# Laying Waste to Planet Earth

An Overview of the Global Situation

K. A. Hammond

Topics:

- Population: How many is too many?
- Agriculture: Can it feed all those in need?
- Energy: The current dilemma
- Natural Resources: For how long?
- Water: Quality and Quantity?
- Pollution: Garbage and toxic waste
- Spaceship Earth: The global ecosystem
- Society and decision-making: Needs and wants
- Values, Attitudes, Behaviour, Morals.

## Circum Specto...Look Around!

Forty years ago, the world lived in a mood of expectation. Today, it might be said that we dare only to hope. The overall state of the world has deteriorated substantially and adverse trends seem to be steadily gaining ground. Technology and science have progressed on many fronts, but these conquests are seldom coordinated and all too often generate new problems in themselves. Political and psychological problems continue to emerge. These events intertwine so that the human condition becomes even more difficult.

We are reluctant to face up to the unpleasant realities, preferring to trust in scientific and technological miracles. Rather than making the effort to assess the situation thoroughly and comprehensively, we choose to place our faith in the promises of the politicians and other questionable leaders. Whatever evaluations we do undertake are sectorial, fragmented and short term. A vast assortment of human resources stands at the ready. These however are rarely mobilized across disciplines and boundaries in the pursuit of a common goal. Consequently, we are pitifully unprepared to cope with the formidable challenges and obstacles that lie ahead.

***The planet "Earth" has life. We are part of it. We have technology and we are powerful. We know of no other place in the universe where life exists – as we understand it. The welfare and the very survival, not only of humankind, but of all species of flora and fauna is in our hands. If we do not speak and act for the "Earth", who will? If we are not committed to our survival, who will be?***

None of us can ever remember a time when there was so much concern and foreboding about the future of our planet as at the present time. There is something incomprehensible going on! I propose to begin this document by assuming that humanity is in a vulnerable position and perhaps even on its way out. Extinction may occur suddenly as a result of man-made or natural disasters. Although I don't think we can halt the demise of our civilization, I do believe the opportunity exists to take two useful and desirable actions. We can delay the demise and we can do much to make the transition to the succeeding civilization less catastrophic and miserable.

We may also have some influence (although very little) on the kind of civilization that will inherit the world.

For many years, many of the world's finest thinkers have warned, cajoled and urged people to become better stewards of our fragile environment. Some have taken heed. Sadly, many have ignored the cautions. These concerns have been well presented over the years in books, reports, conferences, symposia, speeches and other media. This document has been created after extensive research and consultation with leading experts from around the world concerned with the "World Problematique".

## The State of the World

Picture our planet from the moon, that beautiful blue-gray ball called "Earth", 93 million miles from the sun and captive of it, turning on its axis. As you approach the earth, you notice the various features: the oceans, the continents, the mountains, the rivers and other interesting phenomena. Some 20 million species of plants and animals live on the resources of this planet, trying to survive and all reproducing to fill the space available to them, always at the expense of other species and the environment. One of these species is *Homo Sapiens*...human beings. It is this species that developed the "economy of waste", the cultural / economic / political / industrial system that takes far more from the resource base for its needs and its wants than all other species and than what is really necessary.

The earth is in disarray: an economic, demographic, societal, technological and political mess. Yet in spite of the warnings that have been given for decades, many of us do not recognize the sign posts that are out there, nor the precarious nature of our hold on civilized life. What is ahead, especially for our children and grandchildren, if we do not recognize them soon?

Governments have generally taken as their mandate, that humanity can expand into the future (with no restraints) and that the quality of life must continuously be enhanced. A mandate such as this represents a consuming drive to expand (exponential growth) with little regard for the "costs" to the environment and to future generations. The bottom line is that it is difficult to find any responsible governing bodies committing themselves to actually doing something to reduce the high rates of population growth, alter certain consumption patterns, roll back mass poverty, reduce emissions of carbon dioxide and toxic wastes, reduce deforestation and species-loss – or even increase energy efficiency. With the collapse of political resolve in The United States, Japan, and Europe, there is little hope for leadership in the other countries of the world to do anything. And so we carry on...destruction as usual. Surely we must include in any mandate, strong support for the ecological systems required by humans...as well as all flora and fauna.

The ills of overpopulation are present and seen everywhere....increasing smog, water shortages, poisoning of the land, the water and the air, suburbia and concrete spreading over irreplaceable land, garbage and toxic waste, the waning ability to produce food, plus many other issues add to the bleakness of the future. In addition, there is the traffic congestion, the noise, the rising crime rate, the potential for riots and insurrection and all the social symptoms of the growth and overcrowding of people. We are facing a horrible mix of ethnic violence and resurgent nationalism, poor and inadequate educational systems, dysfunctional families, decay of the environment, extinction of species and millions of people with nothing to do. Many of the other species of flora and fauna face extinction because of this massive attack on their environment. Much of this is because of inept leaders in many of the nations..

How did we get into this mess? What are the immediate threats? How do we get out? Can we get out? People are asking these questions...but there are few answers. Politicians stall for time that we no longer have. They call for more study, more research, more committees and more consultation. We may need some of this, but what we need more than anything else is a positive approach and appropriate **action.** To have any effect, in time to avoid total catastrophe, the action must be on a grander scale than anything in the history of the human race. It must start now. We may already be too late.

## The Predicament: A brief overview

Not in the history of our species has humankind been confronted with changes as catastrophic as those presently imminent. We live in times of great change. It is therefore incumbent for us to achieve an objective appraisal of what we have – and what we do not have. Having achieved that, it is our duty, not with alarm but with complete detachment, to determine what our options are for an acceptable way of life for the present and perhaps for future generations.

Historically, there have always been worlds to conquer, either because of necessity or in quest of adventure. Such luxuries no longer exist and humans for the first time in two million years, have to make do with what is in view. There will be no recharging of the resource base, only decreasing and degrading. It is this fact that has urged many people to unite in discussions to appraise the events and if possible, to suggest courses of action.

## What are the Physical Issues?

### 1. Global Population:

The single major problem is global over-population, the result of the human incapacity or unwillingness to control their own numbers. With the intense biological drive to indulge in sexual activity and with the only common restraints being social mores and/or personal preference for other activity, there is little effort or success in this direction. Add to this the life-saving effects of modern medical practices, the growth in human numbers is exponential. Demographic pressure is destroying the resource base and the environment – the "stuff" of life, and is subjecting an already critical humanity to new and unbearable situations. It is overrunning the planet like an out-of-control malignancy. There are more humans than any other mammal on the planet and we are adding about 98 million more each year – over 250,000 each day. This growth must quite obviously come to a halt, whether by conscious effort or by nature's often drastic methods. A population of 6.25 billion by the year 2000 is the current estimate by the authorities in population studies and rising exponentially. There seems only a scant possibility of an effective control to limit this because of many traditional cultural and political influences. **There is a carrying capacity to the planet.**

### 2. Feeding the People:

The production of food and fibre to feed this ever increasing number of people coming onto the beleaguered planet is totally dependent on the amount and the quality of land suitable for growing crops. This valuable asset is dwindling at an ever -increasing rate due to other priorities being given to it. It is also very dependent on massive inputs of chemicals such as fertilizer, insecticides, fungicides, herbicides, drugs, synthetics, plastics and of course fuel for many uses. Possible new food sources, while projected for the future with some optimism, are not going to be spectacular in the next several years. The shortage of prime agricultural land, the dwindling supply of fertilizer and other chemical inputs and the increasing cost of energy do not encourage optimism. With seventeen of the world's most productive fishing areas now showing a sharp decline in production, authorities are scrambling for solutions. How far can fishing be curtailed without causing food shortages? What will eventually happen if drastic action is not taken? Is aqua culture an answer to this pending disaster? What is the future?

### 3. The destruction of the land:

Arable land is being destroyed on a phenomenal scale by wind and water erosion and some of our best growing are soils being sacrificed to the ravages of the "economy of waste". Millions of hectares are covered over by asphalt, concrete, bricks and mortar and other people needs and wants. This land is irreplaceable. It takes between 300-400 years to produce 1 centimeter of land through natural growth and decay. A 19% decline of the arable land in the world is projected to occur in the next 15 years. The great deserts of the world are expanding at the rate of about of about 5 km per year with little or no hope of stopping them. Living space and, equally important, space for recreation, is being restricted by ever more demands for industrial and agricultural pursuits.

### 4. **Energy**:

At the crux of most problems is the amount of available inexpensive energy. The end of the world's supply of oil and natural gas is about 10-30 years in the future. Coal is more abundant but with limitations. Its increased use brings with it the increased prospect of more destructive pollution, exacerbating the already severe overloading of the air, soil and water. Nuclear fission energy cannot conceivably meet more than a limited demand, even we were able to overcome the current design, operating, decommissioning and waste disposal uncertainties. Fusion of hydrogen, the hope for the future, is still decades and many billions of dollars away, if ever. There remain other energy sources, such as solar, wind, water, solar cells, biomass, geothermal etc. These can generate only small quantities of energy, compared with present and forecast demand and then often at very high cost. The "Second Law of Thermodynamics"applies here. We are so used to limitless supplies of materials from oil, gas and coal that we can hardly imagine what life might be like when these fuels soon start to run out.

We have harnessed the water energy and ravaged the biomass sources. We have done many bad things. The question is...***after fossil fuels, what?*** Will demolition and salvage of the fossil fuel edifices be one of the important occupations of the future because we don't have the materials or the energy to manufacture. Will the fading structures of a decaying city become the mineral mines and hardware shops? What can we do to prevent this? Now, almost nothing! If we had started 20 years ago, it might have been another matter. If we had started 50 years ago, it may have been easy.

### 5. Minerals:

Closely related to our use of energy is the alarming observation that this planet is fast running out of almost every major non-renewable mineral necessary for the maintenance and growth of highly industrialized economies, in economic quantity. There are, about 19 minerals, most of which were largely responsible for our high standard of living. now considered to be in "critical short supply". Many of these will be nearly depleted in economic quantity early in the 2000's. The rich deposits are now being mined out. Copper as an example, typically contained 8 percent metal a few centuries ago. Today, the average ore mined, yields under 1 percent. Eight times as much ore must be processed to yield the same amount of copper.

### 6. Global deforestation:

There is more to forests than just timber for the hungry economies of the world. In particular, there is the "environmental dimension", a factor that has always been important but has received scant attention. The world's forests do many thing, such as the regulation of floods and droughts, the regulation of water-flow for irrigation, control of erosion, control of sedimentation, linkages with public health, climatic and weather linkages. It can all lead to changing weather patterns in various parts of the world, affecting the production of food, to the greenhouse effect, warmer and drier climates interspersed with violent wind and rain storms. This, with the massive production of greenhouse gases from the burning of fossil fuels may also lead to an increase in average world temperature, resulting in the melting of the polar ice caps and the resultant rise in ocean water levels. This would eliminate much of the lowlands of the world. Current opinion suggests a rise of 1 to 3 degrees Celsius and a rise in water levels of 1 to 2 meters in a time span of 50-60 years. The socio-economic impact will be formidable.

### 7. Ozone Layer:

First measured in 1949, it has been disappearing at an increasing rate since that time. The culprit chlorofluorocarbon. Large holes are being closely monitored and daily warnings issued because of the incidence of skin cancer due to the loss of ultra violet filtering.

### 8. Acid rain:

A complex and dangerous atmospheric condition caused essentially by man-made pollutants such as carbon dioxide, nitrous and sulfurous gases. Much is known about the present and future devastating effects on plants, aquatic life, animals and humans. Not much is being done to curb this increasing problem.

### 9. Loss of diverse germ plasm:

Local and wild progenitors are required to maintain the productive and resistant strains of plants – especially the cereal grains. Germ plasm banks have been set up on a world-wide basis to try to protect against this loss. Sperm banks serve the same purpose for domestic and some wild animals. Plant and animal scientists see this as one of the issues of survival. Of particular concern is the realization that perhaps twenty percent of the species of flora and fauna, worldwide, will disappear in the next twenty-five years. The all important soil micro-organisms are disappearing at an even faster rate.

### 10. Natural Resources:

What are they? Where are the reserves? How much is remaining? What is the present and expected future depletion rate? Who are these allotted to? For what reasons? These resources have made our standard of living possible through their use and abuse. What will the physical, social, political and industrial situation be when they quickly disappear?

### 11. Potable Water:

Without it, there is no life. Water of adequate quality and quantity is fast disappearing due to the polluting processes. Even in the deep aquifers, the uncontrolled run-off due to forest removal and the very large volumes required by the agriculture and manufacturing industries are having an effect. Water treatment processes are barely able to handle the current

pollutants, threatening the supplies of many millions of the earth's inhabitants.

**12. Pollution: (poisoning).**

The massive increase in the pollutants being pumped into the atmosphere, the land and the water resources is a threat that authorities believe will lead to the destruction of many of the world's species. Humans are but one of these species. Acid rain, toxic wastes, garbage, gases and others are a manifestation of our lack of interest and/or our inability in solving the problem. It is said that there is nowhere in the world that is free from pollution or where there is really fresh air. The "bird" experts estimate that about 60 percent of the songbirds have disappeared since the 1960's, due mainly to loss of habitat and to pollution. What will be next? Technolo7gy stands at the ready to do something about it – when society demands it.

**13. Disease:**

This problem has **not** been ignored by the futurists. It is difficult to deal with. There are many health problems now challenging our scientists and our health systems. AIDS is the current example of what may yet come, a disease which has challenged the best of our science with few positive results to show. A little analysis will show that the next several years could have the impact of a major war, a recession of major proportions, a stay-at-home society and a death toll of very large numbers of people. In the countries already devastated by wars and natural disasters, it could wipe out the leadership, leaving nations without direction and hope. There are current new strains of diseases such as tuberculosis, malaria, yellow fever etc. which defy the best of the treatments now available.

## What Are the Social Issues?

Bleak as this view of the world ***Problematique...***(that very large web of entangled and intertwined problems facing humankind) is, the future of work looks equally as uncertain and challenging. The previous social revolutions, agricultural and industrial, brought about many changes in the work-place. These changes also spawned new ideas which resulted in new job opportunities for the expanding population.

The recent marriage of communications and the computer has ushered in the "Information Revolution". The results are the many new tools from which developed robots and automation. The sophistication of these tools together with the speed and the broad spectrum to which they are being introduced and applied, is making much of the traditional work obsolete as seen in the growing numbers of unemployed. The need for many of the intellectual and physical skills is gone. What can these idle people do? How do they earn a living? Will we see a situation where perhaps 40% of the people will do the work and 60% will never work? Who will support them? Why will they support them? How will they support them?

What does this mean in planning for the future? With the new reality comes the need for new ideas. Perhaps there are just too many people, too many old ways of doing things, too much conflicting information. Perhaps also our thinking is rusty and there is too much tradition of the past inhibiting us. Should not new leaders wipe it all out and a new start, with new people and using new rules take over? The game amongst nations and amongst individuals of power, prestige, profit and position is over. The game of survival has begun. There would be perhaps more gain than loss. We must not give up. We must accept the challenge.

## Actions Required

**1. Information and understanding:**

There is a primary need to spread and deepen understanding of the current difficulties and potential dangers in the world system and throughout the world population. This is essential, especially among decision-makers, national and international. This will have to be done through an enlightened populace, an improved educational system, communication systems (radio, television, news media, etc.), parliamentary debate, discussions in schools, churches, board rooms, in the street and in every country.

**2. Worldwide Action:**

With enhanced understanding of the world's problems, people must unite in the face of threats to survival, establish priorities and develop a firm plan of action.

**3. World Watch:**

There is a need for a respected authority to continually monitor the world situation and provide current and accurate information on trends and impending dangers in the areas of energy, population growth and migration, food, potable water, climate changes, pollution, global warming, ozone depletion and others.

### 4. Economic Order:

The present economic and political systems must be rethought based on the outlined problems and on updated information as it becomes available, and with built-in means for rapid changes as the situation merits.

### 5. Food:

There is a need for an intensive inventory of all the components necessary to produce food required by the burgeoning population, e.g.:

- arable land,
- water,
- energy inputs (fertilizer, insecticides, herbicides, fungicides, fuel, etc.)
- programs for stock-piling and distribution as needed.
- international involvement.

### 6. Population:

An increased understanding of current and impending world problems, especially population growth. Food, energy and water should motivate all countries to adopt firm policies and effective programs. There has been some success in some areas of the world which came about because of recognition of the future problems and the arrival of strong leadership to implement appropriate changes. Thailand is a current example change and hope. Results can be achieved only when the combined power of science, education, information, and resources are put into family planning and the women of the world are part of the solution.

### 7. Energy and Materials:

In view of the temporary or permanent shortages of key natural resources, long-term global policies should be formed quickly. These should be based on an accurate inventory of known reserves and possible future finds with a timetable of current and future uses. Conservation should remain a high priority.

### 8. Growth (The economy of waste):

Along with an accurate inventory of world resources, rigid guidelines for products and production levels are needed to produce a high quality of life based on factors other than built-in obsolescence and a throw-away syndrome.

### 9. Urban problems:

The energy, knowledge and commitment needed to contain and solve the ever increasing problems must be found before communities break down.

### 10. Research and Development;

National and international research and development policies should be reassessed and priority given to:

- The exploration of long term ecological dangers with a continuous attack on the causes and effects of pollution.
- The need for increased food production.
- The actualization of non-traditional energy sources.
- A population level that can live within the constraints placed on natural and human activities.
- A review of and action for the threatened plant and animal species.

### 11. Threat of War

An all-out effort is needed to bring the arms traffic and defense expenditures into the open and under control.

### 12. Nuclear Energy

An honest and accurate analysis must be made of the costs, the benefits and the negative aspects of the peaceful and military uses on nuclear energy. This should include the design, the operating procedures, the location, the waste disposal, the decommissioning obsolete plants, and other factors. This as an urgent priority.

A new land use strategy delineating the proper allocation of land for urban areas, agricultural use, recreation, rain forests and wetlands is essential.

### 13. Education:

Much has been written about the duties and responsibilities that people of "special training" owe to society. These people do **not** always make a contribution commensurate with their abilities, what is expected of them, or the investment society has made on their behalf for their education and training. Experience received through the educational system does not always train them appropriately and adequately for the challenges ahead. Therefore training is ongoing. This is now of particular urgency, when the challenge to be faced involves the very survival of humankind and other forms of life on this

planet. Our only hope lies with an immediate and enduring change in human attitudes and values.

## Questions to be Answered!

- What is the objective of society?
- What are the ultimate goals of society?
- What is the objective and purpose of education?
- What kind of people are needed?
- With what qualities?
- With what scale of values?
- Who are they and where are they to be found?
- What do we want to produce through the educational process?
- Can we create an educational environment that nurtures the visionary leaders so urgently needed?
- Does the educational system have the freedom, the incentive, the desire or the commitment and, yes, the leadership to lead opinion and to turn out the future leaders so badly needed now and in the future?

*The planet "Earth" has life. We are part of it. We have technology and we are powerful. We know of no other place in the universe where life exists – as we understand it. The welfare and the very survival, not only of humankind, but of all species of flora and fauna is in our hands. If we do not speak and act for the "Earth", who will? If we are not committed to our survival, who will be?*

**Acknowledgment**: Over many years I have had the privilege to discuss the "Predicament Of Humankind" with many people. I have read many of their excellent books, papers and media reports, listened to many fine presentations at conferences and symposia and by the electronic media. My thanks to the many concerned people who have made this paper possible.

*Kenneth W Hammond*

---

## The CACOR *Newsletter* and *Proceedings*

The following information should be useful to members or non-members who wish to submit material for publication

The masters for copying are prepared on a Northern Micro 486/66 DX/2 computer using DOS 6.2, Windows 3.1, Microsoft Word for Windows 6.0 and Microsoft Excel for Windows. It is a great convenience if material can be submitted on computer disk or by modem. Either 3.5" or 5.25" disks, high or low density are acceptable. The following formats are suitable on DOS formatted discs..

- ASCII text file
- Microsoft Word in Windows
- DOS Versions of Microsoft Word
- Word Perfect 5.0 or 5.1
- Word for Macintosh 4.0 or 5.0
- Excel Work Sheets and graphs.

Hard copy is acceptable, *faute de mieux*, but only for the shorter contributions.. 'Phone or Fax it to the Editor on:

**☎ (613) 731-6536 ☎**

Contributions may take the form of:

- News items of interest to Members
- Brief articles for the ***Newsletter*** (< 800 words, approx.)
- Longer articles for the ***Proceedings*** (> 800 words, approx.)
- Letters to the Editor
- Book Reviews
- Reports on meetings of other groups
- Announcements of meetings