OTTAWA PUBLIC HEARINGS
EDITED HIGHLIGHTS

INTRODUCTION

Tom MacMillan

Friends, the consequences of encroaching on our environmental capital have been identified: the greenhouse effect which threatens to overheat the world by wrapping it in a layer of carbon dioxide, the real danger of a nuclear winter imposed on us by war or accident, Arctic haze which reminds us that airborne pollution travels thousands of miles, even to countries away from its industrial origin, less genetic diversity which may eliminate potential sources of medications that alleviate human suffering, the destruction of the national heritage so essential to human survival itself.

Humankind's life support systems are the air we breathe, the water we drink, the soil that provides the nourishment for our bodies; they are under siege. Steadily burgeoning population means that more and more people will be trying to live on less and less environmental capital much of which is being squandered by sheer recklessness. The question is, how can we as a global community stop this spiral? Despite the best intentions, foreign aid and favourable trade arrangements, the industrialized world has done an appalling job of assisting developing countries and nations to solve their fundamental problems.

It is not good enough for us to lecture or to moralise. It is easy for Canada's Minister of Environment to do so in the comfort of his own country where the average income is more than 14 000 dollars annually, an amount greater than that of entire villages elsewhere in the world. It is another thing to deal, as we must, with structural, economic problems of countries where dire need dictates environmentally disastrous decisions. It is only now, very late indeed, that we ourselves in the industrialized world out of sheer necessity have begun to exercise good stewardship over our own resources. A more integrated approach to environment and economics has helped us just as it must increasingly be employed to assist others.

ENVIRONMENTAL MANAGEMENT AND ECONOMIC DEVELOPMENT

Stanley Rowe

How can the world of nature and the community of peoples with their national economies be harmonized? Posing the question this way suggests that the two are separate. But not so. Humanity, the human species exists and is supported within the world of nature and I mean

that not figuratively but literally. We are deep air animals living inside an ecological system.

The analogy that we should keep in mind is that of mother and unborn child, the child existing within the mother wholly dependent on her and on her health. Just so, people are wholly dependent on the health of the ecosphere. I use ecosphere rather than biosphere because ecos, you remember, means home, and that is a good concept, the homesphere in which we live.

We draw boundaries, of course, on the ecosphere for national and regional purposes but it is all of one piece. The peoples of the world in other words are supported by placental technologies that draw resources from the surrounding ecosphere, just as the foetus draws its sustenance from the body of the mother. Knowledge of human ecology therefore sets a clear priority.

The world of nature, the ecosphere, is more important than the human species, but we have pronounced ourselves, the human species, to be more important than the enveloping ecosphere. The malign results of that misjudgement lie all around us, evident in the kind of science, technology and industry that we support and practice.

When, therefore, we optimistically declare that economic development and environmental maintenance can go along hand in hand, this qualifier must immediately be added. Only if the maintenance of the ecosphere is made the first priority. Economic development must be secondary, guided by strict ecological standards.

These fundamental ideas are far from being universally accepted. Mostly nations continue to view the environment not as the enveloping supportive system that is both the source of life and the source and resources to sustain life but rather as a vague addition to the economy, something to be tinkered with to aid productivity, something whose continued pollution at acceptable levels may even provide clean-up jobs. In almost all media reports the economy comes first. People will attend to the environment, with a bit of financial support in goods times and grudgingly if at all when times are bad.

The standards that guide economic development should be those that guarantee the health of the ecosphere. It is not enough to exhort people to protect genetic resources, ecosystems and their processes. The sad fact is that people pursuing a hard kind of science that assumes no environmental responsibility have devised the worldwide technologic economic system that is actively destroying the ecosphere. Patching up, the present tactic, is ineffective. The system itself must be changed.

Most destructive and therefore requiring change first, is use of those unnatural resources that are not normally found in perceptible quantities in the ecosphere lifespace until brought out of the crust of the Earth through pipes and mine shafts, the so called non-renewable fossil fuels, heavy metals and other toxic inorganics. Surely we can develop a softer science, a sophisticated technology, that makes what we need from safer energy resources, from ceramic materials and from the organic rather than from the inorganic. A primary aim of economic development must be new industrial directions that cease to assault the planetary home. But even turning away from non-renewable resources to safer more benign renewable and replenishable parts of the ecosphere will not solve the environmental development dilemma without control of populations.

Over-utilization of landscapes and soils, of plants and animals, water and air may not release poisons as the non-renewable resources do, but may nonetheless starve and cripple humanity while destroying the quality of the natural world.

First, we must educate to increase understanding of the earth-people relationship, conceived as a nurturing ecosphere as home wherein humanity has evolved and is now supported.

Secondly, we must encourage the safe and sustainable use of renewable resources and replenishable components of ecosystems. Humans as organic renewables must also be looked at, as far as their own safe and sustainable numbers are concerned.

Thirdly, we must discourage globally the use of non-renewable resources and of non-replenishable resources, that is of geoenergy and of those unnatural chemicals not normally found within natural ecosystem lifespace; weapons of war must certainly be included here.

Fourthly, we must contain such non-renewable and non-replenishable resources and their toxic derivatives as enter into current industrial processes and protect the ecosphere environment from them until such time as more benign technologies can be introduced.

With these four policies in place and heeded and, of course, with attention to a more just redistribution of the necessities of life, we can then give economic development free rain.

Luc Gagnon

It is less expensive to prevent pollution than to suffer its consequences. We must also continue to emphasize that a development that respects the environment will create more jobs than the current model of development. And most important, political representation must be shifted toward economic decision-makers. We are concerned, however, about the fact that environmentalists presently do not have sufficient credibility to convince economic decision-makers. It will be impossible to demonstrate the benefits of conservation so long as methods of assessing progress remain unchanged. In brief, we think that a complete redesign of economic accounting must be proposed to take into account the assets of the society such as its natural resources and the liabilities of the society such as pollution.

It is important to focus on economic theory because this is the language that decision-makers will listen to. Recent debates in economics focus primarily on the confrontation between the Keynesian and monetarist approaches. However, if we examine the fundamentals of both approaches, we notice that natural resources are absent from both models. This is strange because natural resources are very important in the production process. Both approaches assume that strong economic growth could be achieved under conditions of extreme resource shortages. This is completely unrealistic.

In accounting terminology, we can summarize this shortcoming by stating that macroeconomics only deals with revenues and remains totally oblivious to assets and liabilities. For example, it is obvious that the natural resources of a country constitute a long term asset. In economics, the reduction of the stack of natural resources is not considered a loss. This is a very serious mistake because it creates the illusion of balancing in common expenditures while in reality assets are depleted.

This leads us to an important question. How to assess this depletion value of natural resources. Up to now the depletion value has been completely neglected by economic indicators. Economists justify the state of affairs by claiming it is impossible to attribute a value to such resources. They restrict their analysis to the steps of extracting resources, transforming them, consuming and then discarding these goods. However, sustainable development clearly requires that waste must be recycled. By accepting this new logic, it becomes very simple to determine the depletion value of most resources. It must be equal to their recycling costs. This can be demonstrated by answering a question. For example, if a user extracts a ton of copper, how much would the government have to pay to prevent the depletion of that resource? The answer is simply the amount the

government would need to recycle the same quantity of that resource from scrapped metal. After this recycling, the assets, in this case copper, will not be reduced. Obviously there are many other considerations, for example how to deal with resources like oil which cannot be recycled.

Why do we put so much importance on economic indicators? Because they have become indicators of political performance. Economists and politicians constantly refer to the gross national product to assess the performance of a country. This indicator therefore plays an important role in the decision-making process. Unfortunately, it is systematically biassed against the protection of health and the environment. One reason is that the present calculation method adds up any type of production. For example, when companies discharge toxic chemicals into the environment they are responsible for the sickness of many citizens. We then spend large amounts of public money to care for these people and we add all these expenditures to the GNP. This gives us the impression that we are richer because we are sick. Not only should such expenditures not be added to GNP, they should be subtracted.

A second serious inconsistency in the GNP concerns assets. As an example, let us assume that a country at the start of the year has an oil well. During the year, several thousand barrels of oil are extracted and the well runs dry. All this oil is refined (producing a good deal of pollution) and then consumed. According to the present calculation method, all this activity would have significantly increased the GNP during the year. At the end of the year citizens would have the impression, thanks to this consumption of oil, of being wealthier. In fact, they would not be wealthier but on the contrary minus one oil well. This type of absurdity is involved in the analysis of most assets. According to present calculation methods, when dollars are spent to build, maintain or even demolish a house, all these expenditures are added indiscriminately to the GNP.

This fundamental mistake in economic accounting may be summarized as follows. Economic indicators make no distinction between an expenditure that affects our assets and an expenditure that does not affect them. A new indicator is needed. A new indicator that would make this distinction between the use of non-renewable and renewable resources. It would give us some information on whether our development is sustainable or not.

For those who still doubt that economic indicators are a major factor in the political decision process, we will remind them about the current obsession of politicians about public deficits. The amount of public deficit is also an economic indicator and an indicator

that at present has exactly the same flaws as the GNP, namely that is does not consider assets and liabilities. Is it better as an individual to have a fifty thousand dollar debt on a house that is worth fifty thousand dollars or a five thousand dollar debt because of a trip made the previous year? The amount of the debt does not mean anything if one does not look at the assets at the same time. We are not saying that we do not really know the extent of our real deficit. The current monetary deficit is meaningless. There could be a much bigger hidden deficit related to assets and liabilities. For example, the destruction of our forests without ensuring their regeneration may constitute a large deficit. Exposing people to dangerous toxic chemicals also creates a deficit because it will decrease our long term productivity. Pollution respects the basic principle of borrowing, namely to pay later what we refuse to pay now. It is a deficit.

The recent political desire to reduce monetary deficits may actually increase the real deficits. What are the first programmes to be cut by governments? Programmes in environment, public health, education and also regulation to control exploitation of resources. These political choices will actually increase the real public deficit. We recognize that the development of a new economic indicator is not an easy task. However, current economic indicators are not just inaccurate, they are harmful because they constantly give us the illusion of progress and an incentive towards a development that is not sustainable.

Joe Keeper

I am here to represent the Northern Flood Committee and to present to the Commission our experience of hydrodevelopment in Northern Manitoba: what it has meant for our people, our land and what it may mean for our future. The Northern Flood Committee consists of five Cree bands, with a total population of some 9 200 Cree Indians. On any measure, our bands are among the most seriously disadvantaged peoples in Canada. The life expectancy of Indians in Manitoba is some twenty years below the national average, the infant mortality rate is nearly twice the provincial average, housing standards are poor, unemployment pervasive and per capita income only one fifth the national average.

Historically, our bands had a nomadic life style, sustained by the adequacy in the local environment and the resources necessary for fishing, hunting and trapping. The development of the fur trade which occurred with the colonisation of Canada led to the eventual depletion of these renewable resources. In the 1960s and 1970s, the Government of Canada gave increasing attention to the

development of hydroelectricity in the Northern Provinces. Originally, little thought was given to the consequences that this would have for the North aboriginal inhabitants.

The Northern Flood Committee was formed in 1974 to represent the interests of the Cree people who would be affected by the proposed hydro-project and the diversion of the Churchill and Nelson rivers and the devastation of much Cree land. As a result of pressure from the Northern Flood Committee, supported by Canada, the Northern Flood Agreement was signed in 1977. An indication of the impact of the hydro-project on the Cree and traditional Cree lands is the fact that some 19 per cent of reserved land was affected. In addition, the surrounding land traditionally used by Indian people for hunting and trapping was also radically affected. The altering of the water routes affected access to some 25 million acres. Some 328,000 acres traditionally used for hunting and trapping were flooded.

For the Cree, the water and the land is our life. Water is used not only for drinking but for domestic and commercial fishing, recreation and general transportation. The hydro-project then has had and continues to have a devastating effect on our people.

The relationship of my people, the Cree, toward land and water made development on the scale of the hydro-project virtually incomprehensible. Nevertheless our bands responded to the wish of the Province of Manitoba to engage in such a venture by coming to an agreement with them about the appropriate compensation which will be required to offset Cree losses.

The Northern Flood Agreement defined entitlements for the bands in the areas of land, navigation and transportation, resource management and development, community development and environmental management. It committed the other parties to the agreement, Canada, the Province of Manitoba and Manitoba-Hydro to work towards the eradication of mass poverty and mass unemployment in our bands. The implementation of the agreement, a legally enforceable contract which establishes arbitration procedures, has been beset by delays, difficulties and Government and Hydro procrastination. However, we are now cautiously optimistic that with the backing of Canada we can move towards the realization of our entitlements and thus open new paths for our people's future development.

The Crees' rightful share in the benefits of this development offers us an opportunity to create for our communities the social and economic development that has so far been denied to us. Compensation for the losses we have sustained and a rightful share in the revenues of the hydro-project will provide the financial basis for new

social and economic development initiatives consistent with Cree aspirations. The possibility of diversifying our economy by the imaginative use of aquaculture and the development of Northern agriculture including greenhouse vegetable production based on the availability of cheap energy supplies offers but two examples. Most importantly the pre-entitlements under the Northern Flood Agreement will give us the financial resources to manage, control and lead our own development process. We have depended on others for too long and with too little effect.

We look toward the future confident that with the support of Canada and the good will and commitment of all parties we face a turning point for our people.

Julian Dumanski

All life on this planet, except that which exists in aquatic environments, is dependent on a thin mantle of soil that envelopes the earth. In most parts of the earth this mantle of soil is one metre or less in thickness, that is all. In Northern latitudes, such as in Canada, this mantle is half a metre or less and it is only the top twenty centimetres that gives us all of our food.

Consider also the fact that soil that took perhaps tens of thousands of years to form can be completely destroyed in one or two years of misuse. Land is the basis of food production in Canada and in the world and it always will be. However, the supply of good quality land for agriculture is limited. In Canada, a country which is the second largest land mass in the world, only 5 per cent of actual land area has soils and climates that are dependable for agriculture, although we farm more. There are essentially no reserves of agricultural land in Canada. There is considerable concern about what is happening with these lands relating both to urbanization and soil degradation. In Canada, about 100,000 hectares of rural land were converted to urbanization between 1976 and 1981 and about half of this was prime land.

Of even greater concern is the fact that soil degradation is increasing everywhere. Severe water erosion, for example, affects 5.8 million hectares, wind erosion affects about 6.4 million hectares, compaction affects about one million hectares, and salinization about 2.2 million hectares. Organic matter losses are 40 to 50 per cent of what they were in our prairie soils and 30 to 40 per cent in the Eastern soils.

Farmers alone cannot be blamed for soil degradation. Farmers are under intense economic pressure and they must strive to maximize production year by year in order to survive. Thus far they have had to bear almost all of the costs of soil conservation by themselves and

they cannot afford to do this. Economic production and other policies that are sensitive to conservation objectives are necessary.

Jim Bradley

The environmental problems we face can probably be categorized in two ways: those which are localized affecting only the area in which the problem arises and those which are international having a transboundary effect on other countries. The most recent example of this is the radioactive fallout from the Chernobyl accident.

Let me address the transboundary issue first. Ontario's two most important environmental problems arise from activities outside of its borders and thus outside of our effective control. Acid rain from United States power plants and industries is falling on our lakes and our forests. Toxic chemicals leaking and being discharged into the Niagara river from the New York side are threatening drinking water and fisheries. Ontario is handicapped by its lack of jurisdiction over these polluters. Without the co-operation of our neighbours little can be done to protect our side of the border. It is not a situation which should continue between two nations which enjoy such a long friendship.

But before we can ask another jurisdiction to take corrective measures we must attend to our own backyard, otherwise we have little credibility in requesting another government to take what can often be difficult and expensive measures. Ontario did this with an acid rain programme launched in December 1985. We targetted the Provinces four main emitters of sulphur dioxide for a 67 per cent reduction by 1994. The programme will cost hundreds of millions of dollars and is expensive for a province with a population less than one twentieth of that of the United States. With our programme in place, we have initiated meetings with representatives of States in the United States, both those polluting and those being polluted, to form alliances and get the offenders to make commitments for reduction. We have also gone to the United States courts joining others to try to force American air polluters to obey their own laws.

In addition to our governmental work the citizens of this Province have been involved. Unfortunately, there appears to be no effective international law or court which can be used to redress the problems. In the absence of these, treaties and agreements provide some help in bringing about joint remedial actions.

On another front, we are strengthening the laws and regulations governing the discharges of toxics into our air and water. With the new laws in place, we will not hesitate to ask the court to jail flagrant and repeated offenders. Ontario is exploring a number of initiatives to increase sustainable development activities within our native communities in Northern Ontario. Any government that ignores the environment does so obviously at its own risk. For in the long-run human health will suffer, quality of life will be reduced and future prosperity forfeited.

Simon Miles

To anticipate what could happen to the Commission's report: most of the real follow-up action will be done by national and sub-national governments and eventually by individual citizens. We all know that is going to take a long time. To make sure that they do follow-up we have to start thinking now about the packaging and the promotion of the recommendations. For example, governments will pick up on the Commission's suggestions when it comes to integrating economic development and the management of the ecosystem if they are encouraged and assisted to start by conducting assessments of their own performance. One has to start with assessments because they force one to start thinking what one is actually doing or has been doing.

But how does the Commission get such assessments launched? We suggest that thought be given to presentation of sort of how-to-do-it kits, with useful examples of how others have gone about their successful work. In addition to these kits on assessment, one could perhaps have a kit on how to identify true costs of new developments that are meant to contribute to our economic and social development.

Finally, it is essential that there be a group that continues to promote the recommendations of the Commission. Ideally the funding should come from a large number of international agencies, including the obvious ones like UNEP and the World Bank, so that they become more identified with the Commission's objectives. We need at least five years of good solid funding to back up the Commission's recommendations.

Wayne Easter

I am President of the National Farmers Union and I am also a dairy farmer from Prince Edward Island. Although I personally as a farmer have been educated to use intensive artificial inputs in my farming operations, I often think how farmers would be probably better of if we just used the natural abilities of the land to produce.

The problem in agriculture is not faceless, I as a farmer am a potential victim of the system that we now operate under. Why are approximately a quarter of Canadian farmers facing the immediate prospects of farm bankruptcy. It is directly related to the general concept of a cheap food policy that has constituted a cornerstone of federal agricultural policy since the beginning of settlement. While import costs have been steadily rising and an increasing volume and variety of polluting imports have been encouraged to maximize production, the general result has been to lower prices and to reduce the margins of returns to farmers on each unit of production.

We regard the current cheap food policy in agriculture as a form of economic violence which is contributing towards soil exploitation and the growing impersonal relationship between farmers and the soil for economic survival. It is a policy of industrialization that can lead only towards disaster economically for us as farmers and environmentally for us all as Canadians and as world citizens.

Francisco Barnes

I am speaking on behalf of Canadian Organic Growers, a citizens organization of growers and consumers interested in health conservation and the natural environment.

We are greatly concerned about plant genetic resources and seed saving. We are most concerned about seed patenting which exists in some countries and about its effects on future food supplies for an expanding population. We feel that any monopoly created by seed patenting allows the integration of plant varieties and agricultural chemicals ensuring a continuing dependence on the latter. This may lead to loss of diversity and to an ever decreasing gene pool. We firmly believe that diversity and availability of seeds may be better maintained as a public resources without seed patenting. Therefore we feel that the practice of exclusive patenting should be publicised and discouraged.

Kenneth Emberley

What I want to consider it that we work towards creating another national park system in Canada where we have one per cent of all the farm land being set up as a genetic reserve to preserve genetic diversity within our own country and promote an alternative technology.

Rhoda Inuksu

Inuit in Canada are becoming very worried because our Government is negotiating free trade with the Government of the United States and is putting water diversion on the table as part of these negotiations.

One protocol calls for the damming of James Bay. This would affect the whales and many other species and it could change the environment of the Arctic on a broad scale. Further we are most concerned to see international trade treaties used to transform the relationship between the Inuit and the animals which they depend on into a relationship where the animals depend on man who destroys their habitat.

The Inuit people are also threatened by industrial activity which occurs far from there and leads to the accumulation of industrial pollution in a thick yellow band called the Arctic haze. The most cruel environmental threats comes from the environmental movement itself as we see the animal rights laws systematically destroy our way of life and violate our right as aboriginal peoples to our traditions and values. Yet our people including the Arctic people, need development. The challenge is to find strategies for development which meet the needs of the people and the environment. Those who truly know the Arctic environment should really be asked how it should be used. Their ancestors helped the strangers who came to the Arctic to survive. We have something to contribute to the continuing survival of man and animals in the Arctic if others could only listen.

Member of the University of Ottawa

I would just draw attention to a rather insidious tough pollution about which most might not be aware. This is through the use of phosphate rock fertilizer both as fertilizers for our crops and also very widely is road slag. Many of the phosphate rock fertilizers are contaminated with uranium; that is the calcium originally present was displaced by uranium. It accumulates in the vegetation which of course may be grazed upon by herbivores and eventually end up in the human chain and also eventually be leached to ground waters.

Laurie Growley

What I would like to suggest is that measures be looked at which would encourage individuals to work to give some of their time to development, perhaps orienting it around the year 2000 since that is a historical point.

Chris Ludmore

In Ontario we have introduced a law which forces polluters to clean up after themselves and pay for the cost of cleaning up. I would just like to suggest that we apply pressure in other countries to introduce such laws and enforce them.

Sally Rutherford

The general population does not have any real understanding of what the problems are and what the situation actually is. I would like to suggest that educational institutions, particularly grade schools and high schools, increase the information presented to students.

Speaker from the floor

The low waste technology approach to environmental management can be applied world wide to prevent many future toxic chemical problems and to remedy many of those already existing. Precious little is being done by industry or by government to support low waste technology either in Canada or in countries around the world where the Canadian Government or Canadian industries have influence.

We in Canada continue to pour millions of dollars into react and cure strategies for the environment and for public health in areas such as cancer research or cleaning up the great lakes, but our Governments refuse to commit more than token financial support to the anticipation and prevention of continuing threats. Reported barriers to industrial waste reduction and recycling in Canada fall into three main categories: financial concerns, information availability and legislation. Under financial concerns, high investment costs are usually paramount. Although the low waste approach generally reduces operating costs, high capital expenditures up front are often required. This can mean a diversion of scarce capital away from other priorities.

In many cases, of course, the cost of waste disposal or resources and energy do not reflect their true costs. As a result the low waste approach often appears less desirably economically, particularly to those in government and industry who can only see the short run.

Information availability is another prominent stumbling block. Larger companies in developed countries have the necessary trained inhouse personnel required to investigate plans and implement the changes required. Small to medium sized companies usually do not, and the

problems associated with finding the appropriate information, learning to adapt it to their specific situation, knowing where to get reliable professional help as well as where to find financial assistance are often daunting enough to prevent a smaller firm from making this commitment. This is of course provided that the firm is aware of the concept of low waste and of its essential benefits to the economy and to the globe.

Legislation or the lack of it is the third major type of barrier. Disposal resources and energy pricing greatly influence the rate of growth of low waste technology and these factors have to be controlled by governments because the long range nature of the negative environmental impacts of pollution and waste make a completely free market unable to ensure that the polluter pays.

INDUSTRY AND SUSTAINABLE DEVELOPMENT

Thomas Coone

It is indeed a privilege to present an indigenous perspective on development. Indigenous Survival International represents indigenous people of the indigenous nations in Alaska, Canada and Greenland. As indigenous nations we put much effort into conservation of sustainable development for our own convenience. It is in our best interest to do so, and it will always be so. We intend to create situations of common sense, environmentally sound sustainable development as examples for mankind. It is the intention of Indigenous Survival International in the future to enter into a joint effort with the principle parties of the world conservation strategy to ensure state of the art renewable resource management models are developed by and practiced by indigenous authorities, and that strategies are evolved for bridging the gap between the scientific community and the indigenous environmentalists in the managing of our resources.

Daniel Dubeau

Hydro-Québec est une société d'Etat dont le role est de produire et de distribuer l'élèctricité. Son mandat premier est de deservir la population du Québec mais elle livre également de l'énergie électrique à ses provinces voisines, l'Ontario et le Nouveau Brunswick et aux états du nordest américain.

La politique d'environnement d'hydro-Québec repose sur sept précepts: planifier, concevoir et réaliser les activités en tenant compte de l'ensemble des implications

d'environnement, gérer les impacts environnementaux à la source, assumer les impacts des activités de l'entreprise par la mitigation, réaliser des initiatives de mise en valeur environnemental, s'assurer de la participation du publique à l'étude et à la conception des activités de l'entreprise, se conformer aux lois et règlements et établir au besoin une règlementation interne et finalement engager tous les employés et partenaires de l'entreprise dans la protection et la mise en valeur de l'environnement.

Ces précepts sont à la base de toute intervention intelligente sur le territoire. Il importe de les intégrer en amont c'est à dire au niveau de la planification d'ensemble et ainsi que des grandes stratégies politiques et programmes d'activités. De plus, l'environnement doit inclure à la fois le milieu humain et le milieu naturel et donc s'intéresser par example aux impacts économiques et socio-politiques en faisant appel aux diverses publiques concernés par les décisions de développement.

Mais le précept que j'aimerais ici mettre en lumière est le suivant: l'harmonisation des interventions sur le milieu doit être le résultat du travail collectif de tous les intéressés: le gouvernement, la population et les promoteurs. Seul, aucune des parties concernés ne peut réussir à concilier tous les impératifs. La protection de l'environnement ne se limite pas à la conservation et peut très bien s'accomoder d'un elan de créativité. Il faut imaginer et planifier l'avenir et le développement de nos milieux naturels et humains. Tout cela est conciliable, la protection de l'environnement loin d'être nécessairement un obstacle, un objet de chantage peut devenir un instrument d'harmonisation du développement et cela est vrai non seulement au Québec, au Canada, mais partout dans le monde. Tous les peuples de la terre méritent de vivre dans un milieu humain au sense fort du terme.

D'ailleurs la qualité de l'environnement est devenu aujourd'hui un enjeu international. D'abord parce que la pollution ne connait pas de frontières, on le savait avec les pluies acides, mais c'est devenu une évidence depuis Chernobyl. Ensuite parce que dans ce domaine comme dans beaucoup d'autres, la collaboration à l'echelle international s'impose comme la seule solution viable.

La protection de l'environnement doit faire partie intégrante de l'aide aux pays en développement car toute vision global de l'environnement doit aboutir à une harmonisation à l'échelle mondiale comme nous l'ont enseigné les évenements récents.

Magali Marc

Environment groups have opposed dams in the past. We were ridiculed and told that we wanted people to go back to live in caves by candlelight. The decision was politically and taken on a political level and it is with the back to wall that the natives had to come up with some kind of agreement with the Québec government. The instances who signed the James Bay and Northern agreement in Québec were in fact not the actual chiefs of the Crees and of the Inuit but rather people named by the Quebec government to represent the natives.

So, in fact, the natives never had a real say in development. The agreement does give some guarantee for protection of the environment; however, it is on paper and in reality it is different. The thousands caribous were drowned because the dikes were releasing too much water. There was no recuperation of the trees in that project. The public is not being informed of the environmental impacts.

My organization is particularly concerned over the mercury contamination that is taking place in the reservoirs. Of course it is a question for the Health Minister to tell the Cree Indians that they should not eat the fish. The problem is the Cree. It is culturally their way of life, fishing and hunting, and if you tell them to stop their relationship to nature and go and eat the canned food they can buy in the supermarket, then you are destroying their way of life.

We have to look for concrete ways to stop these projects and refuse this kind of development or at least make sure that it is being discussed and that the public really knows what is going on. It is a scandal to talk to the unemployed, the youth of any country, and tell them you are creating jobs by building those dams as if it was anything for the youth to look forward to destroy whatever is left of the environment.

Dave Montier

The indigenous people here are very affected about environment. Low level flight disturbs the environment and all the wildlife and especially the inhabitants of the land which are our people.

Ian Wilson

Nuclear electric energy can provide the world with a virtually inexhaustible energy supply through fission of uranium and sodium in the long term and through fusion of isotopes of hydrogen when that technology becomes

available. The health risks posed by the generation of nuclear electric energy can be less that those posed by other energy technologies when all risks involved in mining and transportation of raw materials, manufacturing, installation, construction and operation are taken into account. The environmental impacts of nuclear electric energy can be considerably less than those of other technologies. They have potential to replace the use of non-renewable fossil fuels.

Electricity generating technologies which rely on solar energy are neither more benign, less risky, less expensive nor environmentally superior to nuclear electricity.

The health risks for the development of peaceful uses of nuclear technology including nuclear electricity are very small when compared with the benefits from the use of nuclear radiation for medical diagnosis treatment.

The safe application of nuclear radiation technology promises many benefits in environmental clean-up and in increasing world food supplies by eliminating spoilage.

With a recent and very notable exception, the international co-operation which has marked the development of nuclear power technology provides an excellent model by which to address common environmental and ethical problems posed by the development of other technologies.

In terms of global energy contribution, nuclear electricity now provides the equivalent of six million barrels of oil per day which is equal to the combined output of the North Sea and Mexican oil fields and is approximately a third of the total production from OPEC countries.

In Canada, a country which is a net exporter of crude oil and a significant exporter of natural gas, the energy content of uranium production used only once without reprocessing of used fuel exceeded the energy content of total oil and gas production in each of the last two years. By 1990, nuclear electricity will overtake hydroelectricity in its contribution to the worlds energy needs.

Despite this contribution, conservation efforts and the high oil price regime, the world consumed twice as much oil as was added to reserves in the period 1975 to 1984. Leaving future generations with energy sources to replace oil and gas is a moral imperative. With respect to the comparative health risks between energy technologies, the risk assessments which the nuclear industry conducts and publishes for anyone to review are recognised by the large majority of scientists and

researchers as a model which could well be applied to other technologies. In fact, it has been suggested that it may be the availability of this information which makes the nuclear industry a unique focal point for criticism.

Solar electricity and wind power could contribute much to the energy needs of rural or remote communities and where there are no competing uses for land, such as in deserts, these technologies could well generate significant amounts of energy. But they can do little to satisfy the energy needs of large urban centres particularly in temperate latitudes. Unless and until new sources of energy become known and are developed we are going to need nuclear electricity in growing amounts. And why not? Perhaps only because of undue fear of the effects of radiation, a concern that can only be alleviated by knowledge and information.

We are surrounded by radiation in our homes, in our air, in our water and even in our bodies. The facts are well understood and the press coverage of the Chernobyl accident has clearly showed that it can be easily detected in even very minute amounts. It has been said that radiation is particularly frightening because unlike many other potential dangers in the environment, its presence cannot be detected by our animal instincts: true. But our intelligence which allows us to use nuclear technology beneficially has also allowed us to detect the presence of radiation and understand its nature. We must respect the potential dangers of radiation but continue to use our knowledge to our future advantage.

Sean Bellanger

The Canadian Chemical Producers Association recognizes that a judicious combination of government regulation and self-regulation is required to protect the health and well-being of Canadians and their environment. It should include a reliable validation programme to allow the public to gauge actual progress towards previously announced goals. It is not simply enough to talk about self-regulation, there must be an element of validation.

The CCPA believes that there can be a balance between economic development and environmental protection which will not place the environmental risk. We feel the best way to achieve this balance and reach our objectives is through multipartheid consultations which can bring about commitment from everyone and not simply meeting the letter of the law. We want to be committed to the spirit of the solutions as well and we can do that if we are jointly owning those solutions.

Raymond Robinson

The issue of importance, although it sounds like an academic phrase, is environmental assessment which is nothing more or less than an attempt to plan the future within a concern for environment. The key requirement is to determine how important the likely effects of an activity really are.

First, you have to determine that in order to decide whether it is worth doing a great deal of work and study, spending a lot of time and money, money in examining these things.

Secondly, you have to do it at a much later stage in the process to determine how much change you should have in whatever proposal it is that you are examining in order to accommodate these impacts, how much money you should spent on mitigating measures, whether indeed you should allow the proposal to proceed at all. You are always going to have differences of view, whether domestically or internationally, on issues that are not absolutely clear-cut. You are always going to be involved in subjective judgments at some stage in the business of determining what is good and what is not good in the field of the development.

Our concern, all of us who are professionals in the field of environmental assessment, is to try and narrow that subjectivity or reduce it to the point where it can at least be close to objectivity, if that is not too much a play on words. What I am talking about here is both balance and independence. I do not hold up the Canadian system as a model. For one thing, there are many systems in Canada, the different Provinces, the different processes, the Federal government has a different one, and ours is peculiar to our society and it is not necessarily relevant to other societies of other parts of the world.

But one of the things that we have learned when dealing with major activities that are likely to have significant impacts on people's lives and on the ecology, is that it is important that the people who are making judgments about what is important about those effects are people who are at arms length, that is to say, are fully separate from the authorities that benefit from those activities that take place. Now, it is the stuff of political systems to make judgments that are highly subjective. You have to deal with values and you have to impose, I guess, a certain value over another at certain stages but it certainly helps you, particularly when dealing with highly technical issues, if you have first had it examined by a group that is independent of the political structure.

Speaker from the floor

We have not really discussed the essential nature of what are our ends in terms of what kind of society we want to live in in the future. I think we have more or less assumed that we want a society where participation and decisions are taken in common but we have not related that end to the means that we are going to use to achieve it. Most of the people from the major centralized institutions that have spoken up today have talked of participation as identical to consultation, and consultation is only part of the process.

The reason why this confusion exists is because they are too large to allow for real participation to take place, so if we are going to talk about a society which is going to be based on the collective will and we think that is our ideal we have also to look at the technologies that will be appropriated to distribute that power in the world and that will not create the kind of centralizations that afterwards require an enormous amount of time spent in actually creating an apology for a system which is at its root a mistake because we have forgotten the relationship of means and ends in our development process.

Speaker from the floor

With all the scientific expertise and the engineers, we have barely reached the kindergarden level of a whole study of a river valley's ecosystem and its total natural productiveness. Our technological system is interfering with the natural system that for a million years supplied us free with food, fish and animals and kept the system running. So many times our interruptions are destroying the natural systems and it cannot go on.

But our professional assessment systems are so totally inadequate and so much dominated by the generals, the generals in industry, the generals in the government, the generals in the scientific establishment, the generals that sell big machinery, that the ordinary people have no chance for fair input. One of our demands is that the ordinary people, the environmentalists are funded. The businessman has tax deductible dollars to do a study, the government want the same kind of projects that destroy the environment, they have tax dollars, any amount they want to put into a project. We should have a right to an equal number of dollars because we are the only ones who want to save the environment.

The environment department's job is to monitor and to regulate the destruction. So, they are not on our side either. Any real long term improvement in environment involves funding for the interveners to the extent that they can produce not only equivalent quality studies but that they have access to the media and the public to inform.

Keith Lewis

I am with the Serpent River Indian reserve in Ontario. On our reserve in the middle of the community, a hundred acres of land has been laid to waste. In 1955 through negotiations with the Federal Government a mining company hooked up a place that produced a gas reserve which was used in the uranium milling process at the Erie Lake uranium mines. In 1963 the place was closed down. What they left there was stockpiles of calcium, sulphur and pyrite on a hundred acres site, along with the concrete structure that had been there originally. They took what was good to them and then they left the rest of the stuff that was there.

In 1969 in an exercise by the Federal Government using the Department of National Defense, the structures were blown up and, to complicate matters further, heavy equipment was brought in and the concrete, steel and contaminants were plugged into the ground and scattered over the hundred acres site. We are still stuck with the hundred acres site and we are in the process right now of trying to secure funds to clean up the site.

John Booth

First, a few comments from a sort of young person's point of view, I guess. It is kind of unfortunate but economics have been the focus of our society so far, perhaps the reason being particularly in this country that the environment has always been too large to have ever really been depleted. Now for the first time we are seeing the effects of what a totally depleted environment is going to be like. So, whereas everybody here knows is that there is a problem, we are still not reaching out to the general public. What we are dealing with here is a problem then that is basically twofold in nature: it's ignorance and it's apathy. If we can each tell two people, I mean that deals with the ignorance problem, perhaps not as wholeheartedly as would be expected but it is a start.

Then there is the problem of apathy and I ask myself, why are yuppies not here. I mean, you know, can't they take time out of their busy schedule? But we need to talk to a few of them. The standard response that a lot of them give is well, you know, I got a wife and kids to feed, I don't have time to do that. No one is interested in the long term, and I am sure that this is the political system everywhere. And it is a shame. We can have an environment without an economy, you cannot have an economy without an environment.

INTERNATIONAL CO-OPERATION: ENVIRONMENTAL SECURITY

Ralph Torrie

Everywhere, one finds an awareness that we have arrived at an historical moment, a moment of profound change. Yet everywhere one also finds a sense of frustration, a sense that our institutions are not meeting the challenges of today. The environmental agenda for example has come a long way from its root in the conservation movement. The concerns of modern day environmentalist extend far beyond their own backyards. They are becoming true internationalists and their concern is they recognize that environment is indeed an international problem.

Environment must also be an approach to development. Environment has a social justice issue and environment even has a peace and security issue. The barriers to achieving sustainable development are great as might be expected in the major historical transformation but they are far from insurmountable.

Neither is there a shortage of practical suggestions on how to proceed: the conversion of military spending to peaceful application; the establishment of global resources as the common heritage of mankind; the international aid and trade regime which is so important to environmental sustainability; the alleviation of the debt-burdenon developing countries; the international control of transnational corporations; the adoption by nation states of international standards for environmental protection and rehabilitation.

Non-governmental oganizations have traditionally and historically played their role of policy leadership, of education and consciousness raising and practical innovation and bringing about sustainable development. And it will surely be the case that non-governmental organizations, with their inherent adaptability in responsiveness to people's needs and concerns, will lead the way once again in policies for sustainable development. All the practical suggestions for achieving this however will amount to nothing unless the political will to overcome the obstacles can be raised through public education and awareness raising processes in which NGO plays such a critical role.

Paul Mouldon

There has been a consistent movement towards strengthening of the legal regime pertaining to environmental protection and management. This legal regime is evidenced by over one hundred and ten

international agreements universally. It mandates a number of important duties which State have accepted, even though not all abide by this law. Nevertheless, the fact that there is non-compliance clearly does not indicate that there is no acceptance of international law itself. In fact, international law has been doing so well it has almost reached a universal point of acceptance in consensus.

Secondly, the traditional belief that obligations are only born of decades of consistent practice is outdated in a world where mostly nations are less than three decades old. Eco-development norms suggest: that every State has a role to play in development and that environment considerations must be integrated into the development policies in a non-sectoral or a cross-sectoral manner; that each State has a duty to improve its own environmental capability through increasing environmental law, environmental training and public awareness building; and that development policies and programmes and activities must be viewed from a regional perspective ensuring the management of ecosystems.

Marcia Valiente

Canada is an industrialized nation but the most important industries are natural resource industries, forestry, agriculture, fisheries, energy, mining. The sustainability of these resources is essential to the maintenance of our high standard of living. In addition, Canada is a vast country containing regions and peoples who are developmentally disadvantaged. This makes sharing the wealth between have and have not areas of the country and between our peoples within our country an important political imperative.

Third, the political structure in this country is such that no one government has complete jurisdiction over environmental, economic or social matters. Thus, we are forced to act through co-operative arrangements between different levels of government, different regions and different peoples within our country.

The fourth characteristic: in Canada we have had more than 15 years experience with environment and protection law including experience with environmental assessment.

What then are the lessons we can convey to the Commission from Canada's experience in environment and development from a legal point of view? We suggest that the specific changes required should include the following: an economic policy of long term sustainable development, a change to an anticapatory approach to environment, the regulation of resource use, the use of

appropriate technology, the physical integration of government departments, increasing the environmental capability of industry, and a formalized call for public and non governmental organization participation in environmental decision making.

Fergus Watt

First, there are some failures of the present approaches, many of them are obvious but I would just like to put them on the record anyway. Often, the drafting of international agreements is the result of competing national interests and therefore reflects the lowest common denominator of agreement. This is true not only in the drafting of the agreements but in their decision making bodies and regulatory agencies. Often, the focus of international agreement is too narrow, unspecific, it defocuses on specific environmental development issues. We believe that the phase of change in the international arena around these issues requires the more integrated approach and a broader issue linkage. And many of the international agencies and bodies set up by international agreements lack power to create and implement policy. This in part reflects a lack of a grassroot mandate.

What are we to do? It is axiomatic that we as individuals or group of individuals share territory in resources. We need to define common norms of behaviour. This is true whether we are speaking of a family, a small town, a province, a country or the world community. However, the definition of common norms of behaviour is not in itself sufficient for the creation of a body of rules and regulation.

In order for those to operate effectively, certain basic conditions must be fulfilled and I would like to enumerate four of them: one, the existence of a general will among members of the community to accept and adhere to regulations; two, the existence of a political framework not only for defining and quantifying common behaviour or norms but also for adapting existing rules to change within the community; three, a means of determining compliance with international rules and regulations and finally, the means for enforcement. To attain a more optimal management of the planet Earth: first, decisions should be taken at the lowest level possible; secondly, the parties affected by decisions should be represented on the decision making body.

Margarita de Botero

Instead of lamenting the situation all the time, the world injustice or the economic war or the arms race, social economic and environment problems have to be

tackled in concrete political terms, the way to structure a proposal for society that is politically powerful enough to defend its rights from the grass roots.

The model of development that is trying to be imposed on us, the dreams to bring the world together as a big consumer society and have no little scars left in our whole culture. You cannot destroy civilizations opposing them only because they are different or because you imagine they are an intrusion in your sphere of influence or your sphere of marketing. There must be a way without effacing primitive societies as such, or praising underdevelopment or poverty, without being considered the prophets of doom or not understanding the enormous efforts that man has made through science and technology in all these years.

There must be a way in which a new complete different instant power structure could be put together with power and space for different choices and different development styles, a way which society can stop becoming only a spectator of State violence, of State and power terrorism and a source of expanding production, which has led to enormous wealth in some parts of the world and the destruction and exploitation of nature and men.

Charles Caccia

In moving the environment up on the political agenda, we have to remove obstacles such as short term economic thinking, such as the propensity towards curing instead of preventing, such as the short term political planning that seems to be a major inherent characteristic of the political system, such as the propensity on the part of many to see the economy not as part of the environment, and finally, the acceptance that it is all right for private enterprise to pass the cost of environmental damage to the public sector.

In moving the environment up on the political agenda also, we have to shape the main thrust of political thought so that the environment is seen as the envelope within which the economy functions. And I submit to you that this is a unifying concept that applies anywhere whatever the economic system, whatever the political system, whatever the stage of development. Well, in doing so we have to develop or to adopt a number of initiatives, we have to do our homework in economics and develop a better knowledge of the cost of inaction. We do know the cost of landing man on the moon, we do not know the cost of increased hospital admission because of air pollution.

We have to develop and adopt social shock absorbers to protect workers when they are affected by environmental measures and programmes, shock absorbers such as mobility, retraining and early retirement. We have to encourage and give greater momentum to modernization programmes on the part of industry, in co-operation with government and labour. We have to develop further thoughts on the adoption of charters of environmental rights.

We have to ensure the adoption of industrial codes of conduct by industry, particularly by transnational industry. We have to explore the possibility of establishing environmental protection boards that would be empowered to collect premiums based on performance by industry. And we have to find ways of adopting new government structures whereby the environment department becomes a central force in the overall policy making process, not just another department often losing out in competition with other departments at the national, sub-national and local level.

At the international level, we should endeavour to develop something that has a strong rule at the centre, in the Secretary General's office or the equivalent, where it would initiate policy. It would play a strong advocacy role, it would promote advance long term global thinking and research, and when needed even offer mediation services on transboundary environmental issues.

Louis Bryer

Around the world, wherever there is development, indigenous people are always pushed out of the road for the development to take place, for nations and countries to build, and for progress as they call it. I can look and read it in my homecountry, Ontario. And I think these people around the world, all they are asking for is to be involved and to be consulted. Because indigenous people around the world are great protectors of the environment. And people of indigenous extraction always look after the environment because they know that they have to live off the land and without the land they are not going to be able to survive.

Maxwell Cohen

The convergence of so many fundamental issues of our time makes it seem to me that mankind's institutions globally have almost reached the age of unmanageability. I think, for example, of the mixture of nuclear issues, economic issues, the environmental issue, the population and hunger issue and the areas of sub-nuclear violence in so many parts of the world today.

One has to ask the question whether we haven't come to a critical point where the manageability of the issues per se is now clothed in doubt and it is a race against time to decentralize and simplify issues while there is still time to do so. One of the dilemmas we face is the nature of scientific dispute about environmental issues. We've had it in Canada and the United States over the acid rain issues, as you probably know. That scientific dispute is very discouraging particularly when scientists are recruited in aid of a national purpose and a national point of view.

I therefore take strong exception to the use of national scientific brains for the advocacy of a special interest nationally. What we need wherever neighbours are involved is never a national scientific point of view or investigation but a bi-national or multinational one. Common fact finding is superior to national fact finding no matter how difficult the issue may be. It's remarkable how ready scientist from different communities are to come to a consensus when they are looking for the minimum line upon which they can agree as an alerting point for their respective communities.

It seems to me that we are not without very substantial recent legal assets. There is an enough law in the world today. It seems to me time to start a campaign for normative minimum reference to those rules. And what we need really is a propagation and a publicizing of the rules so that the international community understands that the beginning of a solid legal framework exists, however much it may be described by some law teachers as soft laws or even soft law or hard soft law.

Finally, I'd like to comment on the institutional arrangements required to make that normative system effective. It seems to me that we have three options here that are very useful. One is of course the global institutional arrangements. Here, we need a kind of new earth space monitoring system. I think that it goes farther than simply an earth environmental monitoring system. It's a combined earth space monitoring system, a new agency that would have the resources to be able to monitor report and recommend in a very systematic way on the earthspace interaction which is so fundamental to a total ecological view of the biosphere.

Secondly, we need to have a deeper understanding of what it means to have effective regional arrangements. The Canada-United States experience has been a profound reinforcing one. My third suggestion on the legal institutional side is that there is a need for harmonization of countries' legal systems.

Joseph Crock

We discuss the effects of the environment on forest, agricultural land, plant and animal species but we ignore the very real threat to the existence of the human species. Good health and the prevention of premature death and suffering are goals which all people value. The elements of the dual political system of the modern world are interrelated. If we harm our neighbour, we harm ourselves. We hear about the pollution of the entire world ecosystem, the spreading of many industrial and military toxins into the biosphere, the spread of pesticides and herbicides, about radioactive dust present thousand kilometres from the site of an explosion and the universally present acid rain.

Many industrial wastes are biochemically active in the form of free radicals which eliminate from the natural environment and the food chain very important minerals such as zinc, magnesium and others. These elements are natural anti-oxidents providing protection against the degenerative processes. The acid rain removes from soil magnesium which in chlorophyl is one vital mineral necessary to the process of photosynthesis. Without magnesium a plant cannot produce oxygen and without oxygen we cannot survive. The complementary worlds of plants and animals can only exist in the state of dynamic equilibrum which must be preserved.

Today, the world's crisis is an ecological one which cannot be solved locally. It is known that in the situations of unethical actions and a wrong doing, there are pathological processes and or external factors influencing the function of the brain. Many people would be unable to commit transgressions without the influence of alcohol and drugs. A similar effect can be brought about by heavy metal such as lead and various chemicals occurring in our food, polluted air, contaminated water, workplace and homes.

Various pathological phenomena like poor human interrelationships, aggressiveness, crime without motivation, terrorism have their roots in malfunctioning brains overloaded with toxins. Neurobehavioural toxicology proves that toxins in very small doses can damage the human brain and cause a variety of behavioural and emotional symptoms such as hallucinations, confusion, depression, loss of memory and decreased intellectual functioning.

We know that the human being is able to maintain his integrity, identity and sovereignty as long as his psychological processes are energetically supported by a correct supply of nutrients. Intoxicated brain function becomes subclinically abnormal.

When the battery of the calculator begins to weaken, the calculator can perform only simple functions and fails with complicated ones. A polluted brain works by analogy in the same way. It can perform its basic function of maintaining breathing, circulation, instincts of hunger and sex but higher function such as love, friendship, sharing or social responsability are distorted. So one can propose that moral philosophy and ethics are ecologically conditioned, that man in destroying his environment, destroys himself. And his fading sense of guilt leads to further destruction of his environment.

It would be easier for many of our political leaders, executives and scientist to believe in this threat if people were dying massively from environmental pollutants. Unfortunately, this poisoning does not appear in the acute form but manifests itself as a chronic disease of civilization which includes cardiovascular disease, collagen disorders, neurological disturbances, schizophrenia, environmental hypersensitivity, cancers and totally malfunctioning immunological system in the form of AIDS.

What is the prime responsibility of scientists, physicians, educators indeed all people of this planet. It is not to become discouraged but to realize that our survival is only and exclusively possible through holistic ecologism and to alarm, to inform, to achieve and work together to educate society at every level to prevent the physical and mental infirmities which preclude solving our environmental and other problems.

Mary Ann Jewer

Today, we would like to be very practical and focus only on two agencies that exist now: the International Atomic Energy Agency and the International Commission on Radiological Protection. The developing nations rely heavily on information provided by these two agencies and I think we have to do an evaluation of what kind of information people are getting.

The International Atomic Energy Agency was founded in Vienna, Austria in July 1957. Its main objectives were to seek, to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world, and to ensure that those installations under its supervision or control are not used in such a way as to further any military purpose. According to the IAEA, peaceful uses of nuclear energy include nuclear power plants and even nuclear explosions for canal building, harbour deepening, creation of underground reservoirs and the unlocking of oil and gas reserves. It should be noted that, for many years, these activities have been successfully blocked in the first world by

environmentalists and health professionals. Over the years with its advocacy mandate, it has become a public relations organization for producers of nuclear hardware.

We recommend that the IAEA be no longer mandated to promote nuclear energy. The board of IAEA should be freed of governmental ties and compelled to take some oath of office as a truly international public sector.

The ICRP was formed in London in 1950. It was a medical association which reorganized to include the physicists who had worked on the atomic bombs during World War II. The organization was dominated by Britain and the United States. It was to establish itself as a recommending body setting permissible levels of radiation exposure for workers and the general public, given the economic and social benefits of the activity. No outside body can appoint a scientist to ICRP. No prediction of health effects has ever been allowed and the ICRP have never opposed any of the serious radiation problems which have occurred since its formation. For instance, they never took a stand against the above ground nuclear weapon testing, they never called for ventilation in uranium mines and they never objected to indiscriminate x-rays of pregnant women.

We are recommending that the ICRP should be deposed from its self-appointed position as an international recommending body for radiation exposure. An organization needs to be formed which will deal with the health effects of the military, the industrial and technological proposals.

DEVELOPMENT ASSISTANCE AND ENVIRONMENT

Margaret Catley-Carlson

Experience has taught us that the development process is likely to be inefficient and the benefits short-lived in the absence of a true concern for the environment. In Third World countries, land misuse, deforestation, desertification and water scarcity are all closely tied to poverty and population pressures.

Poverty is self-sustaining, a self-generating process that compels people to live in a way which destroy valuable soils, water resources and forests. Much of the environmental degradation is the result of the desperate search of the poor and the landless for such basic needs as fuel, food and water. Small farmers are held responsible for environmental destruction as if they had a choice of resources to depend on for their livelihood, when they really don't. In the context of basic survival,

today's needs tend to overshadow consideration for the environmental future. It is poverty that is responsible for the destruction of natural resources , not the poor.

Poverty and environmental degradation are often compounded by rapid population growth which translates into increased human needs and intensified pressures on already scarce resources. The problem is not simply one of numbers, it is far more complex. It involves land sustainability, relationships between people and the environment, the degradation of natural resources and under-development. A major consequence of rapid population growth is the inevitable increase in the numbers of poor, living at or below minimum subsistence levels. Population growth is both a cause and an effect of poverty. Both tend to create groups of environmental refugees.

The basic question today is not whether to choose between environment and development, rather it is how to select patterns of economic development which are environmentally sound. International co-operation is essential in devising a global economic system that responds to the needs of Third World countries, as well as of the industrialized countries. Not only must we find more effective tools to treat the symptoms of environmental mismanagement, we must also address its root causes: poverty and population growth, crippling debt, unfair terms of trade, fixed aid budgets and under-development.

CIDA is currently re-evaluating its programmes in the light of our greater understanding of environmental concerns. In reviewing its performance, the agency found that certain universal lessons seem to emerge from bilateral and multilateral donor activities. Some of the key lessons learned include the recognition that in the past decade some projects have not succeeded because they were not environmentally sound, and therefore not sustainable.

This failures often resulted from lack of understanding about the complex links between resources, population, environment and development. Others have achieved the objective set for them, but have not contributed significantly to genuine development. Donor and recipient countries alike can improve their development programmes by emphasizing environmental management and rehabilitation, by focussing on the needs of the people, particularly the marginal groups, and by widening the debate on environment and development, so as to achieve community understanding and support.

The future, in large part, depends on the way we deal with the seriousness of a global scale depletion of our resources. National and international actions are

needed to ensure that appropriate technologies are made available in order to increase productivity. And greater emphasis will have to be placed on improving the welfare of marginal groups, particularly women and the landless. We have the tools, the knowledge and the skills to build a more secure and more sustainable world. What is needed is greater political will, increased international co-operation and greater community involvement.

Environmental progress requires the support of an informed and alert public in developed and developing countries. We must think and act more as citizens of one world. We live on a planet with finite resources and a planet irrevocably interdependent. We share a common heritage as well as a common future. We have a responsibility to manage the world's resources for the benefit of future as well as the present generations.

Theodora Carol Foster

It is a privilege for me to be here today to address one particular factor of development and environment which, I feel, has been perhaps ignored or neglected and that is the role and integration of women into both the development equation and into the environmental equation. The two are very much interrelated. It has only been recently, in the last 20 or 30 years of modern development, that development planners and policy makers have really come to appreciate women's role in the economy and in the development of agriculture, fisheries, certain types of energy and small scale business. Their environment importance is less well recognized. And, unfortunately, I think to a large extent, many of the programmes that are supposedly directed at all human beings still tend to treat women on the periphery and they tend to be treated on an ad hoc, piecemeal basis. So long as this occurs you will not achieve sustainable development, because you are only dealing with 50 per cent of the population.

I would like to refer to six particular issues. One is women and food production and agriculture. United Nations data show that women produce 50 per cent, at least, of the world's food and that in Africa and Asia in many parts it is 60 to 80 per cent. Even in Canada, where we tend to think that the farmers are all male, at least 25 per cent of the farmers are women. 15 to 25 per cent of households are female headed due to many instances of the shift of men off the land. And women, especially the female headed households, represent the poorest of the poor. Women's agricultural activities, obviously, have potentially positive or negative implications for the environment, especially in the Third World countries, no less than here. But, whilst women's agricultural needs are beginning to be dealt with to a greater extent,

certainly the environmental needs and information that they require are not. For instance, most women are involved in subsistence farming in the Third World countries. Cash cropping is known to displace the subsistence agriculture and push it onto more distant, less fertile lands. That has severe implications for the women, because they are the ones that often do the subsistence farming, and they are the ones that are pushed onto ever depleting, declining soils. Agricultural policies often promote large inputs of herbicides, pesticides, large scale technologies. Rarely are the technologies directed to the women. Herbicides, for instance HCH, is ingested through the soles of feet of the women working in the fields. It becomes part of the mother's milk and then that is taking in by the children. So you have severe health hazards arising out of it.

The more time that women have to spend in the fields further and further away from home results in a decreased nutrition and more disease. There is another aspect too of agrarian reform. Typically, in the past in many countries, women have had traditional control over their lands. But with the decline in women's relative control over traditional lands, you will find that women are having less and less interest in preserving the land that they traditionally looked after.

Another aspect, 30 per cent at least of all food growing per year in the Third World countries is lost to insects, rot and vermin, and our response has often been to throw pesticides and fungicides at them. Why not build on women's traditional knowledge of food processing and storage to reduce those food losses and avoid environmentally damaging pesticides.

Improving the role of women in agriculture and rural development is more than equity. It is basic to meeting the food needs of millions. Without women's full integration into agriculture and the linkage of women, agriculture and the environment into a workable matrix, food production will not reach its full potential.

Second issue, women and energy. In Third World countries and in industrialized countries, women have been affected by dwindling resources, fluctuating energy prices and health hazards. But very few women, with perhaps one major exception in Canada at the present time, influence policy or remedies to energy problems. Most people here now know about household fuel shortages, fuel declines, improved cook stoves, but how many really know about the daily pressures on women to find fuel, how many know about the need of these women to have to use crop residues and dung as fuel rather than as fertilizers which leads to depletion of the soil, and the need for them to resort, if they can afford it, to costly fertilizer substitutes, and of the many health hazards, likewise, related to the fuelwood situation and the need to resort to other types of fuel.

But what about the failure to include women, in most instances, in improved stove planning, building and marketing. There are various reports around that state that the reason that cook stoves that had been improved do not work is simply because women have not been involved. And it is a simple fact that since they use them mostly, they should be involved in the design, construction and marketing of them. Even the oil price fluctuations have hit women. They have been socially and economically destabilizing in some countries, as male labour follows the flow. Construction of large hydro-electric dams, also cause the eviction of families, resettlements, and the elimination of marginal farmers. Very often the marginal farmers are the women. Again, they are the hardest hit with nowhere to go, no compensation.

Third issue: women and forestry. This is related to the energy issues. We hear a lot about social and community forestry. But I still see a real neglect of the genuine integration of women into the design, planning, implementation and monitoring of these projects, even though women in many countries are very heavily involved in the maintenance and looking after the seedlings and the weeding. It is crucial to get them in and not just to put the necessary word "women" into social forestry. There is little training directed at women, by and large, in any of these areas.

Fourth issue: women and sanitation. Adequate unpolluted water supply is one of our most critical problems. Clean, safe water, obviously, is basic to survival, yet again, though we may have programmes for pumps and wells and so forth, why are the women not involved in helping to determine the location of wells. Why are they not involved in the maintenance of the wells. Why are they not involved more in the training.

Fifth issue: women, population growth and health. I am delighted that the Commission has actually has grabbed the bull by the horns in talking about population and its linkage, because I had noticed over the last five, six years, particularly, a number of organizations, be they bilateral, multilateral or NGOs wanting to avoid the issues of population growth. But you can't ignore it, and I think here in the Commission, it has been brought out, and I think people are more aware of the need to link it in.

Sixth issue: women and appropriate technology. Suffice it to say that, traditionally, technology has discriminated against Third World women in the setting of the natural environment and in the work and home environment.

Finally, I think we must take the opportunity to integrate women fully. Women do exist who have the qualifications, whether it is in the Third World or in Canada. Women's organizations exist to help you rally around and lobby for environment. Rural women have a stake and they have lots of knowledge in this area. We have to tap it.

Giles Lazzard

The environmental degradation in Africa and the problems brought about by increasing desertification and the shortage of fuelwood has been the subject of several international conferences and they are very well known. There is a steady and increasing deterioration of the natural environment in most areas of Africa. Since the planting of trees can go a long way to protect the environment, it is surprising that they are not springing up all over the place. Why is it so difficult to grow trees if they are so important?

At International Development Research Centre, we feel strongly that the active and voluntary participation of rural communities in tree planting is essential, and probably the only way that poor African countries can cope with the environmental problems created by the fuelwood shortage and the disappearance of trees from the landscape. The IDRC forestry programme, has from the start concentrated on social rather than on industrial forestry. The key factors distinguishing social or community forestry from commercial forestry are the decision making process, the source of land and labour and the distribution of the outputs. The various components of social forestry are based on tree farming and include the planting of trees on farmers' fields, of farm forestry around villages that have village wood lots, in lines and strips, such as windbreaks and shelter belts, and in many other non commercial ways. For producing firewood or fodder, trees don't have to grow straight and they don't have to be planted in square blocks. Reforestion is not social forestry if it is primarily a government activity without significant involvement of local communities.

One of our challenges in social forestry is to identify precisely who in the community would do the afforestation, and how is it going to be done to achieve long-term results. It can be an existing unit of an organization, like the family, or a special group created for that purpose, like a co-operative. Stable social organizations are particularly important in the case of tree growing which requires continuous support over an extended period. Selected tree planting technologies species selection, nursery development, planting method and maintenance must all be appropriate. This finding of the proper fit between the technical elements of

afforestation and the attributes of the units of social organization around which an afforestation strategy can be built is at the core of the co-operation between forestry experts, sociologists and planners. Imaginative incentive systems can be developed with sociological knowledge of the local culture and value system. Several examples exist. Many countries have used school children to grow seedlings in the school yard. Women have operated mini nurseries in the community. There is no need for large expensive regional nurseries. There are many other creative ways possible.

Michael Sweatman

I am a banker, and I am a life-long naturalist and conservationist. My proposal for a World Conservation Bank deals not with the nuts and bolts of such an institution, but rather why such an institution is necessary and why the existing international institutions, be they bilateral or multilateral or whatever, will never be effective guardians of the earth's natural resource base. I have ten minutes, and I'll make ten points:

- Mandate of the Commission
  A proposal for the World Conservation Bank is made today in the context of the Commission's mandate to examine critical issues of environment and development, strengthen international co-operation on environment and development and to assess and propose new forms of co-operation, and to raise the level of understanding and commitment to action on the part of individuals, voluntary organizations, businesses, institutes and governments.

- Change
  In response to the Commission's conviction of the need for significant changes in current approaches, perspectives, attitudes, critical policies, co-operation between governments, businesses, science and people, certain forms of international co-operation, levels of understanding and commitment by people, organizations and governments, in recognition that things cannot go on the way they are, change must be quick and meaningful.

- Vehicles of Change
  Change cannot be effected without the creation of appropriate vehicles. If I go back to the 1940s, the time of the then international monetary crisis, it took the Breton Woods Conference and thereafter the creation of the World Bank and the IMF, then seen as macro solutions to then macro problem. Today we have an environmental crisis of global proportions, and although we have international environmental organizations of repute, such as IUCN and UNEP, somehow the job is not getting done.

- Public and private sectors
The private sector is full of energy and talented people, who surely must play a bigger role in the solution. The public sector possesses huge resources but is ever wary of the private sector.

- World Conservation Bank
Whatever happens, we need more money, both new money and rechannelling of existing money. The shareholders of the World Conservation Bank would represent a partnership of both public and private sectors. The World Conservation Bank would derive funding from a variety of sources, including shareholders, the world monetary markets and private banks. It would fund anything within the definition of the World Conservation Strategy. Staffed by highly professional people with environmental awareness, it would be looking at things like environmental rates of return for environmental projects.

- Billions not millions
Nothing would be a greater waste of time, certainly mine, than to form a World Conservation Bank with a few million dollars. Let us put the issues into some perspective. Up to 100 billion US dollars is received by developing nations from donor countries every year. How much of this 100 billion dollars is spent directly on environment is hard to guess, but if the World Bank is an example, not very much. The World Conservation Bank would have an initial paid up capital of 1 billion dollars, raising another 4 or 5 billion dollars on the world money markets. If you look at this in relation to the cost of the arms race, clearly there has to be a fit somewhere, the trick is how to harness it.

- World Conservation Strategy
The World Conservation Bank would work within the framework of the World Conservation Strategy. It would underpin the World Conservation Strategy and individual national conservation strategies that flow from it.

- World Conservation Service
It is proposed that in addition to a new international money organization, there is need for a parallel people organization. Not a World Conservation Corps, as has been previously proposed, but a service of professional people. I believe "corps" suggests "youth", and where I have absolutely no problem with youth per se, I believe that developing nations are tired of well-meaning visitors from overseas coming to show them how things should be done. I think what we need is a

service of extremely professional people who would provide expert advice and assistance and education to countries in need, and in turn would act as a conduit for education and multinational organizations to receive people from the developing world for further education and so on in environmental affairs.

- Third World Debt
As a banker, clearly, I must cover the point of Third World debt. To discuss the worldwide conservation issues without inclusion at some point of the international debt implications can be likened to playing a game of hockey without a puck. For some countries, the debt issue is the single most important economic issue today. As a banker, I am bound to inform you that international banks will be serviced and in some instances repaid or refinanced. At worst, some will be managed-down over a period of time. As a conservationist, I am alarmed at the devastating effects on the environments of some countries caused by the servicing of international debt obligations. A World Conservation Bank would look for ways to use the international debt obligations of particular countries as a lever. One example is to provide a vehicle for the exchange of environmental assets on the one hand for international debt obligations on the other. A second example, particularly in the low income countries, is to arrange for the loan interest repayment to remain in local currencies, to be reinvested in programmes in those countries.

- Political Will
My final point rests on political will and returns us full circle to the Commission. Without the political will and the determination to effect change nothing much will happen. What is needed is a bold new initiative, a call for action to both sectors now.

Jennifer Harker

We believe that there are two important features of environmental assessment. The first is the complete integration of environmental assessment in the design phase of a project, and the second is the scoping of the environmental assessment to meet specific project needs.

In the integration of environmental assessment and design, environmental considerations are instrumental in the formulation of engineering and planning alternatives, in the evaluation of alternatives and in the design, construction and operation of the project. For example:

route alternatives for roads are generated in such a way as to minimize disruption of agricultural operations by following existing lot lines or historic lot patterns. Key issues are identified early in the project through discussion and consultation with government agencies and local inhabitants, and might include, for example, protection of water supply, prevention of soil loss and preservation of sensitive ecosystems.

Elements of this process are commonly used in Western world project planning, yet rarely has the whole spectrum of environmental effects been part of the planning in developing countries. Where environmental measures have been implemented, the benefits generated, including the damage costs avoided, have generally been greater than their cost. An analysis of costs and benefits to the sponsoring country and the host country supports our approach.

Speaker from the floor

I would like to address another driving force, and I think it is important in the context of development assistance: the will at the bureaucratic level at the top of organizations and institutions, multilateral and bilateral. I think this is very important for change as well.

Speaker from the floor

Concerning the Sahel problem of drought, I think this drought has been caused by the 24 h emissions produced from the Soviet Union in extreme low frequencies that have been able to deflect various movements of air and other fluid masses in the atmosphere. Because the technology involved is quite advanced and very little understood, it has been skimmed over as a possible effect. But it is very interesting that these extreme low frequency emissions started a few weeks before the Sahel drought started, and are still going on. It is very important if we want to keep a clean earth that we must be very careful about how we use electromagnetic fields, such as extreme low frequencies in constant propagation.

Yves Jordan

I have 20 years of background in water management research and experimentation. I was very interested in listening to what has been said, but I noticed an important peg missing. What is to be introduced is a very delicate thing. It is a level of decentralization where you give back the responsibility of development, not only economic development but also environmental and human

development, to the peasants at the grass root level. If you don't do that the present trend will go on because in spite of all the money which was spent over the last 30 years on environmental concerns, the balance is negative, we have not improved the situation. On the contrary, it is deteriorating everywhere; in the Sahel, in the developed countries, it is deteriorating.

The measures taken, the famous environmental impact statements are biased, slanted, because governments have short-term concerns for rentability, for money back. That comes from tax and tax comes from activities which have an economic feature. We are just catalysts in development, we from the West. The initiative has to come from the grass roots. We first have to take the situation as is, governments as they are, institutions as they are, and increase the efficiency. More money is not what is necessary, it is more efficiency in the use of money.

Haiden Burgess

I come from Hawaai and I am associated with the World Council of Indigenous People. We say earth is not a commodity to be bought back and forth to maximize profit or to be damaged for scientific exploration or tests. The earth is the foundation of indigenous peoples. It is the seat of spirituality, the fountain from which our cultures and languages flourish. The earth is our historian, the keeper of events and bones of our forefathers. Earth provides us food, medicine, shelter and clothing. It is a source of our independence, it is our mother. We do not dominate her, we must harmonize with her.

And in line with this philosophy, I would like to introduce a more basic systematic concept of the environment that principally comes from Hawaai. But in my experience, I find that we share it in common with many indigenous people. And that is that we recognize basically five elements, five god-elements. These are the elements of the sun, which stands for life, which stands for warmth; the element of the wind which stands for time; the elements of the water which stand for change or fluidity; the element of the land which stands for stability; and the last element, the human element.

We believe that one element cannot dominate the other, but must have a special relationship with one another. I think it is important that we understand this relationship because only by understanding this relationship can we understand that the environment is not here to serve man, the environment is not here so that man can promote his economic growth, but instead what we need to do is learn how to harmonize with one another, so that we can pool ourselves to a continual harmony that will go on for ever, rather than trying to maximize the potential of the environment,to continue to increase man's wealth.

So, I think, basically for environmentalists we have to come down to this basic question: what do we view environment as? Is it really to serve mankind? Is it to further the increase of man's materialistic development? To see how long and how far we can stretch the natural resource before it reaches its breaking point? Or are we really talking about trying to maintain a balance among all of these god-elements, so as to perpetuate a continual harmony among us all?

Speaker from the floor

I would like to talk about environmental law in light of the fact that environmental awareness is only just emerging between public and political departments. In my country, Denmark, the environmentalists have the problem that they are often accused by industry of being envious, that we are just using the environmental problems to limit the more successful people in their freedom of action.

Mankind has always been very creative, they have been urged to change things, they have been urged to say: "I have made this - you can see I have been there, it has changed". But now we just have to come to limit this creativeness, we have to limit people in their freedom of action, which is very unpleasant. And I don't think there is any international body, any person who really wants to have the rights to say which kind of pollution is legal and which is not. It will always be an unjust, unobjective way of limiting this freedom.

When you start the discussions and the international negotiations, you shouldn't start talking about social systems, and economics and all the other kinds of areas that are related to environmental problems, but just get down to the environment. And what you could do there is to say: for each little lake, for each little creek, for each little rock, put a label on it. This lake has to be completely unpolluted, this lake has to be a lake where salmon can lay eggs, this lake has to be a lake where fish can be, salmon can live there, where other fish can live, where people can go swimming and so on. And then you could have each municipality put a label on all their areas and have a consensus on that. That would be like going down to the environmental basis to have that kind of labelling system all over the face of the earth.

Maybe it sounds like utopia, but then I can tell you that we did that in Denmark, actually. We did it with our waters, every municipality has labelled all their waters and then when they have that basis they can start putting people in jail or telling people what they can't do and can do and things like that. And also when somebody

pollutes water, which is not allowed, the state helps them, the state would help that industry get a cleaning facility. So it is not the polluter pays system but it is like a common interest, because it is common future.

Speaker from the floor

I would like to draw attention to the marine environment and the very rapid change in the marine political and legal scene, with the rush towards the declaration of exclusive economic zones around the coastlines of the world.

This movement has completely altered both the political scene and some questions of environmental resource management in the world as a whole. Some of these States have declared the zones under the general framework of the United Nations Convention on the Law of the Sea. Some have chosen not to do so and therefore there are some different rules being applied as to how the resources would be managed, who is responsible or able to look at the collecting of information, the sharing and reporting of it.

How this very radical change in the organization of responsibility for global resources will work out is yet to be seen. But the exclusive economic zones now declared include more than 95 per cent of the known fishery stocks of the world, green fishery stocks, and a very large proportion of the exploitable minerals.

Whatever is the future course of the responsibility for developing these areas, two questions are quite readily becoming apparent. One is that by far the greatest proportion of the exclusive economic zones around the world's coastlines now declared are claimed by countries which do not have a highly sophisticated indigenous marine science capacity themselves. The second point it that because the main objective for declaration of these zones has been a mixture of both political independence and the hope for resources, the picture in the new future for international economic aid will very likely be turned very strongly towards marine questions, whereas most of the international aid capacity of the donor countries has been structured on terrestrial questions.

Marcelle Frenette

All over the world and mainly in the Third World countries, land abuse, agricultural deforestation, desertification and water scarcity problems are all closely tied to poverty needs and population pressures. Much of the environmental degradation in the world is the

result of the disparate search of human beings for basic needs, which means water, food, and energy. Also, considering the fact that the world population is increasing, one must consider the fact that the problems will also increase if nothing is done.

Widespread economic problems and environmental problems have been presented and identified by many others, also their effect on the environmental and ecosystems of rivers, lakes, reservoirs, estuaries and seas. Soil erosion, the single most important factor in such degradation is a natural and ongoing process which increases continually with time and progressively affects the ecosystems and the environment at unacceptable levels.

I would like to recommend strongly a world soil conservation strategy, which could initiate a programme to help establish healthy community environment consistent with the global needs of conservation and development, coupled with an international sedimentological decade, for instance 1989 - 1999, complemented by multidisciplinary support by national and international research programmes, that would bridge the gaps between all the organizations, governments, agencies, professional bodies, scientific organizations and others.

Fin Lenge

I am from Greenland and I represent the Inner Circumpolar Conference Environmental Commission. Initiative has to come from the grass roots we heard. Yes. There exist on all five continents groups of people who do live in harmony with the natural resources. They are the Fourth World people, we all know them. The Inuit of the Arctic, and Indians of the Americas, the Sami of Norway and Sweden, the Maori of New Zealand, the aboriginals of Australia, etc, etc. These people are by and large innocent, innocent of this appalling list of negligence and crimes against the environment which this assembly can pull out of their sleeves in a matter of a few minutes. More than that, they do represent an invaluable treasury of knowledge accumulated over millenia about how to deal with nature, how to harvest its resources without threatening its balance and its future productivity.

Industrialized society which is so busy destroying our world while pulling out some short-term profit has a lot to learn from the Fourth World peoples if this same industrialized society would only show a little more humility. I want to make an appeal to everybody taking part in this meeting to help reversing the ways in which dominant societies are treating their aboriginal

population groups. There is no sense in campaigning for harmony between man and nature while at the same time destroying of the only specimens of homo sapiens who actually do live out this harmony.

Janine Feretti

I work with Pollution Probe. As many of you know there has been a great effort on the part of multilateral and bilateral aid agencies to develop environmental policies to guide their activities. And as also many of you know, a number of projects carried out by these same agencies have been associated with negative environmental consequences. It seems to indicate that while there is an environmental policy there is a gap between having a policy and the desired results, and that is because the policy is not integrated into the activities and programmes of those agencies. We are proposing an environmental national policy, and that this national policy be a framework within which policies for each of the government agencies could be developed and integrated.

ENVIRONMENTAL EDUCATION AND COMMUNICATION

Fiona Nelson

Our alienation from and exploitation of the natural environment arises from our fundamental error in thinking that we can function outside the biosphere. We must immediately replace the concept of the biosphere as an inexhaustible store house with the concept of the ecosphere as our home and being inseparable from ourselves, our matrix for all life. Getting in the way of this conceptual shift are forces such as rapid urbanization, where the links between natural forces and man are consciously obscured; as well as assumptions such as environmental quality as a trade-off for progress, technology, jobs or economic growth. Even more pervasive and dangerous is the feeling, especially among the young, that it is no use. We have no future, it's too late, why bother, no one can really change anything, anyway. At the most fundamental level, such scepticism arises from a fear of nuclear war. It gives them a sense of lack of meaning and control.

Another thing that is of concern to us is what is called the "not in my backyard" syndrome. It tends to produce disjointed incremental approaches to decision making. Also the over-emphasis on individual gain without due regard for community integrity is a stumbling block for environmental assessment, sacrificing the needs of the future to the greed of the present - something that we must work hard in education and elsewhere to overcome.

Adam

Better to have a participating citizen, it is important that citizens have political and economic education. For him to be aware of the environment, he must be able to recognize and understand relationships between his actions and the effect on the environment. He has the right to a healthy and clean environment in his workplace and in his leisure activities.

For the quality and the conservation of the environment he must reject any action taken in his workplace that threatens the environment. He must participate actively in the development of policies, programmes and projects that have an effect on the environment. Governments, institutions and corporations have environmental responsibilities. How to achieve this? Environmental education, education in its widest sense, anything that helps to understand the environment in whatever group or society, the multidisciplinary approach to encourage the development of knowledge, to encourage analysis that enables one to have a comprehension of interdisciplinary activities, acquiring the necessary skills to evaluate and be able to reach decisions in an effective manner.

The purpose of these objectives is that the citizen participates in protecting the environment. This is the convergence of education and trade union activities.. To maintain collectivities, to participate in a working class movement is a form of social discipline. We must know in the work place and in the community what the issues are, this main link between health and environment and health and safety at work. The dangerous substances to which workers are exposed everyday usually leave the factory and go to contaminate the rest of the community. An improvement of the control of dangerous substances at the work place, assessing and protecting the environment beyond the work place's frontiers, recognition of a situation like this brought about the co-operation of the different partners in society; a concrete example is the working class' participation to prevent contaminating the environment.

David Brooks

Energy is, put most simply, the fundamental unit of the physical world. As such, we cannot conceive of development without changes in the extent or the nature of energy flows. And because it is so fundamental, every one of those changes of flows has environmental implications. The implications of this are profound. It means that there is no such thing as a simple energy choice. They

are all complex. And they all involve trade-offs. However, some of the choices and some of the trade-offs appear to be unequivocally better than others, in the sense that they offer more development and less environmental damage. And Friends of the Earth have developed an alternative approach to energy issues that have been found to be extremely promising, to have tremendous benefits and to save a lot of money compared with the typical approach of relaying on heavy investments in non-renewables and nuclear power.

Raymond Vles

I wanted to talk a bit about Canadian example which we think might be of interest to other people around the world.

In the public education area, and ways to get the public to participate in environmentally-sound actions, there are three stages that have to be gone through.

The first is to raise awareness or to inform people of environmental problems. The second one is to enable them to participate, to bring changes in their own daily lives which will result in less pollution, the how-to. And finally, to motivate them, to do so to undertake those actions, to show that they can make the difference even though they are just an individual.

One particular project where all these three have been brought together successfully is a recycling scheme in Ontario. It's a scheme which they call "curb-site pick-up", whereby when the garbage is collected, the newspapers, the bottles and the glass are also collected from the front of each house and recycled.

Now, what they did there was quite innovative for an environmental project. They did two things: one of them is that they spent time and effort in what in business terms would be called marketing. In other words, they went from door to door, they told people what they were doing, they distributed information, they got in the newspapers and on the radio and they did a thorough job in informing people of what they were planning to do. The second thing is that they came up with the idea of giving every household a blue plastic box for people to put their newspapers, their bottles, and their glasses in each garbage day.

With the blue box scheme, they can see that they are part of a larger movement, part of the community doing something. It speaks to something in human nature which we often would rather ignore but that we all like to have:

status and to keep up with the Joneses, as we say. I understand having that blue box in front of your house on garbage days is as important as having a nice lawn or a car or everything else - it's part of the standard that's expected of everybody in that community. And so recycling has become part of the life-style, an environmentally-sound aspect of living has become a painless part of the community.

Arthur Hanson

We wish to put forward recommendations that would permit universities in Canada and elsewhere to provide better leadership and initiatives in the fields of environment and development. One of these would be that a systematic examination of teaching curricula should be undertaken to identify the components and to devise models to provide the most effective perspectives on environment and development.

The correct curricula should require at least one suitably designed course to ensure a genuine sensitivity to environmental issues. Secondly, universities provide an important memory and analytical capability. The creation of new paradigms to guide environmental actions will require further cross-fertilization and involvement of virtually all disciplines represented in universities. Means must be found to strengthen our intellectual trust of knowledge and perception in order to improve our conceptualization of environment and development relationships.

Third, universities must be protected from forces that would stifle independent views. Environmental views and the various kinds of experiments in environment and development that have emerged often in universities have come about sometimes without being embraced either by government or by the public. Universities can, and should, take such initiatives even when there may be a lack of outside interest. Not much attention has been devoted internationally to the role of academics in fields like ecology or environment, in struggling to achieve environment and development objectives under unstable circumstances. Perhaps in some Canadian universities we should be providing a greater degree of solidarity and understanding with colleagues in some other countries abroad. In some countries the university may be one of the few institutions able to provide the pool of expertise available to cope with the massive task of rehabilitation you see ahead.

Fourth, improvements must be made in the networking of environmental faculties and institutes within Canada and internationally. At the global level, the United Nations University could initiate such a network with the goals of enhancing the recognition of interdisciplinary research and education, establishing better information flow, providing better standards for environmental education, developing research and following new directions emerging from the work of this Commission.

Tim Whirly

The main theme of our submission is the existence in Canada of two realities with respect to environmental issues, namely, the objective and the perceived realities. The objective reality refers to the actual state of the environment ascertained by accurate collection, analysis and interpretation of environmental data. The perceived reality arises from Canadian perception of the environment based on information distributed by industry, government, environmental groups and the media. Ideally, there should exist one reality where the true state of the environment is known and understood by all, although practically this is impossible. The goal? Bring the two realities as close together as possible thus enhancing the quality and priority of decision making on environmental issues and, as a result, enhancement of the quality of our environment.

Before examining these ideas more closely, we present the views of Carleton University's students concerning Canada's environment. The intention is to give a sense of how one sector of Canada's youth perceives the state of our environment. To measure students perceived reality. Our class reached over 300 university students, most of whom will be reaching the middle of their career in the year 2010. What issues do these students feel are important? Somewhat surprisingly the students feel the problems of acid rain and hazardous wastes disposal are the most important issues of today. These problems are perceived more important than unemployment and nuclear disarmament which rank 3rd and 5th. The water pollution issue ranks 4th. What is surprising about these results is the 3rd place ranking of unemployment when youth unemployment is so high. This shows that students consider some environment issues to be of prime importance. The 5th place ranking of nuclear disarmament may be an indication of frustration of recent attempts to resolve that problem.

What do students think we should do about these problems? Students preferred options resolving environmental issues are the development of control technologies and enforcement of tough laws on the polluters, reflecting their cynicism concerning both the government and the private sectors' ability to get such jobs done. The respondents were asked how they would reorganize the national budget in such a way that more money could be allocated to environmental projects. In decreasing order of preference, students selected budgetary reductions in defence,social support and government services. How do students derive the perceptions to environment? Survey results show that students try to stay informed of the issues; most of them read articles on environmental degradation within the last month, however, students rate the media's performance reporting environmental issues as only mediocre.

Opinions of students on government's performance reflect the desire for more information. They feel that the government is only doing a fair job in resolving environmental issues and an even poorer job in informing the public about such issues. In comparison to other countries, the students rate Canada second to Sweden and just above the United States' performance in resolving environmental issues. Overall, it is evident that the students' opinions fall into the perceived reality trap. Students show concern for the environment yet they are not fully aware of the objective reality.

Rick Lawford

We recommend that the United Nations develop an information bank on major environmental problems around the world and the strategies and technologies used by countries in addressing them. This information should be made available through co-operative research and education programmes to all Member States. Member States should disseminate this information to Universities, other educational institutions and the public through publications, courses, educational kits and where available electronic bulletin boards.

Our next recommendation deals with the generation of knowledge through scientific activities. As the Chernobyl incident indicates, governments, industries and the public need better information on the current state of the environment, the potential impact of failures of the industrial infrastructure and a better understanding of the environmental processes involved. We therefore recommend that the United Nations actively support co-operative international scientific programmes such as the world climate programme, the international biosphere programme and other programmes which deal with environmental monitoring and prediction on a global basis.

Furthermore we recommend that the United Nations agency co-ordinate the development of a data base which could provide current information on the state of the world environment. It is our view that the success of national environmental programmes depends on the degree to which governments and industries follow an environmental ethic. For example, developing countries should be more vigilant in ensuring that they do not comprise the health of their people and the biological vigour of their environment because of their thirst for industrial development. Likewise, multinational companies must give consideration to the social needs of underdeveloped countries in their business decisions.

To aid in developing a global environmental ethic and ensuring fairness in the resolution of environmental differences, we recommend that the United Nations explore first of all the possibility of establishing a treaty for all Member States whereby they will develop a legislative base requiring companies headquartered in their countries not to export chemicals, other materials, industrial processes, or technologies not acceptable for use in their own country, and secondly, to explore the feasibility of establishing an environmental ombudsman who would assist governments in resolving environmental disputes. Our final recommendation deals with the issue of waste recycling. In Canada, the availability of raw materials, the lack of an industry focus for and background information on waste recycling has limited the demand for it. Accordingly, we recommend that the United Nations establish a task force to assemble the necessary background information and carry out the required studies on waste recycling technologies and opportunities on a worldwide basis and develop an action plan for informing and encouraging Member States to recycle more of their unwanted materials. Given the regional nature of these opportunities, industrialized countries should assist underdeveloped countries in developing and applying technologies which would allow them to match their local recycling efforts with their requirements for energy and materials.

Mary Ann Kramer

I just want to make a recommendation to the Commission to try to seek ways to expand the role of youth in society today.

Tilvan Siqare

Out of a personal experience and I sort of speak for other graduates that I know, I don't think that our current institutions are prepared to accept people who are trained in a multidisciplinary fashion to deal with problems.

The jobs are not there. And this is extremely strange because people like you and all the distinguished members of the assembly here are all advocating that we should address problems in an multidisciplinary fashion. Yet, it's a closed shop. I don't understand. Environment means jobs, if you address these environment problems you can create more employment. Yet there doesn't seem to be room for us to find employment, and if I may say so, infiltrate the system to make sure that when the public is properly aware of all the different issues they can apply pressure on people who are in decision-making positions, who are sympathetic to those environmental issues.

Mark Stephanson

As a society, we are now entering a new and critical period. The next 30 years is the most dangerous period in human history. Over that period the cumulative effects of pollution and the destruction of plant and animal life are as serious a threat as nuclear war. As a global society, we seem to be too preoccupied with our own individual self-interest. Whether it be self-interest of government, whether it be self-interest of individual. We have not seemed to grasp the reality of the perilous road that we are currently travelling down.

If the Commission is going to be successful in charting a new course for society, a massive increase in public awareness and education is necessary. It will be important for the Commission to effectively utilize the news media to initiate a worldwide dialogue on the need for fundamental change. It is important that television and newspaper networks of the world begin to participate in an active instead of just a passive way in advancing the cause of environmental protection and world development. The world media have an enormous amount of influence and this power needs to be directed in a positive fashion towards effecting fundamental change.

The Commission should make sure it takes advantage of its opportunity to remind the world media of their moral obligations. The news media cannot consider themselves as mere spectators viewing our global demise. They must become active participants working to systematically increase awareness about the dead-end road

we currently find ourselves on. The societal change the Commission is seeking will only occur if there is widespread support among the world populace. While governments around the world can effect a certain degree of social change, the only proven way to effect a massive shift of human behaviour is through public awareness.

If I might I would just like to read six recommendations to the Commission:

Recommendation No. 1 - the establishment of a permanent international body to implement the recommendations of the Brundtland Commission.

Recommendation No.2 - the establishment of an international communications advisory group.

No. 3 - the utilization of leading international advertising agencies.

Recommendation No. 4 - the establishment of a network of international celebrities.

Recommendation No. 5 - a specialized speakers tour.

The last recommendation, No. 6 - the production of a first class motion picture.

Speaker from the floor

Education and communication are vitally important in order to impress on each individual his or her responsibility regarding the healthy future of the earth. The best place to start is in the schools. Environment and development issues can be discussed as a course on its own and/or it can be incorporated into many traditional subject areas such as geography, history or science. Studying and discussing these issues is only a start. The best way for students to recognize that their action can make a difference is to have projects organized by the school and/or community on which the students can work. Once they are convinced that they can help people, it will tend to change both their attitude and their behaviour. New attitudes towards the environment will be reflected in decisions at home and in corporate boardrooms around the world.

Doug Ferguson

Knowledge and appreciation of global problems lead to commitment to action. Only if knowledge and appreciation occur first, will there be any hope for international co-operation on complex environmental issues.

Your Final Report with its background information and its recommendations must be written in such clear language so that ideas are not open to misinterpretation either by accident or intention. General analysis are useful as well as specific examples from various parts of the world to illustrate each separate point.

The recommendations must be very specific and suggest methods for implementing them. Publish your Final Report in more than one format. All presentations should be also used to ensure that the reports' ideas reach the maximum number of people throughout the world. Be sure that your report is distributed through the school system of the world. To make sure it reaches the students include a pack of ideas for teachers to help them make the report more significant for the students. Your report must give specific recommendations especially on how communities and individuals can take action. Platitudes and generalities are not enough. Most importantly, recommend to the United Nations that your Commission be continued and be given the mandate to do all it can to maintain the global discussion starting during your current hearings.

Ted Tricker

The more material you publish the better. It seems to me that that in itself is a very important contribution. There is a desperate shortage of materials that go beyond on one hand diagnosis of the problem from a scientific or biological or mechanical point of view, and on the other hand analysis of development policy, development institutions and so on.

Speaker from the audience

It seems that there are several things that could be done through the Commission that would be very useful. One would be simply to develop a curriculum based on advice from various people that would be a course on environment and development.

Ray Dark

One aspect I think that we haven't focussed on very much and I thought it could be a little higher on the agenda and that is the way the pattern of consumption in the north, in the industrialized nations, and how does this consumption pattern affect and even determine the ecological and social economic patterns and directions in the south and underdeveloped nations.

Donald Aubrey

In our submission to the Commission, we made a specific request for greater priority being given to environmental education. We believe this requires at least two levels: first, in schools and in the universities, and secondly in industry. In schools where so much of our knowledge is gained, it is essential for every nation to produce an environmentally conscientious population who value the surroundings and have a greater understanding of pollution.

Secondly, in industry, we feel it must now be made mandatory for any firm which is potentially polluting nature through liquid gas or particle emissions to enrol their staff in short but instructive courses of environmental education. Too often firms pollute not just through accident or design but through gross ignorance by the labour involved of the destructive effect on the environment.

Sally Whishigilt

I wish to turn the attention to two problems which may only come more evidently to the attention of the public as well as professionals in future years, although they start to be visible already now and they have been very well documented in a such newly emerged disciplines as behaviour toxicology, para-natal toxicology and para-natal immuno-toxicology.

The concern here with pollution is the concern how the chemicals in our environment affect the unborn child and how they affect the brain of the unborn child and how they increase the incidence of cancer in children who are exposed during their intra-uterine life. Because we have the tendency to believe that this pollution affects mainly people who are working in the industry, we have not paid sufficient attention to that which is happening to our future generation. Actually, in industry, the control of environmental exposure has now been markedly improved. However, the placenta is not, as we believed previously, protecting the developing child against the chemicals which do have the tendency to accumulate in the brain of the unborn child and then impair the learning abilities and behaviour of such individuals. The same occurs in animals. That is the reason for the emergence of this new category, behaviour toxicology.

Another disturbing fact is that once an individual is exposed to chemical carcinogen or chemical which can act as a carcinogen in pre-natal or perinatal time, there is evidence that such a tendency can be transmitted to the future generations of such an individual.

Both these facts are reasons for big concern especially if we look at what's happening - the increasing amount of hyperactivity, behaviour problems in children and adolescents, and the increasing problem with learning abilities.

Stewart Hill

The ecological agriculture project has a one point programme and that is to be an ally to anybody or everybody in the establishment of a sustainable food system and life style.

My experience is that all people including everybody here and those elsewhere are potentially fully aware, responsible, loving, powerful, wise and full of zest. Whenever we compromise this potential, it is because of pressures that have their origin in our past experiences and in present environments. And so it is to these factors that we need to pay some attention if we're really serious about bringing about change.

Regarding past experiences, most children from the moment of conception onwards are confronted by chemical, physical and emotional insults including oppression, isolation, ridicule and punishment. And these children must adapt to these insults to survive. And the price of adaptation is loss of awareness, loss of power, loss of vision and hope and the substitution of compensatory and addictive behaviours. And it's the production of young people in our society through these insults that makes it very difficult to bring about the changes we're talking about.

Gordon Davis

These four recommendations which I am directing towards the Commission could equally be directed towards multinational corporations; they could and should be directed towards the central planning authorities of developing countries and also the implementing agencies of developing countries' development projects. We feel that these four recommendations have no hidden political agenda. They have no hidden economic agenda. Conceptually, they are extremely simple and require only a modest infusion of cash to realize, only a modest

reallocation of human resources to realize. Yet I think I can categorically say that I know of no lending institution and I know of no bilateral aid institution which include these four practices in their modus operandi. And one has to wonder why.

First of all, one should ensure that environmental planning and management activities are integrated throughout the project cycle. From the moment a project is identified to the moment a project is delivered, in the course of its delivery there's a planning stage, there's an implementation stage, there's an operational stage. At each one of these stages of the project cycle, environmental planning management activities should be included, yet they're simply not.

Second recommendation is that not only should projects include environmental planning but also policies and programmes. It's always been a mystery to me that projects seem to dictate programmes and programmes dictate policy rather than the other way around. Most engineering companies are organized on the basis of delivering projects, but I think governments are organized on the basis of dictating policy from which programmes flow and then projects.

A third recommendation, we'd like to ensure that environmental training is incorporated into the technology transfer component of all development projects.

Lastly, and once again a simple notion, we think this Commission should promote the establishment of minimal environmental standards in all countries.

Tom De Fayer

I am merely wishing to draw attention to the fact that if we assume that we can just employ the media, education (and incidentally, who educates the educators?), if we simply go on a propaganda campaign we shall still encounter those who will view us as environmental advocates, as those who have been polluted by the lead in our blood.

Economics is not the tool for resolving our problems. You are talking about economics which is looking at the marketplace and the visible transaction not at our environmental intangibles, unquantifiables. We are using economics from a wrong basis. We are talking about a new ethics and I'm suggesting to you that we do have some very good old ethics in all the teachings, whatever race or base we started off from. And therefore I would suggest that we look at the total system to which we can make ourselves relevant.

COMMENTS BY THE GLOBAL TOMORROW COALITION
OF UNITED STATES NON-GOVERNMENTAL ORGANIZATIONS

Barbara Bramble

I'm the director of international programs of the National Wildlife Federation. The Federation is the largest conservation education organization in the United States, probably around the world. It has about four and a half million, more or less, members and supporters. We are working on many issues of natural resource conservation, but in the international field particularly the interface of environment and development which is your work here. I have been concentrating on the impacts of the developed world upon the developing world particularly through the aid and trade situation that is causing at the moment a very serious debt problem in Third World countries.

Fred Pinkum

I'm President of the Population Crisis Committee in Washington, D.C. It is a fully private organization without federal support of any kind. We work very closely with less developed country governments and organizations in those countries on their population and related problems. We also work closely with the United States government in a NGO capacity and belong to and support a number of coalitions such as the Global Tomorrow Coalition. There are about 75 major NGOs working in the population field in the United States, another 150 if you add universities and foundations. The number of coalitions now appearing in the United States combine population, resources, environment and related global issues, as those issues and conditions become more evident to everyone. For these organizations I implore the Commission to consider population growth, especially where it's burgeoning and exacerbating other problems, as an equal if not more than equal condition needing attention along with water, toxic waste, and other problems before you. It's a major world problem threatening better life everywhere for everyone on the globe.

William Nagel

I'm here this evening not in my capacity with the World Resources Institute, but rather as Chairman of a United States NGO steering committee on environment, development and population. Just a word of background on how that came to be. Many of you are aware that the

Environmental Liaison Centre with some financial assistance from the United Nations Environment Programme had an important international meeting in February of 1985. It was the first time, on at least a significant international level, that environment and development NGOs were brought together to discuss what common agreement they might be able to come to on sustainable development and how indeed these two NGO communities could co-operate better together. When the United States delegates to that conference came back, there was a meeting in New York about a month later that established a steering committee which was charged with finding ways to see if these two communities, first of all, the environment and development communities, could come to some common agreement, some common statement of principle, and then a common agreed-on action plan. We worked on that for a number of months and then we decided it would be an inadequate statement at best if we did not include the very significant population and family planning NGO community in the United States. And so, the statement you have before you is the produce of about 15 months work, basically of consensus building. The basic statement is only four pages and those of you as old or older than I will appreciate the fact that it's in very large type. But that statement which was argued and fought over for those many months does constitute a significant consensus of a significant number of the leadership of those three NGO communities. Now, why should this be presented to you, to the World Commission? I think the only justification to present a United States NGO statement like this is because we are certain it does have applicability to the wider NGO communities in the world, especially those focussed on the third world and on the dire problems of poverty in the third world. I want to share with you one paragraph from the preface to the statement and two or three paragraphs from the statement itself. From the preface, it reads: "Over the past few months, representatives of the three NGO communities have dealt candidly with the various perceptions and prejudices that have kept them from jointly addressing the problems of the poor and developing countries. Some international development workers said they had often perceived environmentalists as elitists, more concerned with rare birds and virgin landscapes than with poor people. A few environmentalists saw development assistance specialists in the cloak of their old United States domestic antagonist, the economic developer. So most claim not so much a negative as a fuzzy image of their copatriots involved with developing countries. And some representatives of both these two communities criticized the population specialists as too single minded. Some population specialists in turn saw development and environment specialists as acknowledging population growth as a problem, and then treating it as an external variable that can be brushed aside especially when controversial."

Therefore, with that background, and I think it would be fair to say it would be the background one would find in Canada, in Europe, indeed throughout the world, with that background, we did try to come to some common agreement, and the important essence of that agreement is in its most essential way an ethical statement and an ethical agreement. Let me just read very briefly from that.

"A communications gap has kept environmental population and development assistance groups apart for too long, preventing us from being aware of our common interest and realizing our combined power. Fortunately, the gap is closing. We now know that what unites us is vastly more important than what divides us. What unites us? We have a common goal in striving for a more livable, non violent planet. We share a deep concern for the world's poor. We affirm both integrity, stability and beauty of the ecosystem and the imperative of social justice. We recognize that poverty, environmental degradation and population growth are inextricably related and that none of these fundamental problems can be successfully addressed in isolation. We will succeed or fail together. We realize that to accept a shared destiny with the rest of creation is to accept the reality of reciprocal interdependence and co-evolution. We agree with the late Barbara Ward, herself a bridge builder, that the great insights of the 1972 United Nations conference on the human environment at Stockholm were inter-connectedness and a sense of shared stewardship for our common planetary home." We regret that our own governmental leaders, and here we are talking about United States governmental leaders, today often seem to be denying yesterday's lesson. We think that the NGO communities in the United States have a particular role at this time in giving some kind of world leadership to our own governmental leaders and to the other people who are interested or focussed on foreign affairs, national security, development problems in general. And indeed we think that NGOs have a particular role to play in that throughout the world and that the NGOs in the third world countries themselves have a particular role and it is because of that that this same United States steering committee joined a few weeks ago with their Canadian NGO colleagues in urging the planners of the conference that's opening this Saturday here in Ottawa, the World Conservation Strategy Conference, to hold a particular session on the role of NGOs, particularly indigenous NGOs in this case, the role of NGOs in the planning and implementation of national conservation strategies. We are convinced that the time has come for the NGOs to exert that kind of leadership. That that kind of leadership is most needed not only in the United States but indeed around the world. And so we are particularly eager to join with our Canadian colleagues in that effort and at the meeting itself, most importantly, to join with the NGO representatives from third world countries that will be there.

David Runnels

I am Canadian and I direct the North American office of an international NGO, the International Institute for Environment and Development. We, together with Mr. Nagel's organization, the World Resources Institute, have spent the past year and a half, a considerable sum of money and a considerable heartache in producing what we think could be a helpful document to the members of the Commission and to the staff, the Worlds Resources Report - 1986. I would briefly say that this is an attempt by us to set out as objectively as we can the pulse of the world's environment and natural resources.. It is divided into four sections. I think the principal ones of interest to you would be section 2, which is condition and trends, in which we attempt to try and assess conditions and trends in a series of fairly predictable, fairly familiar categories, food and agriculture, forests and range lands, population. Part 4, which are the statistical data tables at the back, which will relatively familiar to those of you who have experience with the World Bank's World Development Report, is our best attempt to assemble as much reliable, relevant data on a whole range of environmental indicators as we can manage to do. We think that as NGOs one of the things we can do with part 4 particularly is to identify for the community at large how bad the information actually is in a whole range of areas. So you will find in part 4 a series of fairly professional statistical notations of the type that one finds at the bottom of OECD documents and United Nations documents. You will also find from us as many caustic comments as we could get by our own statisticians about our real genuine lack of knowledge of a whole range of these issues. So I hope this thing will begin to start a trend. We are going to produce it on an annual basis. We know that it will only be really usable after four or five years when one can begin to identify trends, and begin to identify real choices for decision-makers, but it's a first shot. We present it to you with some humility and some pride, and if we can make it of use to you and to your colleagues in your deliberations, we are more than happy to do so.

Don Lesh

The third document and the one on which we believe that we would lay greatest weight during the course of our discussion this evening, although we would welcome open discussion and questions on all these, is the paper on

sustainable development and how to achieve it which was co-ordinated by the first Global Tomorrow Coalition and will be presented by the principal author of the first draft, Tom Stoel, who heads the international programme of the Natural Resources Defence Council and is also president of the Global Tomorrow Coalition.

Before urging Tom to start, however, I wanted just to point out that I would suggest you not see these as separate documents. They represent in many cases an integrated approach, in particular the paper Making Common Cause was the product over the 15 months that Bill Nagel mentioned of a great many sessions, working sessions, steering committee sessions, which included many of the people you see here representing the Global Tomorrow Coalition or wearing a different hat. That paper as you may notice when you have time to read, suggests that it is very difficult to define the concept of sustainable development.

Our paper, the Global Tomorrow Coalition co-ordinated paper, is an attempt to further the dialogue on what sustainable development means. We didn't work on it 15 months. It stemmed in large part from a conversation with one of our Commissioners, Bill Ruckelshaus, in December of last year. As part of his function as a Commissioner of the WCED, he has asked several points of contact in the United States to assist him in liaison and circulation of information and papers, and had asked the Coalition who were very pleased to serve as a contact with the NGO community. In our discussions, he suggested that central to the deliberations of the WCED is this concept of which we so easily speak of so glibly, sustainable development, but so rarely attempt to define.

We realize that the paper that we have produced is a first crack. It has gone through many hands. Tom will also describe the process we try to go through in the co-ordination. It has faults, it has been criticized by members of our own NGO community, by some as being too broad, too inclusive, raising too many issues that are peripheral in their view to the development process. But I would have to say that the position of the Global Tomorrow Coalition could be described as determinedly unrepentent. We believe that the discussion of development in the past has been far too narrow and in fact if we have erred on the side of opening the discussion more widely to new issues, new concepts, then we feel we've made some contribution.

Tom Stoel

The paper we have submitted is entitled Sustainable Development and How to Achieve It. I thought I'd explain a little about how the paper came to be. After Bill requested that we prepare it, we put together a draft toward the end of January which was then circulated to a number of NGOs in the United States and abroad. We received a total of about 40 comments, a number of them rather lengthy and very thoughtful. Then the draft was considerably revised in light of those comments. Thus far, seven NGOs listed on the cover have fully endorsed the paper. As requested by Bill Ruckleshaus, the paper is a conceptual analysis, it explores the relationship between environment and development, and does not attempt to catalogue all the actions needed to achieve sustainable development.

The first requirement is the satisfaction of human needs especially the basic needs, such as food, clean water, health care and education. The second requirement is freedom from unwanted dependence on the part of both individuals and nations. We feel very deeply that development must fulfill the aspirations of peoples themselves and not those imposed on them by others. The third fundamental requirement is control of population growth which in some nations is causing human numbers to double in less than a generation. Obviously, this cannot be a sustainable situation. The fourth requirement is maintenance of natural and life support systems. In many places in the world, environmental deterioration is already making development unsustainable. These recommendations reflect our view that in general the main need is not for additional technical breakthroughs but for proper application of knowledge the world already possesses.

Tom Stoel

I think a lot of people in the United States are emphasizing more the question of qualitative kinds of growth including things like recreational opportunities and so on as most of the material needs of people are met in the industrialized societies. That is to say one might have a growth in the quality of life without necessarily having a growth in the quality of material consumption. I think in fact this is what is occurring with the so-called information economy and other developments. On the other hand I think there is no room for any such ambiguity as respects most of the developing countries, particularly since populations are growing so fast, just to meet basic needs and get beyond that. You are going to have to have material growth and, after all, these countries are the great majority of the population of the world, so on a global basis we are certainly going to need a growth in material consumption.