmental stress (131<sup>st</sup>), biodiversity (101<sup>st</sup>), reducing air pollution (122<sup>nd</sup>), reducing waste and consumption pressures (136<sup>th</sup>), eco-efficiency (107<sup>th</sup>), reducing greenhouse gas emissions (133<sup>rd</sup>), and reducing transboundary environmental pressures (135<sup>th</sup>). However, the one indicator where the US ranks first in the world is science and technology. As can be seen from 2002 ESI report, overall the US ranks in the top third of the world's countries for making progress toward sustainability. However, we do have significant areas where our performance ranks in the bottom third.

### Sustainable development in the United States

In 1993, then President Clinton formed the President's Council on Sustainable Development whose membership included senior representatives from federal, state, and local governments, non-governmental organizations (NGOs), and industry. Active from 1993-1999 and now defunct, this council developed policy recommendations for steps the United States could take to realize sustainable development. There is a complex myriad of sustainable development activities among different federal agencies and non-governmental organizations. Many states have their own initiatives and partnerships of varying scope exist between government and industry, as highlighted in Table 3. The

**Table 3. Sustainable development highlights in the United States.**

<b>THE BUSINESS COMMUNITY</b>	Extended Product Responsibility, e.g., recycling Other Business Efforts, e.g., Energy Efficiency Eco-Industrial Parks, e.g., Northampton County, VA Automotive Technologies, e.g., electric vehicles
<b>NON GOVERNMENTAL ORGANIZATIONS AND ACADEMIC INSTITUTIONS</b>	Working with America's Businesses, e.g., Responsible Care Working with Communities, e.g., Architecture for the Future Educating Tomorrow's Leaders, e.g., Univ. of New Hampshire
<b>FEDERAL GOVERNMENT</b>	White House Interagency Working Group on Sustainable Development Federal Interagency Working Groups Federal Offices of Sustainable Development, e.g., NOAA/DOC, DOA, DOE, EAP Educational Programs, e.g., Sustainable Development Extension Partnership Federal Technology Programs, e.g., Manufacturing Extension Partnership Metropolitan Development Issues, e.g., Brownfields Initiative Natural Resources Management, e.g., Rebuilding fisheries Eco-Efficiency Initiatives New Approaches to Environmental Management, e.g., Project XL, Common Sense Initiative
<b>REGIONAL, STATE, AND COMMUNITY EFFORTS</b>	Pacific Northwest Regional Council Statewide Efforts, e.g., Minnesota, Oregon, Maryland Local Communities, e.g., Seattle, St. Louis, Cleveland Sustainable Communities Network Joint Center for Sustainable Communities

US has numerous sustainable development programs across the country, based on recent Internet searches. However, a central organizing entity is lacking; the sustainability programs in the US follow more of a “shotgun scatter” pattern. That is, activities are being implemented as separate programs at all levels of government and industry without a central policy directive, point of oversight, or way to monitor overall progress in relation to goals, other than perhaps using the ESI.

Assuming that having national goals and a centralized way to influence progress toward sustainability is desirable, the federal government could provide the most influence. Presently, there are several federal agencies that have important initiatives underway. Some of the prominent programs are reviewed below.

**US Environmental Protection Agency.** The EPA is the US agency with responsibilities to enforce environmental laws and protect the environment. EPA has several programs related to sustainable development, three of which are briefly described here: pollution prevention, Smart Growth, and the Brownfields Economic Redevelopment Initiative. The Pollution Prevention Act was signed in 1990 and states that “pollution should be prevented or reduced at the source whenever feasible.” Many strategies have been implemented for the agency itself as well as public and private stakeholders. Rather than a regulatory approach, EPA implemented strategies such as the Common Sense Initiative and Project XL. The Common Sense Initiative tests innovative, flexible solutions to environmental problems and improves the cost-effectiveness of the existing regulatory system while continuing to protect and restore the environment. This strategy incorporates “cleaner, cheaper, and smarter” approaches to environmental protection on an industry-by-industry basis. Project XL provides support for pilot projects that demonstrate alternative environmental management strategies that could achieve better results than those required under existing law.

Smart Growth is development that serves the economy, community and the environment. Smart Growth makes it possible for communities to grow in ways that support economic development and jobs; create strong neighborhoods with a range of housing, commercial, and transportation options; and achieve healthy communities to provide families with a clean environment. Reducing urban sprawl by improving existing urban areas and redeveloping now-unused industrial sites are ways to promote Smart Growth and, in doing so, reduce air, water, and soil pollution.

In 1996, the U.S. Environmental Protection Agency joined with many non-profit and government organizations to form the Smart Growth Network (SGN) to promote Smart Growth in neighborhoods, communities, and regions throughout the United States. Other Smart Growth advocacy programs include: the Smart Communities Network of DOE, the Sprawl Watch Clearinghouse, and Smart Growth America.

**US Department of Energy.** The United States Department of Energy (DOE) promotes sustainability through numerous initiatives, including the Smart Communities Network (SCN). The SCN was established to promote sustainable development with an emphasis on increasing energy efficiency. Although the SCN does not use the term Smart Growth to describe their efforts, their sustainable development objectives still focus on the three chief aspects of Smart Growth: economic development, environmental preservation, and cultural well-being. A related DOE program is the Office of Energy Efficiency and Renewable Energy (EERE), whose mission is to strengthen America’s energy security, environmental quality, and economic vitality in public-private partnerships. EERE places emphasis on programs such as the Biomass Program, that promotes opportunities to use

domestic and sustainable resources to provide fuel, power, and chemical needs from plants and plant-derived materials and the Solar Energy Program, which aims to accelerate the development of solar technologies as energy sources for widespread use, as well as to educate the public about the value of solar power as an energy source.

**US Dept. of Commerce.** The Economic Development Administration (EDA) promotes eco-industrial development and, through grants, has funded the various aspects of eco-industrial parks in such places as Cape Charles, VA (initial phase of the sustainable technology park); Dallas, TX (eco-business park and international environmental training and technology center); Burlington, VT (bioshelter greenhouse and infrastructure for capturing and using waste heat from an electrical generating station).

**US Dept. of Agriculture.**

## Conclusions

Sustainable development requires viewing the world as a global ecosystem. To manage global ecosystem quality and reduce impacts is an incredibly complex undertaking, made almost impossibly challenging due to the huge volume of political systems and variables in scientific approaches and data related to ecosystem characterization throughout the world. Overall the US effort seems fragmented and is characterized by voluntary programs, as opposed to regulatory approaches or even well-defined performance targets to reduce environmental impacts or achieve specific milestones. All US federal initiatives are voluntary and rely on incentives and partnerships to be successful, although several of our regulatory programs, e.g., the Clean Air Act and Clean Water Act regulations, promote sustainability without specifically referencing it.

Based on available information, as a country, the United States has opted to avoid setting performance targets and milestones with regard to sustainability goals. This approach is contrary to the current widespread business practice of setting performance-based goals and measurements. It appears that the US is reluctant to be held accountable for at least part of our impacts on the global commons. The private sector is key to advancing sustainability in the US. Several US companies, e.g., Texaco and Ford, in addition to other prominent members of the WBCSD, e.g., Royal Dutch Shell and BP, have left the Global Climate Coalition and have not endorsed the Kyoto Treaty.

On July 17, 2002 a letter from the attorney generals of 11 states, including California, New York, Maryland and Massachusetts, was sent to President Bush urging him to mandate the reduction of greenhouse gases. They note that the administration’s policy of state-by-state regulation will lessen the certainty of reduced emissions. They urge the President to adopt a comprehensive policy consisting of mandatory caps of carbon dioxide emission levels to protect both citizens and our economy (State Attorneys General, 2002).

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