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Globalization, Ecological Security, and the Sustainability of Human Societies

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“Ecological deficits created by the current industrial model cannot sustain the global economy as currently structured” We are depleting the earth’s natural capital at a rate that cannot be sustained. . . . “Economic Deficits are what we borrow from each other: ecological deficits are what we take from future generations.” (Brown, Lester R. Eco-Economy. New York: Earth Policy Institute, 2004:21)

*“Gapping and growing inequality between the rich and the poor, globalized trade, travel and microbes, rampant epidemic diseases such as MDR-TB, AIDS and hepatitis, rapacious neglect of a fragile environment, the disintegration of public health infrastructure and the triumph of raw self-interest over public responsibility define this ever-growing web of failure and betrayal of trust for people’s health.” (Dr. James Orbinski, President, Medecins Sans Frontieres, winner of the Nobel Peace Prize. In the preface to *Betrayal of Trust: The Collapse of Global Public Health* by Laurie Garrett NY: Hyperion 2000)*

GLOBALIZATION and the Environment... What is it and why does it matter?

During the last half of the 20th Century, the population of humans grew to 6.1 billion, exceeding that of the previous 4+ million years of human evolution. During this same period our appetites for and rates of consumption of the earth’s resources also increased. Between 1950 and 2000, the global economy increased nearly seven times (Brown 2003:6). Given population growth and rising incomes during this timeframe, we have also increased the world grain demand by 300 percent (Brown 2003). As our standards of living have increased, we have mined our fresh water to the extent that we are using triple the amount as in 1950. We have exceeded the sustainable supply in many countries with the result that water tables are falling, wells are going dry and even rivers are fully allocated or diverted for irrigation, so that many run dry during certain seasons. At current growth rates, we anticipate that there will be more than 9 billion people on the planet by 2015. This

means we will have to be able to provide at least 50 percent more food, fuel, fiber, drinking water, living space, waste management systems and jobs than we are producing now (Meadows 2004, Brown 2003).

Population densities in many parts of the world have already increased beyond the point where people have effective access to water and sanitation, secure food supplies or jobs. Nor do simple population growth rates tell the entire story. If we try to understand the challenges of globalization from the perspective of the amount of earth’s resources that are consumed by people, we’ll find that consumption rates are very uneven. While most of those new citizens of the earth will be born into countries in the developing world, on a per capita basis they will demand fewer natural resources than those of us who live in the United States (Goodale and Daly 1996, Vitousek, 1997, UNDP 2003, UNDP 2004). Why does it matter?

We are now experiencing environmental change at a faster rate and on a larger scale than at any time during human history. The cumulative effects of these changes are of serious concern because for the *first time in history, humans can be considered a “dominant force of nature”* on par with other natural disturbances like hurricanes or volcanic eruptions. In fact, the nature of the changes caused by human activities have consequences from local to global level levels of the planet’s ecosystems. In spite of the more than 250 international environmental treaties intended to remedy or prevent environmental damages that have come into force since the mid-20th Century, the accumulated ecological stresses from our collective economic activities have put our planet’s life support systems at risk. We have globalized the environmental impacts of human activity (Vitousek 1992, Rapport et al. 1998, Brown 2003, Speth 2003).

At a global scale and until about fifty years ago, humans had, for the most part, lived on the “sustainable yield” of the earth—on the “interest” provided by earth’s systems, not on its natural capital or endowment. Today if we pay attention, we will see many signs that we are now dipping into the natural capital itself. As with our

savings accounts, once we dip into the savings itself rather than using only the interest it produces, we will, in the long run, bankrupt the system (Brown 2003:4). What is the evidence that this is true? Close at home, we may notice that our local communities are facing shortages of water, that fuel costs are rising, or that there is a housing shortage because all the available land is built up. We may notice that farmland is rapidly being turned into housing developments or shopping malls. Perhaps your town has been filling in local wetlands to make building sites, or to dispose of its trash. Maybe your local woodlands have been cut down for development. However, to get the big picture, we must look beyond our local communities to recognize the nature of the changes that have accumulated to affect our environment and life support systems at a global scale.

Thomas Friedman contends that “globalization shrinks the world from a size medium to a size small” (Speth 2003:15). Environmental globalization is the process of “integrating not just economies, but also cultures, environments, and governments” both here and in the farthest corners of the earth (Speth 2003:1). Compelling proof of the challenges posed by the “globalization of the environment” is summarized in the *Millennium Ecosystem Assessment* (UNDP 2004), a report in which the international scientists who are its authors assess the forces of human economic activity and identify the effects that have contributed to the current “state” of the planet’s ecosystems.¹

The earth’s ecosystems provide a wide variety of goods and services that benefit people by providing such essentials as food, fiber, mineral and genetic resources, fresh water, and fuel for cooking. They also provide “environmental” or “regulatory” services to maintain air quality, control weather and climate patterns, keep soil from eroding through growth of vegetative cover, facilitate pollination, and process wastes and purify water. Longer term ecological processes, if sustained, form soil, sequester carbon, and maintain the proper balance of oxygen and carbon dioxide to support life. Ecosystems that maintain their “integrity” can function to support biodiversity. The extent to which an ecosystem is diverse can affect all the other services that ecosystem is able to provide. So when we alter habitats

or allow the discharge of toxic chemicals and other pollutants into a river basin like the Rhine or to the world’s largest freshwater lake system, the US-Canadian Great Lakes, we may kill or damage many of the native species in that system. Pollution limits the system’s ability to provide the desired goods such as food and safe drinking water or the environmental services for treating wastes that a healthy system can provide. In both cases, we have impaired the ecosystem’s functional integrity. If ecosystems are stressed beyond their “carrying capacity” (the capacity to tolerate multiple demands over time while still performing their ecological functions), they may radically change: from arable land to desert, from a diverse system to one that has few to no living species (an acidified lake).

The Millennium Ecosystem Assessment and other reports (e.g., Speth, Meadows, Rapport, Lubchenko, Brown) point to at least six global scale indicators of human impacts that threaten the carrying capacity of the planet’s ecological systems:

- The loss of biodiversity due to habitat destruction, over-harvest, introduction of exotic species and climate changes has led to the sixth and largest mass extinction of life on earth (at rates 100 to 100s times greater than background levels of extinction). More than 25 percent of bird species have disappeared over the last 1000 years, for example.
- The global fishery is threatened: In 1965, 5 percent of marine fisheries were fully exploited or depleted. By 1995 about 70 percent of the major marine fisheries were fully exploited or depleted from causes such as habitat destruction by fishing gear, removal of specific species from the food chain, by-catch, and just plain over-fishing.
- Over 50 percent of the planet’s land cover has been transformed from one state to another: forest or grassland to farm, highway or city, floodplain or wetland to water reservoir or farmland. Much of the remaining land is marginal: erosion prone, not arable, on steep slopes, too cold or in desert.
- Release of chlorofluorocarbons (CFCs), assumed initially to be inert, caused a hole in the stratospheric ozone layer leading to increased skin cancers in humans and affecting wildlife as well.

¹ The ecosystems that make up our living environments exist at many scales from local to regional to global. Their boundaries may be specified by: a particular habitat type, a particular type of landscape, the drainage basin of a watershed, elevation, or in the case of climate change, by the entire biosphere itself. Ecosystems are dynamic whole places: an ecosystem includes all the interacting physical and chemical processes and living things, from micro-organisms to humans, within its boundaries.

- Water is a limiting resource for human survival. Humans have increased rates of water consumption such that more than 50 percent of all available surface water on the planet is used by us. Of this, about 70 percent is for irrigated agriculture, with the rest used for industrial activities, drinking water, and sanitation. Often water is returned to the environment salinized, or polluted with toxic chemicals or other industrial, human and animal waste. Increasingly, freshwater shortages are severe in certain regions like the American Southwest, large areas of China, and sub-Saharan Africa.
- Some of the principle biogeochemical cycles are affected. For example, we have extracted nitrogen for use as fertilizer and released it to our environment by our burning fossil fuels, more than doubling the amount that is being “fixed” annually. Much of this nutrient is washed into waterways and coastal areas to change the chemistry of both freshwater systems and the oceans. Their effects can be seen by increased frequency and intensities of red tides and other harmful algal blooms or by the appearance of large zones of low oxygen, known as “dead zones.” Lake Erie exhibits this dynamic as does an area the size of Massachusetts in the Gulf of Mexico. There are now 40 of these large dead zones on the earth (Lubchenco 2003).
- Composition of the atmosphere has been altered leading to climate change. Carbon dioxide has increased 30 percent since the industrial revolution began. This and other greenhouse gases have warmed the earth’s average temperature, leading to rapid melting of glaciers, including the Antarctic ice cap. This has caused sea level rise, very dynamic weather patterns that have increased coastal damage from storm surges and changed ocean temperatures and circulation patterns. (The United States, which produces one-fourth of all carbon emissions, is doing little to reduce them and has officially withdrawn from the Kyoto Protocol, refusing to cooperate with other nations in the current global regime to implement the goals of the Climate Change Convention.)

Given that most of these impacts are the consequence of human economic activities, one obvious conclusion is that our present form of economic globalization has led us to exceed the earth’s capacity to sustain our current levels of consumption of the planet’s goods and services. One sobering reality that we must consider is that under the current World Trade Treaty regime it is illegal for a country to protect its environment if it endangers free trade.

How is globalization related to sustainability, and why is this relationship important? How can we navigate the transition to a just and environmentally sustainable world?

To guide our quest, we must tackle a number of issues concerning the nature of environmental globalization. Clearly, we must understand the nature of the risks we incur for ourselves and our children’s children when our desires for economic wealth now exceed the capacity of the earth to sustain the rate and amount of goods we will collectively extract during our lifetimes. We must be aware of the links between globalization’s ecological impacts and the current state of poverty and wealth among the peoples of the planet. At a planetary scale, we must learn how these accumulating stresses affect the ability of earth’s ecological systems (those interacting physical, chemical and living resources operating at various scales) to support human activities in the present without seriously damaging the ability of those systems to sustain their functional integrity over the longer term. What are costs and consequences for the health of the planet’s non-human life forms? In a reality fraught with uncertainty, we must be prepared to act conservatively to anticipate which natural resources and ecological goods and environmental services must be conserved or remediated to enable local and regional environments to supply them continuously into the future. And we’ll have to find how to learn about other issues that we need to understand better if we are to change the current unsustainable pathways to the future.

Basically, we in the developed world must lower our rates of resource consumption given what we now know. But there are some other challenges. In reviewing almost any collection of statistics collected on a country-by-country or regional basis over the past 20 years, we find that the gap between the rich nations and the poor nations has been growing rather than shrinking. If one uses indicator countries and World Bank tables for 1990–2001, it is very clear that sub-Saharan Africa’s 643 million people have suffered declining life expectancy from 50 to 47 years. Forests in the region continue to disappear with a loss of 0.8 percent of forested area from 1990–99. The value of their agricultural crops has declined by 3 percent of GDP, while access to water and sanitation has only increased by 1 percent (World Bank 2001). Population growth rates significantly exceed replacement rates. Other environmental problems arise from poverty and contribute to the “downward spiral” that leads to greater impoverishment of people, degrading their lands and waters. Some “linkages” commonly

found in poor rural areas are those among high infant mortality, high fertility rates, high population growth rates, and extensive deforestation. Since women and girls are usually responsible for collecting fuel, fodder, water and often for raising food crops, they are hurt disproportionately by degraded environmental resources. Poor farmers, are often “landless,” and use “shifting cultivation” (slash and burn agriculture) practices to claim more farmland from their forests so they can meet subsistence food needs of their families. Because soils in such areas are often of poor quality, they cannot be used to raise crops on a continuous basis without expensive inputs of fertilizer. Since poor farmers cannot afford this, they keep moving, deforesting new areas (IUCN 2003). Finally, ecological refugees arising from food shortages induced by droughts, regional climate variations, water shortages and soil degradation are increasingly both a cause and a consequence of political upheavals (IBRD, World Development Report, 2001).

Global climate change, induced mainly by industrial countries’ emissions, threatens developing countries through reduced crop yields in the low latitudes due to extreme weather conditions. This in turn can lead to increased hunger and reduced water availability in water-scarce regions, particularly in Africa. Rising sea levels resulting from global warming threaten to make several small nations like the Maldives and Tuvalu uninhabitable, and to seriously impact low lying coastal areas in several others such as Bangladesh.

We’ve also learned that many of our global environmental problems are the result of production and resource consumption patterns of people who are NOT poor, but rich. Those of us who live in the industrialized world (e.g., western Europe, Russian Federation, Japan, United States, Canada, Australia, New Zealand) bear a heavy responsibility as a result of our high per capita rates of resource consumption and pollution production. For example, in the United States, with less than 20 percent of the earth’s people, we consume a disproportionate amount of the earth’s energy resources. Annually, an average U.S. citizen may consume 30 times the resources that the average citizen of India consumes. Rich countries efficiently deplete the world’s fisheries, consume disproportionate amounts of tropical hardwoods and other tropical forest products as well as other resources extracted from developing countries. They continue to demand products from or encroach upon the habitats of threatened and endangered species, thus diminishing the planet’s biodiversity. Some, like U.S.

based corporations, even shift their polluting production to poorer countries with less stringent environmental protection policies. Global development policies, intended to help underdeveloped countries to make the transition to competitive economies have instead served to increase the debt loads and therefore the dependency of many developing countries. Loans from rich countries to poorer ones are generally provided through global or regional development banks. When countries cannot meet routine debt repayment obligations, the international lending financial institutions intervene. Debt repayment mandates under the World Bank and International Monetary Fund have often required poorer countries to extract their natural resources at unsustainable rates in order to make debt repayments. Steps one and two in making a transition to sustainability are to reverse harmful production and consumption patterns in the industrial world and to forgive debt loads or seriously reform the strategy for extracting payments from developing countries. We in the industrial world must seriously reduce our emissions of greenhouse gases, manage fisheries on the basis of their ecological limits, limit the capacity of corporations to shift their pollution burdens to poor countries, and provide leadership to adopt and implement new international rules to govern the destruction of habitats so we can begin to reverse the rate of species extinctions.

Before we embark our problem solving journey we should be aware of current international policies intended to address environmental globalization and sustainability concerns. **Table 1** (page 29) presents a summary of such initiatives. Those focused on sustainable development include the Brundtland Commission’s 1987 *Report on Our Common Future*, which triggered the 1992 International Conference on Environment and Development (the “Rio” Earth Summit). The Rio Earth Summit Agreements included the Climate Change Convention, the Convention on Biodiversity, Agenda 21, the Rio Declaration and the Forest Principles. A strategy targeted more specifically on development to eradicate poverty arose from the 2002 Johannesburg Millennium Development meeting (**Table 2**, page 30). All focus on strategies that create international programs of action intended to guide the integration of environment and development initiatives to achieve the goal of sustainable development. All place specific responsibilities on nation states, but collectively, they are intended to cover the earth (Grubb et al. 1993, UNDP 2003). The 2002 *Millennium Development Goals* (summarized in **Table 2**)

were in response to vast, uneven differences between the rich and the poor, including the gap which has widened over the past 20 years, in spite of stated objectives to the contrary. The largest gathering of heads of states ever assembled adopted the UN Millennium Declaration, and the Millennium Development Goals. These goals recognized the lessons we have learned over the past 20 years: we cannot have healthy, sustainable economies unless we also have healthy ecosystems. They are a pledge to rich and poor alike, that we will work toward the eradication of poverty, promotion of human dignity and equality and to achieve peace, democracy and environmental sustainability. These goals are so linked that

we will achieve none unless we make progress toward all (UNDP 2003).

These goals provide ample fodder for the deliberation, debate, and creative problem solving that is required to achieve the degree of “national ownership” by governments, communities and the broad range of interests necessary for progress. Note the targets which have been established (UNDP 2003:1–3). What kinds of actions are needed to make them a reality in your country? What do you think are the biggest challenges? What obligations do we in the United States have with respect to the rest of the world? How would you begin? Where would you look for partners? Who would be

Table 1 Evolution of Global Environmental Policies

YEAR	EVENT	SPONSOR	POLICY	GOALS
1972	Stockholm: UN Conference on the Human Environment	UN ECOSOC	Stockholm Declaration on the Human Environment	Created UNEP (UN Programme on the Environment) and put environment on the global agenda
1974	UN Conference on Population and Development	UNDP	Report	Reduce population growth rates
1975	First UN Conference on Women	UNDP, UNEP	Mexico City	More just governance
1970–1982	Negotiations		The Law of the Sea	Governs exploitation of marine resources
1983	UN established the World Commission on Environment and Development	Chair: Gro Harlan Brundtland	Charge: Examine key issues of environment and development	Sustainable development and poverty reduction
1987	Brundtland Report is Published	WCED	OUR COMMON FUTURE	Set in Motion preparations for a world summit
1987	Amended Vienna Conv	UNEP	Montreal Protocol on Substances that Deplete the Ozone Layer	Banned or limited production or use of ozone depleting substances
1992	Rio Conference on Environment and Development	UNEP	1. RIO Declaration 2. Framework Convention on Climate Change 3. Convention on Biological Diversity 4. Agenda 21 5. The Forest Principles	1. 27 principles to guide action 2. Established principles, mandated protocol negotiations. 3. Goal: preserve biological diversity on the planet 4. Strategic action plan: sustainable development 5. General principles for forest protection and management
1995	Fourth UN Conference on Women & Development	UNDP, UNEP, WCSD	Report	Improve status of women
2002	“RIO + 10” World Summit on Sustainable Development in Johannesburg, So Africa	UNEP	Millennium Declaration: Protecting Our Common Environment	Reaffirmed Agenda 21, Kyoto Protocol un CCC and Conv. on Bio-diversity

Sources: Strong, 2003, Speth 2003, *The Earth Summit Agreements, 1992*

opposed to such initiatives? Supportive? It might be interesting to take the goal of environmental sustainability and identify how it links to some of the others, then explore where you might be most likely to be able to “leverage” interest and actions. What we cannot afford to do is to ignore the reality of the globalization of the environment IF we envision the survival of human societies on the planet. How will you begin your journey toward global environmental sustainability?

Bibliography of Sources Cited

Brown, Lester. (2003). *Plan B: Rescuing a Planet under Stress and a Civilization in Trouble*. Earth Policy Institute. New York: Norton and Co. 285 pp.

Esty, Daniel, C. Esty and Maria H. Ivanova. (2003). Chapter 5: “Toward a Global Environmental Mechanism” in James Gustave Speth, ed. *Worlds Apart: Globalization and the Environment*. Washington D.C.: Island Press. pp 67–84.

Table 2 Millennium Development Goals and Targets

Goal 1: Eradicate Extreme Poverty and Hunger	Target 1: Between 1990-2015 halve the proportion of people whose income is less than \$1.00 (US) a day Target 2: Between 1990-2015 halve the proportion of people who suffer from hunger
Goal 2: Achieve universal primary education	Target 3: Ensure that by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling
Goal 3: Promote gender equality and empower women	Target 4: Eliminate gender disparity in primary and secondary education, preferably by 2005 and in all levels of education no later than 2015
Goal 4: Reduce child mortality	Target 5: Reduce by 2/3s, between 1990 and 2015, the under-five mortality rate
Goal 5: Improve maternal health	Target 6: Reduce by between 1990-2015, the maternal mortality rate
Goal 6: Combat HIV/AIDS, malaria and other diseases	Target 7: Have halted by 2015 and begun to reverse the spread of HIV/AIDS Target 8: Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases
Goal 7: Ensure environmental sustainability	Target 9: Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources Target 10: Halve by 2015 the proportion of people without sustainable access to safe drinking water. Target 11: Have achieved by 2020 a significant improvement in the lives of at least 100 million slum dwellers
Goal 8: Develop a global partnership for development	Target 12: Develop further an open, rule-based, predictable, nondiscriminatory trading and financial systems (includes a commitment to good governance, development, and poverty reduction—both nationally and internationally). Target 13: Address the special needs of the least development countries (includes tariff and quota-free access for exports, enhanced program of debt relieve for and cancellation of official bilateral debt, and more generous official development assistance for countries committed to poverty reduction Target 14: Address the special needs of land-locked countries and small island developing states Target 15: Deal comprehensively with the debt problems of developing countries through national and international measures in order to make debt sustainable in the long term Target 16: In cooperation with developing countries, develop and implement strategies for decent and productive work for youth. Target 17: In cooperation with pharmaceutical companies, provide access to affordable essential drugs in developing countries Target 18: In cooperation with the private sector, make available the benefits of new technologies, especially information and communications technologies.

Source: UNEP. *Human Development Report 2003*: pp.1–3.

Falk, C., S. Carpenter, T. Elmqvist, C. Gunderson, C. Holling and B. Walker. (2002). "Resilience and Sustainable Development: Building Adaptive Capacity in a World of Transformations." *Ambio*: 31(5):432–440.

Goodland, R. and H. Daly. (1996). "Environmental Sustainability: Universal and Non-negotiables" *Ecological Applications*: 6(4):1002–1017.

International Bank for Reconstruction and Development. (2001). *The Little Data Book: 2001*. Washington, D.C.: IBRD.

Lubchenco, Jane. (2003). Chapter 2: "Waves of the Future: Sea Changes for a Sustainable World" in James Gustave Speth, ed. *Worlds Apart: Globalization and the Environment*. Washington D.C.: Island Press. pp 21–32.

Mander, Jerry. (2003). Chapter 7: "Intrinsic Negative Effects of Economic Globalization on the Environment" in James Gustave Speth, ed., *Worlds Apart: Globalization and the Environment*. Washington D.C.: Island Press. pp 85–108.

Meadows, Dennis, Donella Meadows and Jorgen Randers. (1972). *Limits to Growth*. The Club of Rome. White River Junction, VT: Chelsea Green Press.

Meadows, Donella, Jorgen Randers and Dennis Meadows. (2004). *Limits to Growth: The 30-Year Update*. White River Junction, VT: Chelsea Green Press.

Rapport, D.J., R. Costanza, and J. McMichael. (1998). "Assessing Ecosystem Health." *Trends in Ecological Health and Evolution* 13(10):397–402.

Speth, James Gustave, ed, (2003). *Worlds Apart: Globalization and the Environment*. Washington D.C.: Island Press. 180pg.

Stiglitz, Joseph E. (2003). *Globalization and Its Discontents*. New York: Norton and Company. 288 pp.

Strong, Maurice. (2003). Chapter 3. Stockholm Plus 30, Rio Plus 10: Creating a New Paradigm of Global Governance in James Gustave Speth, ed. *Worlds Apart: Globalization and the Environment*. Washington D.C.: Island Press. pp:33–52.

United Nations Development Programme. (2003). *Human Development Report 2003: Millennium Development Goals—A Compact Among Nations to End Poverty*. UNDP. New York: Oxford University Press. 367pg.