



Environmental Sustainability



Let's talk about sustainability.

The ability to sustain ourselves—to survive—is of primary importance.

The topic of sustainability has become controversial since humanity has grown to stretch the limits of living on Earth. Survival now requires extensive change, yet some people are attempting to define sustainability in a way that would avoid change. Some of the arguments are valid. Some are not.

The purpose of the Sustainability Project is to focus debate on what is and what is not sustainable. This article contains an outline of sustainability and some introductory explanations. Compare it with your view of the world and let us know if you think this account can be made more accurate.

The goal of sustainability is not served by avoiding disagreements. Truth is uncovered through the encounter of different opinions. Until this debate takes place in the open, with everyone adding their insights, we will not resolve the differences which keep us from decisive action. Without action, civilization will sink deeper into the environmental and social peril which threatens our future.

Why does the issue of sustainability come up now?

Humans have never had to pay much attention to the Earth's limitations. For thousands of years, our activities have been insignificant on any but a local level. This has changed. Enormous advancements in mechanical and chemical technology have greatly extended the power of individuals, and world population has mushroomed to the point that our actions are now felt all over the globe.

This has significantly changed our relationship with the Earth.

Sustainability has always been the bottom line in evolutionary judgment, but it has taken the problems caused by our rapid growth in population and technical strength for us to realize that it will also be the final measure of our success. We have come of age as a species. Where we were treated as young offenders in the past and dealt with leniently by natural law, we are now fully responsible for our actions and subject to the same laws which rule the survival of any organism.

Almost all of our customs and institutions were created before environmental limits were recognized. Many of them served us well in past centuries. Today, however, our survival depends on learning to respect the laws of nature and on adapting the way we make decisions and do business accordingly. The need for change has been confirmed.

Our common future.

On April 27, 1987, the World Commission on Environment and Development (WCED)—also known as the Brundtland Commission—presented its report, *Our Common Future*, to the United Nations. Their observation, after a three-year, world-wide investigation into the relationship between the environment and human development practices was that: "Many present efforts to guard and maintain human progress, to meet human needs, and to realize human ambitions are simply unsustainable—in both the rich and poor nations. They draw too heavily, too quickly, on already over-drawn environmental resource accounts to be affordable far into the future without bankrupting those accounts." Their message was not one of doom.

Rather, it was an "urgent notice" that we must take these matters seriously and correct the situation. They are hopeful that it is indeed within our ability to avoid disaster, providing we get on with the task.

Thanks to this authoritative study, society has largely passed the stage of denial and can now proceed toward action.

Meeting "the needs of the present without compromising the ability of future generations to meet their own needs," is the objective set out by the Brundtland Commission. The Sustainability Project aims to expand debate on how to do this by asserting the following:

Guideposts for a Sustainable Future

Activities are sustainable when they:

- 1) Use materials in continuous cycles.
- 2) Use continuously reliable sources of energy.
- 3) Come mainly from the qualities of being human (i.e. creativity, communication, coordination, appreciation, spiritual and intellectual development).

Activities are not sustainable when they:

- 4) Require continual inputs of non-renewable resources.
- 5) Use renewable resources faster than their rate of renewal.
- 6) Cause cumulative degradation of the environment.
- 7) Require resources in quantities that could never be available for people everywhere.
- 8) Lead to the extinction of other life forms.

We have to clarify the design criteria if we hope to focus on resolving the crisis.

Do these points seem accurate? Is anything missing? Can a sustainable society exist within other boundaries? The following will clarify the previous statements:

Sustainable activities:

- 1) Use materials in continuous cycles. Pictures from space show our blue and green planet as a small sphere orbiting with its moon in a vast emptiness. A closer look reveals that the layer of materials actually of use to living things is only a very thin film over the planet's surface.

Within this limited stock of materials, any substances needed regularly must over time be used again and again. The cycles which bring the needed materials back for reuse must either occur naturally, like the cycles of water and carbon, or they must be maintained through mindful recycling programs.

- 2) Use continuously reliable sources of energy.

We are consuming supplies of coal and oil at a far greater rate than they are created. The dangers of releasing all the carbon in these resources aside, their massive use cannot be our custom if civilization is to be a permanent presence on Earth. The same is true of nuclear energy. The enormous cost and danger could perhaps be overcome, but the raw fuel is, in the end, also limited in supply.

This leaves heat from the Earth's core, tides, the sun (nuclear fusion at a safe distance) and the wind and water which the sun sets in motion. These power sources are

abundant, and can be harnessed practically anywhere. With the exception of the problems associated with large dams, these renewable sources of energy have little or no negative environmental impacts.

- 3) Come mainly from the qualities of being human.

Once we have secured the food and shelter necessary for healthy life, worlds of opportunity open up for personal growth and satisfaction. The three "L's": Learning, Love and Laughter, as well as art, music, dance, sport, communication, service, and appreciation of the universe within and around ourselves, can all make life worthwhile. They can provide pleasure, purpose and meaning to our lives without harming the Earth.

Non-sustainable activities:

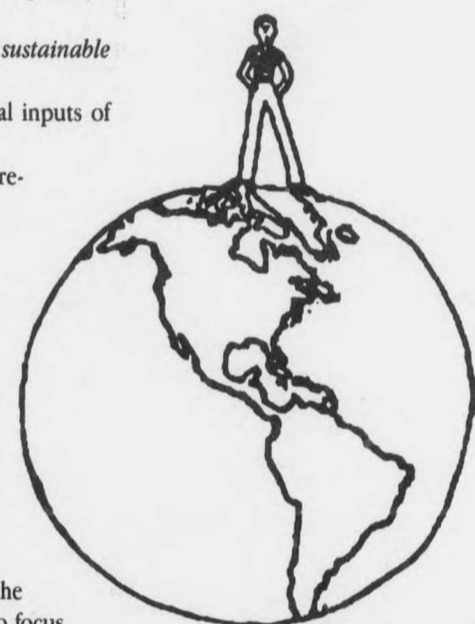
- 4) Require continual inputs of non-renewable resources.
- Non-renewable resources are resources available only in limited quantity. Metals, coal and oil are notable examples. They can be very useful, even essential, for building a sustainable society, but

- 7) Require resources in quantities that could never be available for people everywhere.

The cooperation needed to build a sustainable world order will not come about as long as some groups of people take unfair advantage of others. Inequity often leads to social strife and armed conflict. Furthermore, the people at the bottom of the pyramid of exploitation are often forced by desperation to degrade the environment around them for day to day survival. The degradation of their territories not only makes life worse for them, it undermines the global systems which provide for those at the top of the pyramid as well as for those below.

- 8) Lead to the extinction of other species.

The web of life is intricate and mutually supporting. However, it is weakened with each life form lost. If we maintain patterns of development which regularly destroy or significantly diminish the presence of other forms of life, we progressively undermine our own existence as a part of the global ecosystem.



of life always requires that more and more of these materials be extracted, we will eventually run out. Dependency on more at that point would be disastrous.

- 5) Use renewable resources faster than their rate of renewal.

Renewable resources are resources which grow and increase through natural processes. Some examples are forests, fish stocks, ground water and soil fertility. As long as the rate at which they are used is not greater than the rate at which they grow or accumulate, the situation can remain viable. When the rate of use exceeds the rate of renewal, the stock will become depleted and problems will follow.

- 6) Cause cumulative degradation of the environment.

Certain amounts of pollution are cleansed by natural processes. When we create waste which nature cannot handle, or which cannot be absorbed as fast as we create it, pollution builds up, causing problems which become more and more serious as the activity continues. Some pollutants can create serious hazards even when thoroughly diluted. Small amounts of toxic chemicals, after being absorbed by tiny organisms, can accumulate in the flesh of the creatures that eat them. If these creatures are then food for larger ones, the accumulated toxins are concentrated even further. Through this biological accumulation, some poisons, although thinly dispersed, can be found in dangerous concentrations—for example, in the fish people eat from polluted water.

With the loss of species we also lose genetic possibilities for fighting disease, in people and in food crops, as well as potential new sources of food. In addition to the dangers and loss to people, one can also argue that other living things have their own right to exist.

A pattern to remember:
Economics is 3/5 of ecology.
Resources → materials → processing → distribution → waste

Environmental problems come from overlooking waste and the base of natural resources.

The entire range of economic activity can be looked at in terms of three basic steps.

- 1) Assembly of materials. Locating or gathering raw materials like soil and seed, metallic rocks and energy; or information and images.

- 2) Processing the assembled materials. Planting, cultivation and harvesting; extracting metal from the ore and forming it into useful items; or organizing the information into a coherent, useful or entertaining format.

- 3) Distribution of the end product. Getting the produce grown, the goods manufactured, or the report, film, or whatever has been produced, to people and places where they can be used and appreciated.

In a well-developed economy, the raw material for one economic activity is of-

ten the product from one or several other activities. However, the three steps are basic to them all.

From an ecological viewpoint, these same three steps are present. Plants and animals collect nutrients, process (digest) them into useful forms and distribute them to organs and limbs for use in their growth and activity. Sometimes, creatures even gather materials and form them into "artifacts" for specific purposes, such as nests and honeycombs.

In both the human economy and the natural world, these steps of assembling materials, processing and distribution are accompanied by two further considerations: the natural resource base, and waste. In economics, these concerns have seldom been accounted for. In the study of ecology, however, the limitations these impose are often observed and sometimes explained as the "law of the minimum" and the "law of tolerance."

The law of the minimum states that growth will continue drawing on available materials as needed until one of those materials is exhausted. The first material to be used up is the limiting factor. Soil degradation, loss of genetic diversity, and the depletion of fossil fuels, forests, fish stocks and other resources, are examples of the problems which arise when this "law" is overlooked.

The law of tolerance deals with the ability of different organisms to tolerate changes in their living conditions. Changes in climatic conditions or the chemical composition of their surroundings can lead to intolerable—and therefore limiting—situations, as can the arrival of a competing organism or a new predator. Among the concerns associated with the limits of tolerance are: the greenhouse effect, ozone depletion; pollution of soil, water and air; the loss of natural habitat, pesticides and garbage.

Every environmental problem results from either overlooking the resource base or the waste we create. Some complex problems, such as overpopulation and militarism, have effects in both areas.

If Mother Nature were to present invoices for resources extracted and wastes absorbed, conventional economic accounting would be able to keep human activities in balance with the rest of the natural world. Now that Mother Nature is ailing, we may have to tally the costs and pay the bills to raise the money so badly needed to prevent catastrophe.

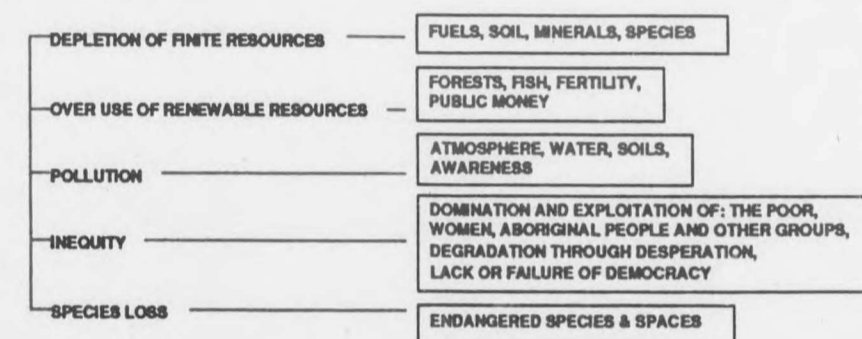
The motivation of volunteers.

There is no shortage of vision in the land. Wherever there are problems, people dedicate themselves to solving them. Tens of thousands of people have, for many years, been working on the entire spectrum of issues related to sustainability. These include environment, development, peace, justice and the fulfillment of our potentials as human beings. The understanding, experience and vision coming from the voluntary/non-profit sector, provide an encouraging picture of the world we could create, if only we agree on its implementation.

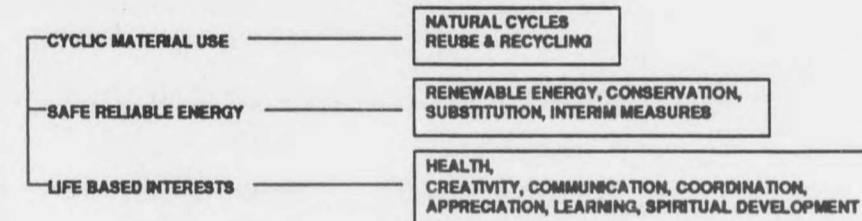
The charts given indicate how many current issues interrelate within the guidelines of sustainability. Note that the eight headings are the Guideposts for a Sustainable Future restated as index titles.

SUSTAINABILITY

PROBLEMS



SOLUTIONS



Is there life after growth?

by Mike Nickerson

Even as environmental and social problems build, there is little talk of changing the direction in which society is heading. Continued economic expansion is the only option offered. The following looks at deficiencies in this traditional goal and suggests a change.

Economic growth does not come easy any more. With dozens of countries lining up to mass produce goods, we are told we have to be very competitive to succeed. Unfortunately, vigorous competition produces more losers than winners. And even the winners will lose, as rich countries driven by growth and poor countries driven by desperation over-stress our environment.

An ever-growing Gross Production (GNP or GDP) is extensively promoted as the ultimate good. But it could be dangerous to rely on an indicator that recognizes no difference between money made selling new shoes and money made treating pollution induced illness.

Gross Production accounting seriously misled the East Coast fishery. Each year there was more investment, more boats, more fish caught and more money made. Then the fishery collapsed and a multi-million dollar industry turned into a nightmare.

During the recent recession, GNP wasn't growing, but it wasn't shrinking either. In fact, the volume of goods and services produced was the highest in our history. Where did the wealth go? Why was it not taxed enough to maintain public revenues?

When human activity had only a tiny impact on our planet's ecosystems, unlimited growth was imaginable. No longer. Today our collective consumption rivals that of all other forms of life put together. Humans consume 40% of everything that grows on land and the wastes we produce affect every corner of the globe. We know the earth has limits, but we are still being told that growth can be limitless.

Growth and environmental limits meet head on at the garbage dump. Practically everything we make gets thrown away and we're running out of places to put the waste. With reduction, reuse and recycling efforts, we conserve landfill space, save natural resources, conserve energy and reduce pollution. But, some argue, these efforts

The sustainability project.

The Guideposts were derived from a four-year study of the concerns, aspirations, and initiatives of voluntary and non-profit organizations.

The impression made by the assembled materials was dramatic. Clearly these people understand the problems and know what we can do to solve them. In addition, numerous groups pointed out that we have a limitless ability as human beings to enjoy ourselves. Friendship and creativity are the real thing. The rat race is optional.

Taken as a whole, this voluntary/non-profit view of the world is reassuring and inspiring. It seemed important enough to find ways to share it, and so, the Sustainability Project evolved. As more and more people come to see sustainability as a viable option, society is more likely to adopt appropriate priorities.

The Sustainability project exists to help you raise the subject in your community. We can provide material for community papers, bulletin boards and other outlets. We are also prepared to help you organize meetings on the topic with your friends and associates. Call or write for more detail.

Debate.

As a general goal, sustainability is hard to oppose. However, when it comes to details, there are some differences of opinion. With this in mind we propose a public registry of all the ideas and information on the subject. The material could be organized using the sustainability chart as an index and sub-index. Differing opinions could be highlighted with the opposing views listed side by side for easy access and deliberation.

The information in this article is from the booklet "Let's Talk About Sustainability," produced with assistance from the Ontario Ministry of Environment and Energy and the Federal Environmental Partners Fund. The opinions expressed in this booklet are the Sustainability Project's and do not necessarily reflect those of the Federal and Provincial Departments involved.

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decrease production. Some even assert that the recession can be traced to the success of the "3R's."

Making and spending money are the twin motors of growth. If what you do doesn't show a profit—it's of little value. For example, the devaluation of child-rearing and the parallel increase of dysfunctional families and delinquent children appear connected to our preoccupation with monetary return. Also suspect in our materialistic times is the pursuit of personal fulfillment. What about the "3L's"—learning, love and laughter? What about creativity, dance, sport, music, spiritual growth and friendship? Such activities can make living worthwhile but contribute little or nothing to Gross Production.

As we approach the 21st Century, life is too complex to put all our eggs in the basket of Gross Production. I'm not suggesting we take them all out either, but shouldn't we look at other possibilities—just in case perpetual growth is beyond our means?

How would society change if sustainability replaced growth as our fundamental value? If we put ecologically sound production, justice and the celebration of our human qualities ahead of increasing consumption?

Is there life after growth? A precedent is found with every child that matures. Throughout childhood, getting bigger is a preoccupation, much like it is for industrial society. At a certain point we are big enough to accomplish whatever life requires of us and self-centeredness gives way to responsibility. Physical growth practically stops but development continues through the refinement of skills, understanding, relationships and general appreciation of what life offers. This is a good analogy for looking toward the future.

Our confrontation with the Earth's limitations is an historic opportunity to reconsider our purpose as a society. Greater sensitivity to natural resources, waste, other people and other living things can only improve our chances of finding long-term stability. We have the knowledge, skills and motivation to recreate the world and secure the future, but we have to choose to do so.

Mike Nickerson works with the Sierra Club of Canada and is author of *Planning for Seven Generations* recently released by Voyageur Publishing.