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THE PATH TO A SUSTAINABLE FUTURE: SOME POSITIVE THOUGHTS

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SUMMARY

The Brundtland Commission described the concept of sustainable development in 1987; however, in the intervening decade some of its basic underpinning philosophy has been lost. It is helpful to understand that limitations to sustainable development are not hard and fast, but dynamic. Something that may appear as a tremendous problem today may become less of an obstacle as technology and social attitudes evolve.

Many would argue that greater economic development fuelled by free trade is needed to alleviate human poverty and the environmental problems it causes; yet economic development itself is a major cause of environmental deterioration. To some, the prospect of a sustainable future appears impossible in view of the population explosion, resource depletion, apparent limits to food production, and global environmental crises such as climate change.

An ever-escalating world population is obviously not sustainable; however, demographers now project that world population will reach a state of equilibrium. Due to the phenomenal acceptance and success of birth control technologies. Population scientists agree that world population should stabilize at about 12.4 billion in 2035 or 14 billion people in 2100. Many have concluded that a world population of around 14 billion may indeed be sustainable. There is good evidence that expanded and improved agricultural production should be able to feed a world population 2.3 times greater than today's, although this will be challenging. Similarly, international co-operation and a commitment to good management could help ensure the sustainable production of renewable resources. Fossil fuels will become depleted; however, higher energy prices should encourage the development of cleaner sources of renewable energy. Environmental concerns, such as climate change, are real but tend to be overstated.

As the Brundtland Commission asserted, the possibility exists for a new era of economic growth based on policies that sustain and expand the environmental resource base; however, world-wide poverty must first be alleviated. One engine for such outcomes is free trade. As subsidies and import duties and quotas are removed, countries will gain the ability to succeed in those economic areas where they have a comparative advantage. Environmentalism is an evolving phenomenon; as the standard of living rises, there appears to be a natural public demand for improved environmental quality. Moreover, economic development should provide the means with which to pursue environmental objectives.

As the countries of the Western Hemisphere come together to consider a Free Trade Area of the Americas, it is clear that their goal is not limited to economic considerations, but rather to a future that is economically, socially and environmentally sustainable. In the Declaration of Santa Cruz de la Sierra, the countries of the Americas have charted a course toward sustainable development. They have affirmed their commitments to adopt an equitable, non-discriminatory multilateral trade system, address poverty, promote strategies to address the needs of the most vulnerable segments of society, protect the environment, and strengthen scientific and technological capacities.

TABLE OF CONTENTS

PAGE

CANADA

LIBRARY OF PARLIAMENT
BIBLIOTHÈQUE DU PARLEMENT

THE PATH TO A SUSTAINABLE FUTURE: SOME POSITIVE THOUGHTS*

INTRODUCTION

As the 20th century draws to a close, there is a growing consensus that human poverty poses the single greatest threat to the global environment. It is also increasingly understood that any attempt to deal with global environmental problems will be largely futile unless the broader perspective of world poverty and inequity is dealt with first. *Our Common Future*, the 1987 report of The World Commission on Environment and Development (the Brundtland Commission), addressed this grave issue in a positive manner, asserting that people can build a more prosperous, more just, and more secure future without serious detriment to the environment or depletion of the resource base. In lieu of a world of ever-decreasing resources, greater pollution and mounting human misery, the Commission viewed the possibility for a new era of economic growth based on policies that sustain and expand the environmental resource base. The Commissioners acknowledged "such growth to be absolutely essential to relieve the great poverty that is deepening in much of the developing world," and they identified trade liberalization as an essential first step towards this goal.

The prospect of an expanded world economy fuelled by free trade raises an environmental conundrum. Ever since the publication of Rachel Carson's *Silent Spring* 35 years ago, it has been accepted that economic development is the despoiler of nature. Industrial activity, resource development and agricultural production have all been implicated as the cause of an array of environmental ills: ozone depletion; global warming; air, water and land pollution; soil erosion; desertification; species loss; and the depletion of limited non-renewable natural resources. Accordingly, the question arises of how greater economic development, rather than less, can be the answer to the planet's ills. This paper examines this perceived contradiction and challenges a number of the environmental beliefs and attitudes that stand as impediments to the

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achievement of sustainable development. In addition, the trade and sustainable development nexus is examined in the context of a Free Trade Area of the Americas.

SUSTAINABLE DEVELOPMENT

A. Concepts and Principles

The Brundtland Commission stated that "sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own goals." The Commission also identified two key principles as forming the conceptual underpinnings of sustainable development. First, in endeavouring to meet essential needs, priority must be given to development that raises the living standard of the world's poor; and second, limitations to sustainable development are not hard and fast, but dynamic. Limitations in effect today may dissolve as the state of technology evolves and as social organization adjusts.

The knowledge base is increasing exponentially and history reports exceptionally few instances where new technologies are not better, cleaner, faster, and more efficient than those they replace. Perhaps even more important to the world's poor is the fact that knowledge can now be more easily distributed and shared than ever before. As knowledge evolves, answers will likely appear to previously unasked questions or in response to previously unrecognized needs. More often, however, necessity is the mother of invention. A dwindling resource commodity may result in price escalation and the possible demise of an industrial process. This situation encourages research and development, which may lead to the use of alternatives or the implementation of an entirely new manufacturing process that produces a similar or better product. Similarly, as fossil fuels become limited, financial incentives will encourage the development of new energy sources. It is, therefore, unlikely that a sustainable future will be limited by our current reliance on specific resources; human ingenuity and an ever increasing wealth of knowledge should open new avenues.

The Brundtland Commission also underlined the fact that sustainable development must involve a progressive transformation of economy and society. Sustainable development is unlikely to continue to evolve within the confines of rigid social and political structures; human development is dependent upon a parallel social-political evolution that

maintains equitable access to resources and to the benefits accruing from their development. Even more critical is the environment in which attempts are first made to nurture a sustainable future; equitable human development cannot flourish under social-political conditions that promote or sustain the marginalization of vulnerable groups. Sustainable development requires equitable benefits generated from the development of a resource be made available to all members of society. These benefits may be direct, in the form of employment, or may result from the wise investment of generated wealth in infrastructure such as education, health care, research, roads, communications, energy generation and transmission, housing, water supply and waste treatment. In this manner even the poorest segments of society can benefit, the standard and quality of life can be raised and, with time, a healthier, better educated population can be developed that is capable of generating even greater wealth.

B. Intergenerational Equity

Probably no concept related to sustainable development is more poorly understood than intergenerational equity; this misunderstanding is one of the greatest obstacles to a sustainable future. Many individuals in the developed countries of the world view pre-industrial society as a happier, cleaner, less stressful time, when human society existed in harmony with nature. Some people believe that the current pace of economic development and the quest for material goods is causing irreversible harm to the planet in the form of resource depletion, pollution, the ozone hole, and global warming. Flowing from this sense of impending doom, a culture of environmental advocacy has developed which promotes lifestyles dissociated from consumerism.

This culture was given its greatest audience at the 1992 Earth Summit, when the consumption habits of the developed countries of the North were castigated as the prime cause of environmental deterioration world-wide. It was suggested that the ecological carrying capacity of the globe would simply collapse should the poor people of the South ever achieve the level of economic development and consumerism enjoyed in the North. This opinion, however, stands in direct opposition to that advanced by the Brundtland Commission, which viewed increased economic growth as absolutely essential for the relief of poverty in the developing world.

The Commission called for equity within each generation and equity between generations. Groups opposed to expanded economic development have taken this to mean that

each generation must live lightly upon the planet, using only what is absolutely necessary to meet present needs and leaving the planet to the next generation virtually unchanged. It is said that intergenerational equity bestows resource rights on the unborn of future generations; that is, future generations have as much a right as ourselves to the natural resources of the planet. Thus the present generation has the obligation to conserve or even ration the known reserves of non-renewable resources so that future generations will not go without.

This concept, however, presumes that the needs of future generations will be the same as ours today. Imagine that this view of intergenerational equity had been practised 150 years ago; our Canadian ancestors would have conserved copper for telegraph wires, old-growth white pine forests to furnish masts for our sailing ships, and coal-oil for our lighting needs. As impossible as it would have been for our ancestors to anticipate our actual needs, the exponential rate of technological advance makes it even more difficult for us to foresee the needs of our descendants.

Many would argue that it is not reasonable either to ration or to squander natural resources; rather, it should be the responsibility of each generation to conduct its development in a way that does not cause long-term damage to the natural environment. Similarly, each generation should ensure that some of the wealth generated by the development of natural capital is wisely invested in man-made capital that will improve the quality of life of future generations. By investing in knowledge and societal infrastructure today, we are ensuring in the most comprehensive manner that the needs of tomorrow can be met.

CHALLENGING ENVIRONMENTAL ASSERTIONS

Virtually every major environmental conference over the past ten years and certainly the 1992 Earth Summit and the 1997 five-year follow-up meeting, were billed as our "last chance to save the planet." It has been argued that the assertions of environmental groups are often overstated and that the planet is much more in need of good management than it is of saving.

There are two environmental beliefs which, if true, would make the pursuit of sustainable development futile or at the least very difficult. These are that world population is exploding at an uncontrollable rate, and that the fragile ecological carrying capacity of the planet

is on the verge of collapse because of the irreversible depletion of finite natural resources and the overburdening of the biosphere by toxic wastes. Such assertions have had the beneficial effect of promoting environmental awareness among the general public and of encouraging policy makers to institute programs and regulations to protect and conserve the environment. Data collected by the World Health Organization, the World Bank and the United Nations, however, show that, world-wide, child mortality rates have fallen, life expectancy has risen and that the basic needs of food, shelter, and clothing are better met around the globe today than ever before. We have evidence of local and regional collapse of some environmental systems, but this does not necessarily mean that the global biosphere is in jeopardy. These observations mean that we need to better manage and husband our environment; specific areas of concern must be addressed, but there is definitely hope for the future.

A. The Population Explosion

For thousands of years, the world's population grew at a snail's pace. It took over one million years to reach the one billion mark in the early 1800s; however, after that point, human numbers began to increase rapidly, so that there are now an estimated six billion people on the planet. The growth in human numbers was most rapid in the decade and a half after the Second World War, a time when a high birth rate coincided with a decreasing death rate as a result of improved health conditions. After 1960, however, the rate of population increase began to slow, and today it is showing dramatic decreases.

There are many reasons why fertility levels are dropping world-wide, but the major one has been the development of birth control technologies, which allowed many developing countries to implement strong family planning polices. From 1960 to 1990, the number of couples using some form of birth control grew from 50 to 400 million. By the mid-1990s, 51% and 70% of women of child-bearing age, in developing and developed countries respectively, were using a birth control device. Demographers expect that by the year 2000 the birth rate in virtually all industrialized Northern countries will have dropped to near or to below the level required to maintain population equilibrium. In Southern countries there tends to be a wider variation in the rate of decrease in fertility; however, it is expected that the world population will stabilize at some point between the years 2035 to 2100. Population projections by both the World Bank and by the United Nations concur that the world population will reach

equilibrium at 12.4 to 14 billion people, depending upon whether stabilization is reached in 2035 or 2100. The question that now arises is whether the earth's ecosystem can provide sufficient resources to support a stable population that would be more than twice that of today.

B. Agriculture

Many environmentalists contend that we have maximized the amount of land that can be devoted to agriculture and that agricultural practices and technologies have advanced to their natural limit. Agronomists, on the other hand, are confident that the agricultural resources of the world can be developed further, to meet the nutritional demands of 14 billion people.

At the beginning of this century, both Canada and the United States had largely agrarian economies characterized by low-technology agricultural practices. Between 1910 and 1990, though the amount of land in the United States devoted to agriculture declined slightly from 325 to 322 million acres, agricultural production increased 370%. A similar situation has come about in Canada, with millions of acres of marginal farmland allowed to revert to forest. During the past quarter century, world food production has doubled; 90% of this increase is due to the increased productivity of existing farmland, and only 10% to increased farm acreage.

Just as farm productivity has increased in developed countries, there should be enormous increases in productivity in developing countries as high-yield agriculture practices, commercial fertilizers, improved crop varieties and efficient irrigation systems become more common there. Of particular importance is the transfer of improved irrigation technologies. The systems in use in much of the world are highly inefficient, wasting huge amounts of fresh water that could be used to support wildlife, fish stocks, or manufacturing activities. Worse, excessive irrigation results in salinization of the soil and the long-term loss of productive agricultural land.

Food productivity may also be increased through the cultivation of at present unused or underutilized arable land. Approximately 24% of the total ice-free landmass is suitable for agricultural production, yet less than 50% of this area is cultivated in any given year. It should also be noted that extremely high yields of some vegetables (tomatoes, lettuce, cucumbers, peppers and beans) are achieved by greenhouse cultivation and by hydroponic gardening.

Some suggest that intensive modern agricultural practices are reducing soil fertility and causing erosion. Although, this view is not completely shared by all agronomists,

there is little doubt that the restoration of soil fertility will become an increasingly important area of research. It must also be recognized that, while the earth may be capable of producing enough food to meet the needs of 14 billion people, droughts or inefficient food distribution systems could place millions at risk of famine. Also, the poorest inhabitants of the world may have trouble in affording local produce, let alone hydroponically grown tomatoes from Europe. For many nations of the world, the only answer to the threat of hunger may be the adoption of sustainable agricultural practices and a strong national commitment to family planning.

C. Natural Resource Depletion

Any renewable natural resource, such as forests or fisheries, should be perpetually sustainable under good management; the prospects for this are frequently improved when property rights are applied to a renewable stock. While abuse of the commons is destroying rain forests, devastating fisheries and threatening biodiversity, there can be a different outcome where resources are owned. For example, many Canadians in Newfoundland find themselves unemployed because of the collapse of the cod fishery yet, at the same time, fish farms in Chile, Norway, Southeast Asia, Japan and Great Britain are increasingly supplying the world seafood markets. It should be noted, however, that the private ownership of renewable resources does not inevitably result in good management; history is rife with examples of poor decision-making and the destruction of a local resource for short-term gain. Also, mismanagement of fish and shrimp farms can cause significant pollution and many would argue that fish farms are not a good alternative to a well-managed traditional fishery. International co-operation in the form of international agreements to conserve shared resources (for example, straddling fish stocks) are essential if the abuse of the commons is to end.

The time needed to convert organic matter into coal, oil and gas is too great for fossil fuel to be considered as a renewable resource and, of all the resources it is the only one that may actually become depleted. According to United States Geological Survey Data, there are enough recoverable fossil fuels to last just over 500 years at projected rates of demand. This is not as rosy a projection as it may appear, for the reserves of cleaner-burning oil and gas would be depleted long before the less desirable coal reserves were fully exploited. As these reserves become limited, costs will likely increase and the alternative sources of renewable energy should become competitive. Solar, wind and bioenergy research, which received a great deal of

development funding following the oil crisis of the 1970s, would likely be revived, and there could possibly be a re-examination of nuclear power to determine novel means for making it safer. Future depletion of fossil fuel has already encouraged a number of nations, particularly Japan, to investigate the possibility of exploiting the large deep sea reserves of methyl hydrate as a replacement for current sources of natural gas. Also, research would likely be encouraged in areas of energy conservation such as more efficient energy transmission, and the development of a second generation of energy-efficient manufacturing processes, machinery, engines, motors and appliances. Sceptics may suggest we have reached the zenith of our technological abilities to produce, store and use energy, but there is no reason to believe this. Just as our ancestors of 100 years ago had absolutely no comprehension of thermonuclear power, so we should not dismiss the possibility that the world in the year 2100 could not be powered by an energy source of which we are currently unaware.

A reasonable means of determining whether a resource is in short supply is to analyze commodity price data. A review of the prices of food, lumber, paper, minerals and energy relative to buying power over the period of 1950 to 1990 (Table 1) shows that resources have become less expensive. An oil embargo or the desperate sell-off of a commodity to fund debt payments can disrupt markets and in the short term distort the picture of supply and demand. The 40-year picture provided by Table 1 does reveal short-term fluctuations; however, since the overall trend is towards greater buying power, none of these commodities can probably be considered to be scarce.

Proven reserves measure the amount of a given resource that has been discovered and can be extracted profitably, given current prices and state of technology. Table 2 shows that, with the exception of tin, the proven reserves for a variety of non-renewable resources have increased, not decreased, over the past 40 years. Iron, aluminium, bauxite, silicon, magnesium, titanium, copper, zinc, manganese, chromium, lead, nickel and tin make up most of the world's demand for industrial minerals. For time to time, fluctuations in supply and demand may make it appear that a mineral is in limited supply. When this occurs, higher prices encourage exploration and make it worthwhile to mine reserves that were previously not considered profitable. Similarly, advances in mining technology allow the exploitation of mineral reserves that were previously considered of marginal value or to have been "mined out." Low supply and high cost also work to encourage changes in market demand. For example, higher tin prices give

aluminium packaging a market advantage. At present, no inorganic mineral has been identified as being exhaustible; indeed, the mineral wealth of the earth's mantle remains virtually untapped. The question, therefore, is not whether a mineral is exhaustible, but whether its economic value justifies its extraction.

Table 1
Resource Prices Indexed to Wages, 1950-90
(Relative to 1990 Baseline)

	Year					
Resource	1950	1960	1970	1980	1990	Change (%) 1950-90
Food[a]	386	210	145	161	100	– 74
Lumber	170	114	95	126	100	– 41
Paper	139	121	97	104	100	– 28
Minerals[b]	194	147	179	217	100	– 48
Energy[c]	184	126	74	138	100	– 46

[a] Includes barley, broilers, carrots, cattle, corn, cotton, eggs, milk, oats, oranges, rice, sorghum, soybeans, wheat, and wool.
[b] Includes aluminium, antimony, copper, lead, magnesium, manganese, mercury, nickel, platinum, silver, tin, tungsten, and zinc.
[c] Includes coal, electricity, natural gas, and oil.

Source: Jerry Taylor, *Market Liberalism*, Cato Institute, 1992; *World Bank Development Report, 1992*.

Table 2
Proven Reserves of Various Resources, 1950-90
(Million Tonnes)

Resource	1950	1990	Change (%)
Bauxite	1,400	21,500	1,436
Chromium	70	420	500
Copper	100	350	250
Iron Ore	19,000	145,000	663
Lead	40	70	75
Manganese	500	980	96
Nickel	17	59	247
Oil and Gas[a]	30	250	733
Coal[a]	450	570	27
Tin	6.0	4.2	– 30
Zinc	70	145	107

[a] Billion tonnes of oil equivalent.

Source: Jerry Taylor, *Market Liberalism*, Cato Institute, 1992; *World Bank Development Report, 1992*.

The language of environmentalism is emotive; it is hard to reconcile terms such as mineral exploitation and depletion with the assertion that most non-renewable resources are probably inexhaustible. Our biosphere is a closed system; gold mined 2,000 years ago is still with us. A vein of iron ore may become depleted, but this does not mean the steel it produced cannot be recycled into another car part or a bridge girder. Once a mineral is mined, its availability to future generations actually increases for much of it may be recycled in perpetuity at a reduced cost, since the cost of extracting and processing a virgin mineral is more than the cost of recycling it, both in terms of money and pollution. Not all excavated minerals have been recycled of course; some will remain in use for generations, some may become oxidized, some low concentrations may be dispersed in the environment as a result of automotive and industrial activities, and some will be "discarded" in landfills. "Stored" in landfills is perhaps a better phrase, however, as the mining of landfill sites is now considered a cost effective means of reclaiming valuable minerals.

D. Global Environmental Crises

One of the principal arguments against sustainable development is that the biosphere could never absorb and neutralize the waste products and pollution that would result from raising the entire population of the world out of poverty. The most immediate example cited is global warming; however, this is also an example of how environmental concerns may be selectively overstated.

The greenhouse theory and the possibility of global warming were introduced in the scientific literature over 100 years ago, but it was not until the 1980s that public concern was generated. According to the media reports of the time, general climate models developed by atmospheric scientists showed that the accumulation of carbon dioxide and other greenhouse gases in the atmosphere would cause the global mean temperature to rise by as much as 4.5^{o}C. This warming would cause the ice caps to melt, flooding coastal cities and island nations. As well, rainfall patterns would change, deluging coastal regions and eroding soils; dry grassland regions would become unproductive deserts. Further extrapolations predicted imminent mass famine, disease and the unprecedented migration of eco-refugees.

A decade later, not one of these model predictions has come about. The research scientists who published the papers had made no secret of the fact the models were primitive;

because of limited computing power, only greenhouse gases had been included in their model calculations and those factors that would serve to cool the planet had been ignored. The problem was overstated because of how non-scientists interpreted science.

Over the ages, the earth has been both considerably hotter and colder than it is today, making it difficult to ascertain what global mean temperature is optimum for life on the planet. This point is becoming increasingly apparent as more research is conducted on climate change. In 1995, the Intergovernmental Panel on Climate Change published its now famous consensus statement that "... the balance of evidence suggests that there is a discernible human influence on global climate." This "human fingerprint" was identified as an increase in the average minimum night-time temperature; however, no increase in maximum day-time temperature has been observed. These facts have tremendous positive implications for world agriculture and an expanding population because they suggest more frost-free days and a longer growing season. During the last two years there has been a substantial increase in the number of scientific publications suggesting that warming may provide some benefits. It is of considerable significance that the vast majority of plant species tested under conditions of carbon dioxide enrichment exhibit an increased rate of photosynthesis, greater biomass and improved harvestable yield. Models also predict that, because of increased temperature and rainfall, most of the 57 million hectares of arable land of the sub-arctic regions of Alaska and north-western Canada would become climatically suitable for agriculture.

This is not to suggest that climate change will provide only benefits; indeed, it should be expected that there will be both positive and negative consequences. What is important in the context of sustainable development is that the road to a sustainable future may be complicated by many environmental concerns that are perhaps more illusory than real. Policy makers should challenge environmental assertions, base their evaluation of environmental concerns on solid scientific evidence, and ensure that they weigh social, economic and environmental concerns equally when making their decisions. Further the existence of transboundary or global environmental problems be verified, the best solution will be for countries to participate in bilateral or multilateral negotiations based on scientific evidence and leading to binding international agreements.

THE EVOLUTION OF ENVIRONMENTAL PRIORITIES

It is recognized that nothing is sadder than families driven to such desperation that they eat their seed grain. There are millions of families so abysmally poor that their first and virtually only concern is having enough to eat. Environmental quality is an unrecognized concern for people living at a subsistence level; this situation could continue even when the basic needs of food, shelter and clothing are met, as other needs, such as education and health care, become the new priorities.

In the very poor countries of the world the two greatest environmental health risks are infectious diseases from the consumption of drinking water contaminated with human waste, and the inhalation of indoor air pollutants from unvented home cooking equipment. Even inexpensive and low-technology remedies are often beyond the means of the poorest communities; however, when economic growth begins, these are the first problems to be rectified.

The links between per capita income and a public desire for environmental protection have been well studied. As societies industrialize and incomes begin to rise there is actually a decrease in the environmental health of the region. This is because domestic industries generally begin development at a low technological level with no pollution control devices and with the public priority for jobs, not environmental quality. Industrial air, water and land pollution usually continues until per capita income reaches $4,000 (U.S.). World Health Organization data from pollution studies in developing industrializing countries showed that particulate and sulphur dioxide emissions declined when per capita income exceeded $5,000 and declined dramatically as income approached that of developed Northern countries. Similarly, analyses conducted by the World Bank demonstrated that most concentrations of air, water and land pollutants decline as per capita income rises. A United Nations study on urban air pollution in megacities found that economic development reduced the concentration of atmospheric pollutants and was vital in bringing urban areas into compliance with air quality standards.

Once a country has achieved some industrial success in the form of increases in GNP and per capita income, a number of factors join to promote environmental protection and conservation. Wealthier people have more leisure time to enjoy activities that involve the natural environment. They increase their expenditures on recreational activities and will bid land and

resources away from other uses. In democratic societies, as public intolerance to pollution grows, political pressure is applied for the enactment and enforcement of environmental regulations. As industries acquire wealth they are not only more able to meet public environmental expectations, they may also go beyond established guidelines and standards in anticipation of more stringent regulations or to promote better public relations.

To a very large extent, improvements in environmental protection and conservation are directly linked to the evolving wealth of nations. As a result, the well-intentioned efforts of environmentalists to encourage action in developing countries may be futile, since the priorities of environmentalists and the desperately poor of the world may not be the same. The Brundtland Commission stated: "poverty is a major cause and effect of global environmental problems." Before such issues as biodiversity protection and pollution abatement are tackled, we must start the natural evolution of environmentalism through the alleviation of poverty.

TRADE AND SUSTAINABLE DEVELOPMENT

Since the publication of *Our Common Future*, there has been increasing recognition that economic development and environmental protection are inextricably linked; a synergism that will be accelerated through free trade among nations. At the 1992 Earth Summit, the links between trade and the environment were well analyzed; problems were identified and a variety of possible solutions suggested. High among the list of problems were the use of subsidies and the imposition of trade barriers to promote and to protect domestic markets. In many cases, subsidization of an activity has a negative social or environmental consequence. For example, when electrical costs are subsidized, the public attaches a lower value to this energy source; the result is waste, greater demand, the consequent need for additional generating capacity, and increased energy-related pollutants. Electrical subsidies also discourage investment in new, cleaner industrial technologies. Similar problems arise with subsidies to irrigation water, fossil fuels, forest or fish resources, fertilizer or farm equipment.

Trade barriers may also have negative consequences both at home and in other countries. Both the Earth Summit and the Brundtland Commission identified tariffs and subsidies as perverse incentives which encourage the development of products that otherwise

would never be profitable. The classic example is the world sugar market. The developing countries of the tropics have the comparative advantage for sugar production, and it is estimated that nearly 30 million people in these countries depend upon sugar cane cultivation for their survival. Yet, at the same time, the governments of many developed nations have placed tariffs or quotas on sugar imports in an effort to protect their domestic sugar beet industry. Cane sugar surpluses depress world prices and lead to lower incomes, while high prices in developed countries promote cultivation of sugar beets on land that might be better used for other crops. Sugar beet growing is highly capital-intensive and depends heavily on chemical herbicides. Market protection has also had the effect of helping to promote an artificial sweetener industry, thereby further depressing sugar markets. If world sugar requirements were met by developing nations, the result would be lower sugar prices in developed countries, the use of fewer chemical additives, and greater employment opportunities for some of the world's poorest people.

A great deal of excellent work was accomplished at the Earth Summit; however, on occasion there was the tendency for policy development to reflect an environmental point of view at the expense of social and economic concerns. In particular, some trade issues may not have been evaluated completely objectively and discussions may have failed to include some historical and present-day development realities. In the debate on the possibility of a Free Trade Area of the Americas, some precedents established at the Earth Summit could possibly stand as obstacles or lead to unrealistic expectations.

The major obstacle is the attitude that "over-consumption" in the industrialized countries of the North is the prime cause of environmental deterioration world wide. It is precisely this material wealth and standard of living, however, to which countries of the South aspire. Further, it is this economic paradigm that may ultimately alleviate the poverty of nations and encourage sustainable development. This same attitude assumes that the success of developed nations was gained at the expense of developing nations and that therefore the Northern countries have a moral obligation to give developing nations financial assistance and access to new technology.

At the 1992 Earth Summit, environmentalists concerned about global warming proposed that the developed countries of the North transfer pollution control technology to Chinese industry. The reception given this suggestion was lukewarm. It was recognized that, while a relatively poor country, China is not technologically backward; rather, it may give other

preoccupations, such as defence, priority status. While there is no question that Chinese industry is a significant source of air pollution, the principal cause of environmental health problems in China is indoor air quality. More than 75% of China's primary energy needs are supplied by domestic coal, and much of China's population cooks and heats by using unvented stoves fuelled by coal or biomass. As China has modernized, deaths from malnutrition and infectious diseases have plummeted, while diseases linked to air pollution have spiralled to become the country's number one public health threat. Air pollution accounts for more than 1 million deaths per year, or about one in every eight deaths. It has been argued that, from a social, economic and environmental point of view, it might have been better for environmentalists to suggest that the countries of the North liberalize trading relations with China, thereby raising domestic income and thus assisting the Chinese people in addressing their environmental health problems.

There are certainly specific examples of how the economic policy of a developed country has had a negative effect on a developing country; however, it is very unlikely that this was the sole reason for a country's failure to thrive. There are many reasons for such failure. For example, two neighbouring countries with similar natural wealth but divergent economic philosophies could be expected to have significantly different levels of national wealth after half a century of development.

Paramount in the achievement of countries that have enjoyed economic, social and environmental success, have been land tenure and equal opportunity for citizens. With property rights come self interest and the responsibility to manage that land and its resources sustainably. Countries often fail to prosper because of such impediments to economic growth as government mismanagement of the economy, debt, corruption, political instability, over-valued exchange rates, isolationist policies; prohibitions against foreign business operations, or a history of nationalizing foreign-owned industry. As countries consider the possibility of free trade, it is important that they evaluate their economic history, identify the reasons for past failures, and from there chart an action plan for sustainable development.

FREE TRADE IN THE AMERICAS

As the countries of the Western Hemisphere come together in consideration of a Free Trade Area of the Americas it should be increasingly apparent that sustainable development is not only desirable but achievable, and should be facilitated by free trade.

The countries of the Americas vary widely in their natural and cultural diversity, political tradition, and level of economic development. As our countries enter into free trade agreements, it could be argued that it would be unreasonable to expect the lesser developed countries immediately to adopt the same rigorous environmental regulations as more developed countries. Environmentalism is an evolving phenomenon; as the standard of living rises, so does public demand for improved environmental quality. Moreover, economic development could provide these countries with the means to pursue their environmental objectives. Through the exchange of environmental information, national experience, and recommendations, developing countries should be able to improve their environmental standards more rapidly, so that eventually similar levels of environmental protection and conservation should prevail throughout the Western Hemisphere. The already established United Nations Commission on Sustainable Development is an essential institution for promoting information sharing and developing political will towards this end.

During negotiations for the North American Free Trade Agreement (NAFTA), opponents contended that differences in environmental regulations would give countries with less stringent legislation an economic advantage. Further, it was suggested that countries would have to lower their own environmental standards in order to stop polluting industries from moving to "pollution havens." This has not been the Canadian experience. Indeed during the last decade, only one polluting industry has closed its doors in Canada because of stringent environmental regulations; it moved, not to Mexico, but to the United States. Further, since the ratification of NAFTA, Canada has consistently worked toward strengthening its environmental legislation, and has enacted what are perhaps the most stringent regulations in the world to control water pollution from pulp and paper mills.

As countries participate more openly in free trade, subsidies and trade quotas will gradually disappear and each country will be able to succeed in those areas where it has a comparative advantage. Of particular importance to developing countries, sustainable

development will be encouraged through national policies that encourage foreign investment, often the quickest route to the acquisition of new technologies and pollution abatement equipment. Even when national legislation does not require modern pollution controls, a foreign company is likely to incorporate state-of-the-art environmental technology during the construction phase, partly because the technology is already part of the design process, and partly because it is much less inexpensive to include this technology during the building phase than to add it at a later date when the host country has raised its environmental standards.

In the Declaration of Santa Cruz de la Sierra, the countries of the Americas have charted a well defined course toward sustainable development. They have affirmed their commitment to promote human dignity and their respect for cultural diversity; and have agreed, as a primary objective, to implement relevant measures for meeting the basic needs of the most vulnerable segments of society. These basic needs include: equitable access to adequate nutrition, health care, clean drinking water, employment, and housing. The declaration attests to the countries' strong commitment to promote healthy environments. Nations will assess the environmental impacts of their policies, strategies, programs and projects both nationally and in the framework of international agreements to ensure that adverse environmental effects are identified and prevented, minimized, or mitigated. Nations will strengthen their scientific and technological capacities and will promote the sharing of scientific and technological advancements. These, and other goals, will be achieved by adopting an open, equitable, and non-discriminatory multilateral trade system based on the principles of international law and sensitive to the evolving needs of sustainable societies.