INTRODUCTION TO SUSTAINABLE DEVELOPMENT

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Summary

The concept of sustainable development arises from a worldview which sees the survival, progress, and continued maintenance of the human community as dependent on the continued health and viability of the earth's life support systems. Sustainable development implies processes of fundamental change in our social system and institutions. The thrust of this change relates to addressing the challenges embedded in the new global awareness that the earth is finite, and all of the planet's life support systems – including social and economic systems – are globally interconnected and interdependent.

The awareness of unsustainability has earlier been articulated from the perspectives of population growth outstripping resources, or ecological crisis that is caused by the destruction of the life support systems. In the years leading up to the 1987 report of the World Commission on Environment and Development (the Brundtland Commission), contributions to the understanding of sustainability focused on the concept of carrying capacity, planning and intervention in unsustainable practices, as well as the need for improvement in resource efficiency.

When the Brundtland Commission published *Our Common Future*, it ignited worldwide attention to the concept of sustainable development. The Brundtland report defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." The report adopted the perspective that economic inequities will lead to over-exploitation of resources, and economic growth is needed in the poorer countries in order to satisfy basic human needs, but that this development must follow a "new pathway" that does not entail environmental destruction. It also noted that meaningful political participation is needed to ensure that the fruits of economic growth are equitably distributed. The Brundtland report proposed a number of new ways for achieving sustainable development. It also led to the 1992 United Nations Conference on Environment and Development (UNCED) (commonly called the Earth Summit) held in Rio de Janeiro. The fruits of the Conference included *Agenda 21*, the *Rio Declaration,* the *United Nations Framework Convention on Climate Change,* the *United Nations Convention on Biological Diversity,* and the *Statement of Principles for the Sustainable Management of Forests,* all of which were adopted by the 178 governments that attended the Conference.

Agenda 21, the action plan for sustainable development, provides a comprehensive approach to address the pressing environment and development problems of the day, and to prepare the world for the long-term challenges of sustainability in the twenty-first century. It embodies a dynamic program, which considers various aspects of sustainable development, including social, economic, environmental, scientific, educational, and management dimensions. The Rio Declaration presented a set of basic sustainability values and principles "The rights of the environment to protection," and the need to exercise "the precautionary principle" in decisions that impact upon the environment are among the fundamental tenets.

The Commission on Sustainable Development (CSD) was created in December 1992 to oversee, promote and support the implementation of *Agenda 21*.

The idea of sustainable development has different implications for different decision-makers. For government, a shift in focus from government to governance is anticipated. Increasingly, national governments must form partnerships with other levels of government, with the private sector, and with civil society organizations (e.g. NGOs). Governments at all levels must also develop the capacity to make systems-based, prospective decisions that connect social, economic and environmental aspects. This in turn will require a vast improvement in "horizontal" decision making that breaks down the "silos, stovepipes and solitudes" (Ann Dale's phrase) that characterize most large government bureaucracies. Government must play a strategic role in stimulating and facilitating changes within government and in all sectors of society, contributing to the building of a strong capacity for innovation that supports sustainability, thus maintaining its vital "steering" function. For business and industry, a new form of capitalism that accepts the significance of protecting and where possible enhancing the life support systems must be adopted. The new practice will include transforming production practices, designing for long-term usage of products, and reducing impact of the transportation of goods and material, as well as shifting emphasis to services and their flow, and ensuring full producer responsibility for all products.

For farming and agriculture, the main objective is to increase food production in a sustainable way and to enhance food security, particularly for the 815 million people who are currently undernourished. Sustainable agricultural practices must be developed with an appreciation of the rising trend in global consumption, and a potential downward trend for arable land availability and soil productivity. It must begin with a better understanding of the overall global land resources, and accordingly devise a strategy that is both sympathetic to the needs of the local community as well as to a bioregional perspective. For civil society, NGOs and individuals, sustainable development implies the creation of a political space in which the public interest of individuals and groups can be expressed and help influence matters that affect the public. Education for Sustainable Development (ESD) at all levels is an important instrument for cultivating a vigilant citizenry. Public awareness is a precondition for citizens to better exercise their freedom of choice. Broad public participation in decision-making and the availability of good information about the environment and society are key prerequisites of successful implementation of sustainable development. In recognition of the fundamental importance of education, the UN declared 2005 – 2014 as the Decade for Education for Sustainable Development (UNDESD).

Technology has given us many tools to observe, monitor, and assess the physical, chemical, and biological aspects of change in the natural environment, and has helped us to learn about the various levels of impact that human activities have on the environment. Our new knowledge of the global system is a product of advances in global observation technologies and integrated research design. New methodologies of assessment and evaluation of progress towards sustainability have also been adopted by the social sciences and applied to measure societal development. Significant progress has been made in the development of performance indicators in the social, natural, economic, and institutional domains.

A long term monitoring program to collect data on key aspects of global ecology and the human community will provide multidisciplinary insights about the world. Reporting is now used as a monitoring and communication tool required by all sectors of society. New information technologies (IT) have created unprecedented opportunities for sharing and exchanging information. However, a wide "implementation gap" still remains between diagnosis and solutions. A lack of financial support to back the commitments made at the Earth Summit, and lack of political will are among the factors blamed for the slow progress toward meeting *Agenda 21* objectives.

It is clear that the private sector, which generates most of the world's wealth, has a key role in sustainable development. The United Nations has introduced strategically the Global Compact to engage the private sector. Our greatest challenge lies in the formulation of a joint learning, co-evolving process, which is conducive to finding solutions to problems that are intrinsic in the human system. We need the integration of both the sciences and the arts to inspire, motivate and advance the human quest for survival. Ultimately sustainability offers society the challenge and the opportunity of making wise choices that will lead to a brighter future for humankind and the planet.

1. What is Sustainable Development?

The concept of sustainable development arises from a new worldview, which sees the survival, continued progress, and maintenance of the human community as dependent on the continued health and viability of the earth's life support systems. The term "sustainability" derives from the Latin root *sus-tinere*, which means to "under-hold" or hold up from underneath, implying robustness and durability over time. Accordingly, sustainability depicts a paradigm that seeks to protect the planet's life support systems to ensure longevity for humans and other species.

Sustainable development can be defined as the process of strategic changes in our social systems and institutions needed in order to achieve sustainability. The term "development" is criticized by some as connoting growth. Unfettered growth of the "ecological footprint" of the human population, defined as the portion of the biosphere used to support human production, consumption and waste, is, of course, ultimately not sustainable. Others interpret "development" to mean progress in social well-being or improvement in the quality of life. Sustainable development is, therefore, a contentious and thought provoking concept (see "Sustainability in international law"). To respond to the challenge of finding ways in which all members of the human family can live satisfying lives within the means of nature (William Rees's definition), would require collaborative efforts from a multiplicity of talents: thinkers about society, scientists and practitioners, business leaders, farmers, governments, and citizens.

The fundamental premise that underpins the concept of sustainable development is that the peoples of the world depend for their survival on an ecological system that is both global and finite. Therefore, observing nature's limits is important in order to prevent an irreversible depletion of the life support systems. Until recently, the concept of the earth as a finite system was not easy to understand and convey, for the earth had always seemed so vast and limitless. The advent of space travel brought a new awareness. Margaret Mead asserted that the first image of the earth as a small lonely blue ball in space, looking "vulnerable and needing protection from the ravages of the technological man" provided impetus for the environmental movement. Canadian astronaut Roberta Bondar described our planet as "a crisp, bright jewel in space." Some astronauts noted the rising smoke from the burning of the Amazon forest, and others the high-energy use portions of the earth's surface literally glowing at night. All these images have given new visual meaning to the metaphor "spaceship earth," which was coined by Kenneth Boulding in the 1950s.

The image of the earth from space provided a first glimpse of the "big picture of sustainability" because it showed the limits and vulnerability of earth's life support systems, and made clear the global environmental impacts of human activities.

David Orr's (1991) overview of the extent of environmental degradation that occurs every day on planet earth is alarming:

If today is a typical day on planet earth, humans will add 15 million tons of carbon to the atmosphere, destroy 115 square miles of tropical rain forest, create 72 square miles

of desert, eliminate between 40–100 species, erode 71 million tons of top soil, add 2,700 tons of CFCs to the stratosphere, and increase the population by 263,000.

(Orr, 1991)

In the decade since this stark assessment was published, some of the numbers had changed but the general direction had not. In its 2001 report entitled "People and Ecosystems: The Fraying Web of Life" the World Resources Institute concludes that most of the world's ecosystems are stressed and deteriorating.

Echoing this concern William Rees (see "Carrying capacity and sustainability: waking Malthus's ghost") cautioned that:

At the dawn of the twenty-first century, the massive scale of human activity ensures that many environmental impacts are global in scope. Stratospheric ozone depletion now affects both the southern and northern hemispheres; atmospheric carbon-dioxide has increased by 30 percent in the industrial era and is now higher than at any time in the past 160,000 years; mean global temperature has reached a similar record high; the world seems to be plagued by increasingly variable climate and more frequent and violent extreme weather events; more atmospheric nitrogen is fixed and injected into terrestrial ecosystems by humans than by all natural terrestrial processes combined; up to one-half of the land on earth has been directly transformed by human action; more than half of the planet's accessible fresh water is already being used by people; two-thirds of the world's major fisheries are fully or overexploited; and biodiversity losses are accelerating.

(Rees, 2002)

The global environmental problematique underscores the need for a new approach to knowledge that will extend our capability in problem solving by examining and observing the long term and cumulative impacts of various phenomena. The challenge is complex and multifaceted. John Robinson and Jon Tinker have developed a very useful systems-based definition of sustainability as a creative, integrated response to three "imperatives;" ecological, economic, and social:

- The "ecological imperative" is to remain within planetary biophysical carrying capacity.
- The "economic imperative" is to ensure and maintain adequate material standards of living for all people.
- The "social imperative" is to provide social structures, including systems of governance, which effectively propagate and sustain the values and culture people wish to live by.

Most sustainability theorists and practitioners would expand the dimensions of the social imperative to include a fundamental commitment to both intergenerational and intragenerational equity. A sustainable world must provide for the basic needs of all people living today ("intragenerational equity") without precluding the ability of future generations to meet their needs ("intergenerational equity").

The technological ability to view the earth from space has liberated us from the myopic tendency to treat issues, including both environmental and social ones, from a narrow, localized perspective. Pollution knows no political boundaries. And no country can insulate itself from social turmoil, whatever its origins. This is one of the indelible lessons of September 11 2001. With the present technological advancement in communications, no one can escape the shock and horror of seeing another fellow human in agony anywhere in the world. As Marshall McLuhan prophesied, micro-electronics has created a kind of global village and has made visible the human condition in every corner of the world, now more than ever. The new global awareness has exposed the urgency and the multifaceted nature of many societal issues; and at least in concept, has linked every state, every sector, every individual, now and in the future, to the same sustainability challenge and destiny. All of our life support systems – including our social and economic systems – are globally interconnected and interdependent.

Our Common Future, the seminal report of the World Commission on Environment and Development (the Brundtland Commission) provided a compelling analysis of this "new reality from which there is no escape." In the crisis facing humanity and the planet, the World Commission saw both danger and opportunity. The danger results from carrying on as if "business as usual" were sustainable. The opportunity lies in taking advantage of improvements in science and technology that can increase our understanding of natural systems as well as our capacity to harvest the riches of nature. "We have the power to reconcile human affairs with natural laws and thrive in the process. In this our cultural and spiritual heritages can reinforce our economic interests and survival imperatives." Thus the Brundtland Commission spoke hopefully about humanity finding a new "pathway" involving a different kind of "economic growth … based on policies that sustain and expand the environmental resource base" while addressing "the great poverty that is deepening in much of the developing world."

Their report maintained that the potential for global food production was 8 billion tons of grain equivalent, and estimated that given an average daily consumption of 6,000 calories, the mentioned amount could sustain a little more than 11 billion people. But if the average daily consumption level rises to 9,000 calories, only 7.5 billion people can be supported (see "Malthus' Essay on the Principle of Population"). The present world population is already 6 billion. T. Robert Malthus (1798) maintained, under optimum conditions, the population can double every twenty-five years. Our global population is growing by 80 million per year, and the Brundtland Commission predicted that the world population will stabilize at about 10 billion around the middle of the twenty-first century.

In 2001 the UN Secretary-General's report, showed that the world population would reach 8 billion by 2025, and 9.3 billion in 2050. This report also provided statistics indicating that although global food production has continued to expand more rapidly than population in the past decade, some agricultural practices have led to environmental deterioration. During this period, agricultural expansion continued to encroach into forests, grasslands and wetlands. The rate of deforestation for the 1990s is 14.6 million ha per year. This has been caused mainly by the expansion of agricultural practices and urbanization. It was estimated that a 17 percent increase in water supply

would be needed for food growing in the next twenty years, putting additional pressure on the problem of water scarcity. By 2025, two-thirds of the world's population could be living in countries with moderate or severe water stress. Currently, 815 million people in the world are undernourished. Of these, an estimated 777 million live in developing regions, 27 million in transition countries, and 11 million in industrialized countries.

Evidently, population growth coupled with an increased rate of resource consumption, and waste accumulation, will lead to environmental decay, and land, food, and water shortages. Resource amenities unevenly captured by the rich and the poor will further polarize nations and communities and create disastrous outcomes. In the decade of the 1990s, an estimated 80 percent of world population increase took place in urban centers, but the urban centers are not always healthy places. Urban centers have a sizeable underclass of people who are poor, sick, unemployed, or exploited (see "Urbanization"). Jim Wolfensohn, the former President of the World Bank called this problematic scenario of environmental degradation and growing social inequity, a "time bomb" which, if we do not take action now, "could explode in our children's faces."

The global environment is undergoing significant changes that are having profound effects on society now and for the future, including climate change, increased waste and pollution, and the depletion of natural resources. Global social problems of poverty, unemployment, disease, and violent conflict have reached staggering levels and are in many respects becoming worse.

Sustainable development is a response to the time bomb alarm. The definition of sustainable development provided by the Brundtland Commission in *Our Common Future* (1987) is "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." It is about how to mobilize successfully international, national, community, and human intellectual resources in general, towards solving problems that are, overall, degrading the life support system, compromising the viability of local communities, and hurting the health and well-being of individuals. It is about creating a better alternative to the system at work, because, based on our present understanding, the business-as-usual scenario will bring great disasters to humankind, and is not sustainable.

The sustainable development premise revolutionizes the traditional view of environmental management, which sees the dynamics of society consisting of the interaction and transaction of spheres: economic, environmental, social, and so on. And accordingly, environmental management is about making advances within the environmental sector (for instance, pollution monitoring and mitigation technologies) and in areas where the environmental interest is seen as overlapping with other sectoral priorities (for example, employment in resource extraction and processing industry; new housing in suburbs). The principal disadvantages of this traditional view are that, first, environmental concerns become a tradeoff in every negotiation. The quality and the overall performance of the life support system becomes a mere afterthought. Second, it fails to acknowledge that many environmental problems are systemic, and interdependent. The clue to a solution may well lie in a fundamental change in attitudes, behaviors and world view.
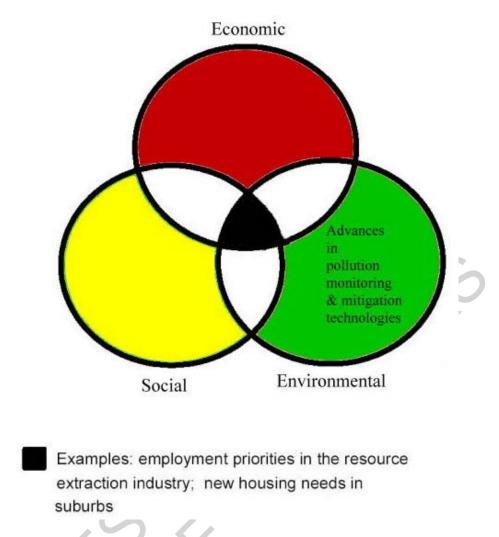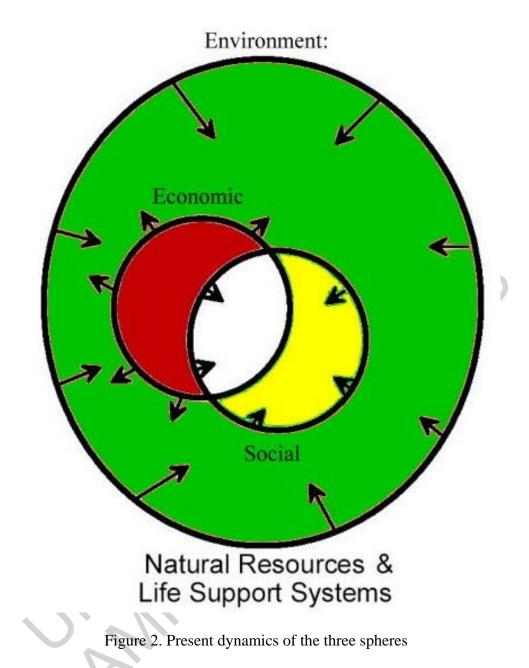
Figure 1. Traditional view of environmental management

By contrast, the sustainable development perspective asserts the limits of nature. There has been considerable controversy around this issue, however. The Brundtland Commission was quick to point out that these are "not absolute limits but limitations imposed by the present state of technology and social organization on environmental resources, and by the ability of the biosphere to absorb the effects of human activities." It went on to insist that improvements in technology and social organization could "make way for a new era of economic growth."

Some critics contend that ultimately growth itself will become either "uneconomic" (Herman Daly's phrase), unsustainable, or both. From this "strong sustainability" perspective, the precondition of sustainability is to protect or enhance the ecological heritage we are passing on to future generations. Proponents of a "weak sustainability" approach would argue only that the total stock of "capital" – manufactured, natural, and human – must be constant or expanding.

Figure 2. Present dynamics of the three spheres

This view implicitly countenances the depletion of natural capital so long as these losses are compensated by growth in manufactured capital. But as strong sustainability advocates are quick to point out, no amount of expansion in fishing boats (manufactured capital) can make up for a collapse of the fish stocks (natural capital.) Furthermore, nature provides a whole range of "natural services"; rainfall, water purification, heat, and so on that are unaccounted for on the balance sheet of modern economies and businesses. Without these natural services all human life would become hugely problematic.

Hence nature or the life support system must be seen as the outermost sphere because the life support system nurtures and sustains human lives. The preservation of the character of the life support system is important because, if it is drastically altered, it may cease to support the functioning of the human and other forms of life, putting

humankind in serious jeopardy, its very survival at stake. Also, ideally, the alignment of the environmental, social, and economic spheres are concentrically descending (see Figure 3). This recognizes that crucial aspects of social activities devoted to non-economic interests, such as voluntarism, and environmental stewardship are important for the nurturing of future generations (see "Egalitarian perspectives on sustainability"). From this perspective the entire economy serves the well-being of the social sphere, within the limits of nature.
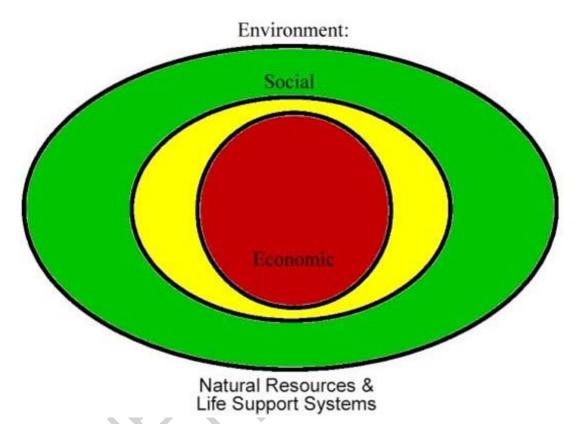

Figure 3. Sustainable Development

In designing a mechanism for stimulating changes in the direction of sustainable development, one must identify the shortcomings of the existing system and learn from experience. The institutions that create wealth in the new economy are changing from being resource based to knowledge based. Technological change has encouraged a shift in manufacturing production from western industrialized nations to plants in Asia and Latin America. Work itself is being transformed, driven by rapid changes in technology, international trade, and economic restructuring. Globalization increasingly exposes all economies, but especially exporter countries, to the dynamics of world markets, with mixed results. The fiscal climate is changing as the role of business expands and that of government shrinks. Even the definition of wealth itself must be modified. Mark Anielski uses the concept of "genuine wealth" which reflects the etymological root of wealth which means literally "the condition of well-being". Improvements in genuine wealth cannot come at the expense of the natural environment. Nor can the wealth of a society be measured appropriately using outdated concepts like GNP. The path of sustainable development requires the use of metrics like the "genuine progress indicator" (GPI).

Advanced industrial societies' traditional response to complexity has been to compartmentalize problems and deal with issues separately, each within its own context. Knowledge is organized in discrete disciplines within academic institutions, societal problems are divided among government departments, and skills are allocated among job classifications and professions. Elites in these societies have specialized to develop expertise, but at the cost of losing perspective on society as a whole. As a result, separate cultures have emerged. A gap has developed between people engaged in social policy and community; the science, technology, and business communities; and those involved in protecting the environment. Each of these solitudes possesses its own assumptions about society, based on different experiences, specialized languages and various interpretations about the cause and effect of common concerns.

These dichotomies become apparent in discussions about government priorities, particularly in the wealthier countries. Finance agencies talk about reducing taxes, debt, deficits, and excessive public spending. Social agencies focus on equity issues; threats to the disadvantaged, unfulfilled needs, and damage to the social infrastructure of health, welfare, and education as a result of cuts in public spending. Environmental agencies focus on issues of climate change, water and air quality, and ecosystem preservation. To all intents and purposes, these disparate groups within government and society appear to live in different worlds, and often regard their fates as independent of one another. They fail to recognize how the decisions taken in one sphere or sector will ultimately impact on all the others.

In schematic terms, the economic, social, and environmental spheres of the present time look like three spheres of varying sizes. The environmental sphere is still the largest, in which both the social and economic spheres situate and interact with each other. The economic sphere is growing in size; the social sphere and the environmental spheres are both shrinking. It may be logical to predict that the alignment of the spheres is moving towards a pattern of concentric circles: environmental, social, and economic in ascending order of size. However, this cannot be a rational prediction, because at a certain point in the transformation, when the limits of nature will be reached, the habitat of humankind will no longer be viable, the social sphere will self-destruct and the economy will grind to a halt. This is the tragedy that one must confront and attempt to avoid.

Scholars, practitioners, and politicians have blamed our present negligent attitude towards our life support system on a host of shortcomings:

- the lack of holistic thinking and practices – compartmentalization of single discipline thinking and of institutional arrangements;
- the absence of global regulatory institutions and legal arrangements;
- the absence of ongoing intergovernmental dialogue, dualism in our power structure and the neglect of feminist concerns represented in realpolitiks;
- the short time frames and weak political will of elected governments;
- the lack of co-ordination among the sectors of government;
- the lack of capacity and tenacity in our administrative institutions;
- the lack of agreement amongst citizenry;
- the weakness of public will during bad economic times;

- the short-term horizons of business;
- the lapse in public spirited initiatives.

Disjointedness, and "missing links" within and between the realms of principles and practices are considered the main weaknesses in the present system.

To achieve sustainability, society needs to stop putting knowledge into separate compartments (silos or stovepipes), acting on the mistaken premise that issues can be dealt with discretely. It has to overcome the myopia of over-specialization, and look at the world as one planet, with an integrated set of systems, where "everything is connected to everything else."

Again, in the words of the Brundtland Commission:

The earth is one but the world is not. We all depend on one biosphere for sustaining our lives. Yet each community, each country, strives for survival and prosperity with little regard for its impact on others. Some consume the Earth's resources at a rate that would leave little for future generations. Others, many more in number, consume far too little and live with the prospect of hunger, squalor, disease, and early death.

(*Our Common Future*, 1987)

The shift of paradigm from present practices to holistic thinking and strategic actions that link immediate to long-term needs and priorities depends on the successful mobilization of community and human intellectual resources. The transformation depends on a broad base of trust and co-operation. Community solidarity rests upon some basic conditions for human dignity and social cohesion. The challenge, therefore, is to bring all sectors of society (government, business, farming and agriculture, the civil society) into some kind of a basic agreement on values and concerns; a new perspective based on a common understanding of sustainability challenges and opportunities. This will facilitate the sharing of resources that is important for the making of wise decisions by countries, communities and individuals in facing the daunting task of "bending the curve" toward sustainability.

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development, and has paved the way for more dialogue at all levels, local and international, on the subject, culminating in the organization of the Rio Summit to focus on the discussion.]

Wackernagel, M.; Rees, W. 1996. Our Ecological Foot-print: Reducing Human Impact on the Earth. Gabriola Island, B.C. and Philadelphia, PA,; New Society Publishers. 160 pp. [This book attempts to give more concrete meaning to the concept of sustainable development by introducing a measurement tool.]

World Trade Organization. 2001. Statistics on Globalization. http://www.wto.org. 44 pp. [This paper provides current indicators of economic and social development of the world.]

Biographical Sketches

David Bell is interested in the Politics of Sustainability; the transformation in political practices, policies, institutions, and culture that will be necessary to support sustainability in the twenty-first century. He has served as consultant and advisor to private sector companies and to governments at all 3 levels in Canada and internationally to the G8, the Government of China, and the Government of Jamaica.

A political scientist by training, David was an undergraduate at York University in its earliest years, graduating with his B. A. in 1965. He received his PhD from Harvard University in 1969, and taught at Michigan State University for 2 years before returning to York in 1971. He served as Dean of the Faculty of Graduate Studies (1981-87) and Dean of the Faculty of Environmental Studies from 1992-1996 at York University.

David is Professor Emeritus and Senior Scholar in Environmental Studies and was until July 2003 the Director of the York Centre for Applied Sustainability (YCAS). This Centre, which he founded in 1996, has now evolved into the York University Institute for Research and Innovation in Sustainability (IRIS).

David is currently the Chair of Learning for a Sustainable Future (www.lsf-lst.ca) and co-chair of the Education Alliance for a Sustainable Ontario (EASO), and of the National Education for Sustainable Development Expert Council (NESDEC). He served as a member of the National Round Table on Environment and Economy (www.nrtee-trnee.ca) from June 2003 to February 2007. From December 2002 until November 2006, David served as Chair Of the Board of Directors of Parc-Downsview-Park Inc. (www.pdp.ca), a federal Crown Corporation whose mandate is to create for the people of Canada an "urban greenspace for the enjoyment of future generations" at former CFB Downsview.

David was a member of the Environmental Task Force of the City of Toronto (1998 – 2000) and the Toronto Sustainability Round Table (2000 – 2003). David chaired the SRT Governance Working Group. He was a founding member of the International Sustainability Indicators Network (ISIN) and was also Chair of the Technical Advisory Committee of the Voluntary Challenge and Registry (VCR Inc) from 1997 until 2004. He served for the Minister of Environment (Ontario) as Chair/facilitator of the Expert Panel on the Taro East Landfill which released its Final Report in October, 2000. In July 2005 he was appointed Chair/facilitator of the Toward Sustainability in York Region Advisory Group which presented its Report to the York Region Council in June 2006.

David's recent papers and chapters include "Education for Sustainable Development: Cure or Placebo?" presented at the IISD/Carleton University Conference *Charting the Future – Learning From the Past: The Path to a Sustainable Canada 1987-2027* October 2007; "Governance Implications of Sustainable Transportation Policy", presented to the International Forum On Strategy and Policy for Sustainable Transportation Development in China (June 2005, Beijing); "Voluntary Codes and the New Sustainability Paradigm" in Wes Cragg (ed.) Ethics Codes, Corporations and the Challenge of Globalization (Edward Elgar, 2005); "The Role of Government in Advancing Corporate Sustainability" (background paper for the G8 Environmental Futures Forum, 2002); "Towards a National Sustainable Development Framework for Jamaica: National Sustainable Development Framework Scan and Approaches for Process Management" (for the ENACT Project/Government of Jamaica, 2003); "Advancing Community Sustainable Development in the Ontario Region: The Role of the Government of Canada" (for Environment Canada, 2001); "Sustainable Urban Communities in Canada: From Rio to Johannesburg" (for the Canadian Earth Summit Secretariat, 2001). He is the co-author (with Glen Toner) of 2 chapters in the UBC Press book, Sustainable Production (Glen Toner ed.) published in the Spring of 2006. His chapter on "Canadian Political Culture" will appear in the forthcoming edition of Canadian Politics in the 21st Century, co-edited by Glen Williams and Michael Whittington.

David was the writer and host of a series of 12 one hour radio broadcasts for the Open College (91.1FM Toronto) entitled "Sustainability: Canadian and Global Perspectives" that has been broadcast six times in Canada and once internationally by shortwave from Radio Peace International in Costa Rica. (Available in RealAudio at www.lsf-lst.ca.)

David was Honorary Theme Editor of the Sustainable Development Theme of the *Encyclopedia of the Life Support Systems (EOLSS),* published in collaboration with UNESCO; and is an editor of the *International Journal of Sustainable Development*. He was a founding core faculty member of the Sustainable Enterprise Academy, developed by the Erivan K. Haub Program in Business and Sustainability in York University's Schulich School of Business.

In May 2007, the City of Toronto honoured David with a Green Toronto Award for Leadership in Sustainability.

Yuk-kuen Annie Cheung's research interest covers a wide range of community, governance and policy issues, using sustainable development as the overarching theme. Her work thus far has addressed concerns over the urban rural divide, environmental protection and management, social justice, human security, multiculturalism, human rights, public participation, peacebuilding, civil society's role in governance, micro-credits and poverty alleviation, and climate change adaptation. Her international work includes Canada, China, and the Democratic People's Republic of Korea.

Dr. Cheung was educated both in Hong Kong and Canada. She received her undergraduate degree with Honours from the School of Urban and Regional Planning, the University of Waterloo, Canada. She was the recipient of the Philip E. Uren Fellowship in 1982. In 1998, she received her Doctoral degree from the University of Hong Kong, specializing in environmental management. In 2007, she attained the Masters Level of training from the United Nations Institute for Training and Research – through the UNITAR-CANADEM Programme of Correspondence Instruction in Peacekeeping Operations.

Dr. Cheung is a designated Consultant with the Asian Development Bank, a Research Fellow of the Asian Institute at the Munk Centre for International Studies, University of Toronto and a Research Associate of the York Centre for Asian Research (YCAR), York University, Toronto.

Dr. Cheung has also served at the Canadian Institute of Planners as Manager, Policy and Outreach (Domestic and International), and taught "Environmental Impact Assessment" and "the Environment and International Relations" at Glendon College, York University. Earlier in her career, she worked in the NGO sector in Hong Kong. She has served as the Vice Chair of PLAYRIGHT, a NGO promoting play opportunities for children in Hong Kong.