

# Tribute . . .

## to Our Common Future

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Solving the Global Crisis

### Brundtland Report points the way...

by Noel Moore

The Prime Minister of Norway, Dr. Gro Harlem Brundtland, has delivered a challenge to "we the peoples" of the world. She has presented to the General Assembly of the United Nations what many people now believe will be the most important proposal in its history, appropriately called "Our Common Future", the Report of the World Commission on Environment and Development. Dr. Brundtland headed a multi-national team of 22 Commissioners who drafted this Report after three years of travelling the world gathering evidence and conducting public hearings.

The Commission Report claims that by adopting co-operative policies and by utilizing existing communication and production technologies, the present North-South confrontation can be transformed into global integration; pollution and environmental degradation can be controlled; and the burgeoning world population can be transformed into an engine of growth, driving the global economy into an era of peace and plenty for all.

To achieve this, the Report recommends, not more government and newer and bigger organizations, but globally-accepted conventions and co-operative programmes which will eliminate confrontation and help all the people of the world attain a higher standard of living through grassroots and community-level initiatives.

The diagnosis is cancer. "It's not terminal yet - but it soon will be. We have at best, three decades to turn it around," warns WCED Commissioner, Maurice Strong.

"The next three decades will be the most important in human history," Commissioner Strong warned. "After that, it will be too late" he added.

In her Foreword to the Report, Mrs. Brundtland says, "unless we are able to translate our words into a language that can reach the minds and hearts of people young and old, we shall not be able to undertake the extensive social changes needed to correct the course of development."

The policies, which the Commissioners recommend, stand a good chance of being voted into international law because they are

directed, not against any country or doctrine, but against poverty, famine, desperation, pestilence and chaos. If this happens, and the General Assembly decides to implement the WCED Report's recommendations, what will result is nothing less than a new constitution for Planet Earth and the people it sustains.

The Report is a low-key, carefully worded document which deliberately avoids definitions so precise that they either polarize thinking or paralyse decision-making. But its conclusions are not ambivalent.

One of the key concepts in the Report holds that there are no limits to growth, because by adopting sustainable policies of growth and development, underdeveloped countries can move beyond their present survival levels to the kind of security and prosperity enjoyed by the populations of the advanced countries.

Perhaps the boldest and most revolutionary proposal of the WCED Commissioners is that the aspirations and dreams of billions of people in the Developing Countries to share the good life they see on Western films and television programmes, can be realized, and without further degradation of the global environment.

The Commissioners believe that there is room for everyone to live in the 'promised land'. All that is needed is the political will and commitment to make it happen - and as Commissioner Strong points out, we don't really have too much choice! This is a major break with the previous policies of the North or industrial world which were

designed to raise people in the South or developing world to subsistence or survival standards.

Commissioner Emil Salim, Minister of State for Population and the Environment, Indonesia, put it this way. "Population and development policies are not an either/or problem. They are two sides of the same coin - namely, a life with quality."

Commissioner Nagendra Singh of India and President of the International Court of Justice, put this statement into the context of law. "The national neglect of an element of nature could be said to incur an international responsibility. At first sight, this conclusion may appear to be over-stretching the development of international law; but in the face of a world-wide neglect of forests, it is essential for the law to be stretched to the necessary logical length, in order to ensure the continued well-being of the entire human species."

Prime Minister Brundtland, whose cabinet is composed of equal numbers of men and women, remarked recently in a magazine interview, "....the party's over and the women, as usual, are left to clean up the mess!" This feminist challenge indicates a determination to have everyone take greater responsibility in caring for the global home we all share.

In support of this belief, following her address to the UN General Assembly on 19th October, Mrs. Brundtland addressed the International Forum on Environment and Development, meeting under the auspices of the NGO Committee on Development.



Dr. Gro Harlem Brundtland

"The working groups at this Forum are following through their discussion of realistic methods for implementing the recommendations. "Because Non-Governmental Organizations have long been innovators in merging environment and development concerns, they bring both practical experience and valuable perspectives on how institutions can co-operate," said Rosalind Harris, Conference Co-ordinator for the Forum.

"Whether they are working in New York, Geneva or any world capital, NGO's represent 'grass-roots' power mobilized on the basis of informed concern, and they will influence the policies of their nations and the United Nations," she added.

In the final analysis, whatever happens to the recommendations of the Brundtland Report after its presentation to the General Assembly in New York, will depend on the 'will of the people'. For this reason it is essential that the Report be understood not only by the government delegations to the United Nations, and the officials of the member-states, but also by members of business, industry, labour and the general public who have the greatest stake of all in our common future.

"A Communicators Guide to the Brundtland Report of the World Commission on Environment and Development"

**Tribute** is published by the World Media Institute Inc., which is a non-profit international organization working to promote better understanding of social issues by the media, to create more effective communication skills for individuals and organizations working with the media, and to design programmes and produce materials to encourage global citizenship and co-operation.

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Wayne Kines, publisher of **Tribute**, started his career in journalism as a stringer, correspondent and photographer on the Canadian Prairies in the early '50s for the *"Winnipeg Free Press"*, later attended the School of Journalism at Carleton U. in Ottawa, before working on daily newspapers, as well as weekly and monthly magazines. For six years, he served with the CBC, first on the Prairies and then at national headquarters in Ottawa. He founded World Media Consultants in 1966 and directed the Canadian Centennial International Development Information Programme in 1967. He helped to establish the U.N. Centre for Economic and Social Information in New York and Geneva, then became the first Director of Communications for the U. N. Environment Programme (UNEP) in Nairobi, Kenya, including liaison with the world's mass media industry and international non-governmental organizations. On returning to Canada in the mid-'70s, he worked to develop the World Media Institute as a network of professional communicators concerned with global economic and social change. He is the co-founder of Westman Media Co-operative, a 30-community cable television system prototype for grassroots democratic control of media.

#### JANE STUART

Jane Stuart began working in communications in London, in the early '50s, moving later to East Africa where she spent 20 years as a correspondent, photographer and editor, specializing in issues of health, environment, development and cross-cultural media. She moved to Canada in the mid-'70s where, as Vice-President of World Media Institute, she helped develop a prototype for a community-owned and -controlled cable television network now interlinking 30 rural communities in Western Manitoba. Since that time, she has edited *"INFOETOX"*, a quarterly tabloid newspaper about toxic chemicals for Friends of the Earth (Canada), and for **Tribute**, has edited special issues on Women in Development, Primary Health Care, Rural Development and the World Commission on Environment and Development Public Hearings in Ottawa in 1986. She is also the President of KIRATHIMO International, a non-profit programme to inform and educate various publics concerning 'primary health care', working towards "Health for All by the Year 2000".

#### LAURA WALLIS

Laura Wallis worked in the Ottawa studio of CTV's national news and public affairs show "Canada AM", and in cable television production, as well as with Pollution Probe in the national capital, before joining the World Media Institute as production co-ordinator. As such, she has been responsible for computerizing the organization and for all graphic design work.

#### NOEL MOORE

Noel Moore lived and worked in Europe, Asia and the Caribbean before moving to Canada and becoming an award-winning journalist and film-maker. He has taught journalism at Carleton University, Ottawa, and as Adjunct Professor at the University of Western Ontario, and film-maker in residence at the University of Toronto's Erindale College.

Now serving as Editor and Publisher of *The Delta Report*, an electronic newsletter on communications technology, launched in 1980, he is President of Scriptonics Corporation, a Toronto-based desktop publishing and communications consulting firm which pioneered, five years ago, the use of desktop publishing in Canada.

#### WARNER TROYER

Warner Troyer has had a remarkable career in print journalism and broadcasting, beginning in the early '50s. He started in radio, then became a newspaper stringer, reporter and editor, and frequent contributor to national magazines and to CBC programmes in network radio and television. In 1961, he became a free-lance journalist, working chiefly in network television and documentary production as a writer, director, producer, host and interviewer. Subsequently, he wrote and published five books, and won national and international film and television awards. Troyer has conducted over 5,000 TV interviews, and has directed, written, produced or hosted more than 1,000 network TV programmes, for CBC, CTV, BBC, PBS, NBC or CBS. He has taught or served as consultant in communications, journalism and television for many universities, private corporations, and departments of government.

Troyer, with his wife and colleague Glenys Moss, worked in Sri Lanka from 1980-83, under CIDA auspices, to organize and plan that nation's national television system, launched in 1983. The Troyer-Moss team have since completed an international TV production series on grassroots initiatives in global development titled *"Small Miracles"*.

#### GEOFFREY LEAN

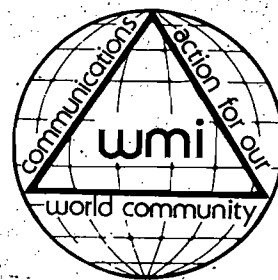
Geoffrey Lean, environmental specialist for *The Observer* has won many awards for his investigative and scientific journalism, including a ROSE Award at the 1986 World Environment Festival. For a decade he has provided penetrating coverage to his readers, on a full range of environment and development topics, local and global. He is the author of *"Rich World, Poor World"* (1972) and more recently co-authored *"The Worst Accident in the World: The End of the Nuclear Dream"* an investigative report on the Chernobyl incident of 1986.

#### PETER STONE

Peter Stone, a career journalist and science writer, worked in Fleet Street and with the BBC before serving as information co-ordinator for the UN Conference on the Human Environment. He was the founding editor of the U.N.'s *Development Forum*, which he edited for ten years, until he became Director of Information for the World Commission on Environment and Development. He moved, in 1987, to the Food and Agricultural Organization (FAO) in Rome as Assistant Editor of *"CERES"* magazine. He is the author of *"The Great Ocean Business"* and *"Did We Save the Earth at Stockholm?"*

#### MARY LEAN

Mary Lean is Editor of *"FOR A CHANGE"*, a new monthly magazine published in Britain. She is an Oxford graduate and has worked as a free-lance journalist, undertaking many assignments in Europe and Africa, including with the United Nations Environment Programme in Nairobi, Kenya.



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# "Dr. Brundtland please, take the pulse of the world!"

So compelling was the request voiced by "We the peoples of the United Nations" to Dr. Gro Harlem Brundtland, asking her to examine "the global problematique to the year 2000 and beyond", that the busy Norwegian medical doctor, politician, wife and mother, entered a new dimension, as diagnostic physician to an ailing world.

She quickly assembled an international team of multi-disciplinary colleagues and they set about their diagnosis by circling the suffering patient with sensitive probes to the most painful places. They elicited responses to delicate questions concerning symptomatic behaviour.

Now the diagnosis is complete and the treatment must begin.

Dr. Brundtland's Report is in, submitted to the only authority that can possibly claim to speak for the

whole body of the suffering patient. And the diagnosis is profoundly serious.

There is some good news and some bad news. The bad news is that the world has been living as though there were no tomorrow; the good news is that there will only be a tomorrow if we stop living that way.

There must be a change in our lifestyle, personal, corporate, national and global, if we are to sur-

vive and prosper. There is no such thing as 'apart'; we are all interlocked, like the cells of a smoker's lungs or an addict's brain. We are but one global body and we have some life or death choices to make about how we will now live.

If the patient lives, it will be due, in no small measure, to Dr. Brundtland's early warning. If the patient dies, it will be only because the message was not heard, and understood, in time.

All of us are part of that global body - we are the cells of its lifeblood conveying disease and death, or life and health, to the last follicle of its living surface.

How we choose to respond to the news of our serious condition, is a dilemma of unique power which each of us miraculously retains as an individual unit.

But whether we each respond, and whether we do so in sufficient numbers to spread the curative process effectively throughout the body, remains to be seen. Our children will know if we did, and their children will suffer if we don't.

Dr. Brundtland has taken the pulse of the world and given her diagnosis.

But is the patient listening?

WAYNE KINES

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## Message to the Media:

### A CHALLENGE TO DESPAIR, AND A MANIFESTO OF HOPE

The WCED Report, *Our Common Future*, is not some dismal prediction of inevitable catastrophe and ultimate environmental decay amid poverty and hardship, but a challenge to despair and a testament to the courage and *inevitable triumph of the human spirit*. It is also a map detailing routes to two alternative futures - one leads to a wasteland - the other to the promised land.

"We do not offer a detailed blueprint for action, but instead a pathway by which the peoples of the world may enlarge their spheres of co-operation. The Earth is one but the world is not," the

Commissioners state, urging the mass media to help them alert the public and their political representatives to the dangers and opportunities before it is too late.

The Commission concludes its findings with the optimistic belief that "people have the power to prevail, and build a common future that is more prosperous, more just and more secure" than any we have known before, if we can summon the personal commitment and generate the political will to do so.

New technologies to improve and increase our powers to communicate, forecast and plan are now

available and can be put to good use to help us solve the problems of the frightening present for the sake of the long-term future.

Most of the major, individual perils are examined in this issue of *Tribute*, as the Commission's findings are reviewed and explained by veteran journalist and broadcaster Warner Troyer. He describes and illustrates the connections it makes to arrive at the only viable solution - **the careful and deliberate use of rational and sustainable development** as a tool to save our global village.

It is the hope of the world, and of the World Media Institute, that other journalists and broadcasters and citizen communicators of all kinds, will take unto themselves, for creative purposes, Mrs. Brundtland's uncommon Report about our common future. If enough of us do, then Warner Troyer's final word in this epic may come true, and "Our Common Future" may begin "to turn back Earth towards Eden". Troyer explains below something of his personal struggle with the "Brundtland Challenge", and his analysis follows of the problems and recommended solutions, reported by the World Commission on Environment and Development.

NOEL MOORE

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## A Journalist Answers

### Gro Brundtland's Challenge

"The time has come for higher expectations." The words are those of Norwegian Prime Minister Gro Harlem Brundtland, Chairman of the World Commission on Environment and Development. Like the Report they preface, those words are a global call to the barricades to human survival on this small and fragile planet.

For 35 years my work as a journalist has been chiefly focused on social and environmental concerns and their relationship to our political and social processes. For much of the past nine years I have practised my trade living in or reporting on the developing world. I believe in 'advocacy journalism'. Given accurate and responsible facts and fair and honest conclusions, I

believe those of us privileged with the time and resources to research serious issues owe our clients - readers, listeners, viewers - the fruit of the endeavour: our conclusions.

Edmund Burke was right. "The triumph of evil requires only that good men keep silent." When any of us perceive a common evil or danger our most fundamental responsibility is to alert our neighbours.

When I first saw an advance copy of the Brundtland Report, in early March, 1987, I thought it the most important document published in this generation. I devoured it, without sleep, for 30 hours. Here, finally, was an utterly pragmatic

response to our global fears and crises. Moreover, it crossed all the petty, artificial barriers between problems of environment and development, between rich nations and poor, between militarism, politics and culture, between the disciplines of science, economics, demographics, anthropology, agriculture and the rest. Here, in short, was the best exemplar yet of Alvin Toffler's 'Third Wave' - a marriage of many sciences and studies, a genuinely renaissance approach to universal needs.

Prime Minister Brundtland wrote: "First and foremost, our message is directed to people ... in particular the young, (we must) translate our words into a language that can reach the minds and hearts of people

young and old." Failure to respond to the imperatives she describes would leave us as naked in the world as if the words of Gallileo, Louis Pasteur, Copernicus and Lister were still read exclusively by a few fusty scholars in isolated attics, speaking only to one another.

What follows is my first, modest attempt to answer Gro Brundtland's challenge. No one of us who cares for the future of our children, and of their planet, dare ignore Prime Minister Brundtland's call to arms.

WARNER TROYER

# The WCED - a revolutionary process to involve the people of the world

by Peter Stone

Perceptions about the environment movement have gone through many stages. A couple of decades ago most observers characterised environment as an elite concern mostly located in the rich countries of the North.

Nowadays, lengthy debate and a succession of disasters all over the world has persuaded most of us that environment concerns all the people, rich and poor, North and South.

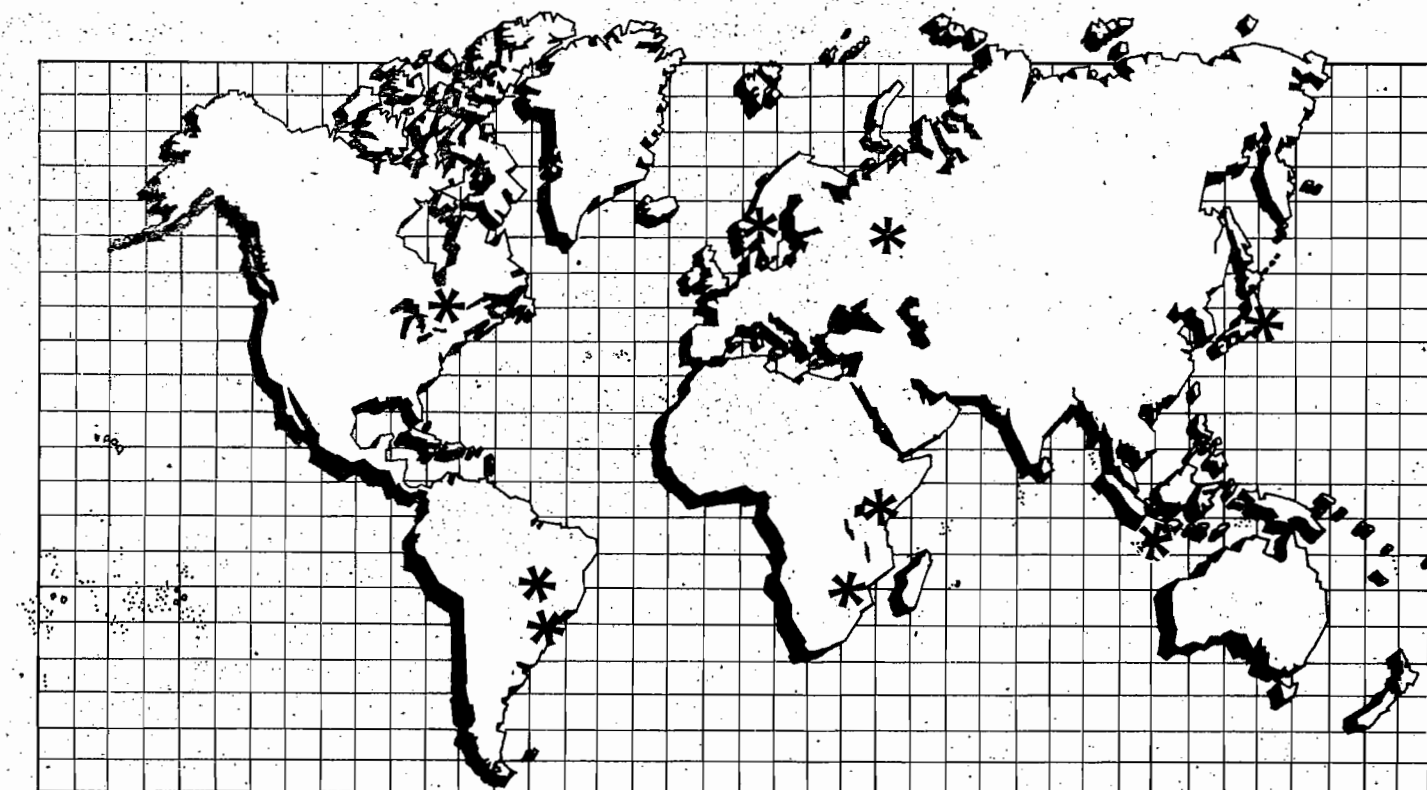
## FIRST AN IDEA

However, when the World Commission on Environment and Development (WCED) was conjured onto the world stage in 1983 by the U.N., there was no practical way it could be anything other than elite. How then could it address such a popular concern?

## THEN A LEADER

Its Chairman, Mrs. Brundtland, who was, at the time she was chosen, Leader of the opposition in Norway, sought the first answer in the character and provenance of her Commission. She eschewed the retired elder statesmen and invited many active politicians in regular touch with constituencies in many parts of the world. It was the device of Public Hearings, however, which gave the World Commission its singular cachet. It became known even to cynical observers of the intergovernmental scene as "that bunch of big shots that keeps holding Public Hearings round the world." Those words came from a London journalist who never personally attended a preparatory meeting, but who had formed the view from what he had heard and from press releases.

The logic was quite practical.



*Public Hearings were held in Jakarta, Indonesia in May 1985, Oslo Norway in June 1985, Sao Paulo and Brasilia, Brazil in October 1985, Ottawa, Canada in May 1986, Harare, Zimbabwe in September 1986, Nairobi, Kenya in September 1986, Moscow, USSR in December 1986 and the final meeting was in Japan in February 1987.*

## WITH A TEAM

The Commissioners naturally came from all over the world. There was no reason to favour any one meeting place as against any other. Governments invited them for their preparatory meetings and paid local costs.

## AND A PLAN

Thus the Commission was able to meet in Indonesia, Norway, Brazil, Zimbabwe, Kenya, Canada, the USSR and Japan, as well as its

headquarters in Geneva. Public Hearings were held in each place before the Commission began its closed sessions. The Commissioners either sat on a stage or around tables and listened to short statements either from the floor or from a podium. Sometimes there were short debates with interested Commissioners and exchanges of views spilled over into corridors and hotel lobbies.

## TO HEAR THE CRIES

The Public Hearings were publicized in advance through the press releases and the NGO community and by the host governments. Those who could not attend personally could send written submissions which were presented to the Commissioners and also made available to the Press. Over 10,000 pages of material from 500 submissions provided an up-to-date perspective on subjects as diverse as carbon dioxide and global climate, the fate of native peoples and the conservation of species.

## OF A TROUBLED WORLD

Scientists, experts, research institute staff and senior government officials constituted a large proportion of those participating, but it was the passion and urgency of people from non-governmental agencies that the Commissioners probably most remember. Thanks to financial help from an NGO, the

Commissioners heard for themselves pleas for the tropical forest from a poor but charismatic rubber tapper, Jaime da Silva Araujo, who had come from the upper reaches of the Amazon basin. Ailton Krenak, who travelled just as far to get to Sao Paulo, received a standing ovation as he called for the preservation of his own Indian "micro-country". Elsewhere, village level workers, religious leaders and campaigning journalists pressed new concerns for the environment on Commissioners whose own horizons were continually extended.

## THE PEOPLE RESPONDED

The list of those who contributed occupies many pages of close type at the back of the Commission's report "Our Common Future." It is itself an affirmation of the meaning of the title. Whatever else the Commission will prove to have achieved (and one hopes it will achieve all its recommendations at the very least), it will lay to rest one exceedingly damaging and infuriating misconception - that environment is a rich man's concern and only for action when there is enough money to spare. The World Commission's Public Hearings showed that environment is a prime concern of the poor as well as the rich, and of the priorities of mankind today.

**MARGARITA MARIÑO DE BOTERO**  
Columbia

*Chairman, Fundacion El Colegio de Villa de Leyva (The Green College); Director General, National Institute of Renewable Resources and the Environment (INDERENA) 1983-86; Director, Office of International Affairs, INDERENA 1978-83; Regional Consultant, United Nations Environment Programme 1973-77*

## Ramphal Believes

# "Enlightened People Can Save the World"

by Mary Lean

Shridath Ramphal has just completed 'some of the most stimulating work' of his life. Quite a statement, coming from a man who became Attorney-General of his country at the age of 31, served in the Cabinet of independent Guyana under the eccentric Forbes Burnham and, as Secretary General, has hauled the Commonwealth back from the brink of disaster time after time. Particularly as the work in question involved sitting on a dry international commission, whose name raises few flickers of recognition in the world at large.

The World Commission on Environment and Development, to which Ramphal was referring, reports to the UN General Assembly this autumn and was chaired by Gro Harlem Brundtland, Prime Minister of Norway. According to its authors, the future may depend on whether governments and people take its themes on board. "What we are doing to the environment is putting human survival in peril," Ramphal told me in London on the eve of a trip to the South Pacific. "It's as stark as that."

Brundtland's commission comes hot - or, at least, warm - on the heels of two similar inquiries, headed by Willi Brandt of West Germany and the late Olaf Palme of Sweden. Ramphal served on all three - and describes each as a 'learning process'.

The Brandt Commission, which reported in 1980 and 1983, set out from an economic standpoint, and found that world poverty was inextricably wound-up with arms-spending and the environment. Palme took security as his starting point. The Brundtland Commission threw a green spotlight onto the issues raised by Brandt and found that economic growth, in both North and South depends upon the health of the Earth.

Each of the commissions drew together VIPs from all political, cultural and geographic climes. Each found that in spite of the initial clash of conceptions, consensus was possible, and each concluded that the only hope for the world lies in learning to work together. After *Common Crisis* (Brandt's second report) and *Common Security* (Olaf Palme's report) comes Brundtland's *Our Common Future*. After the

third time round, there is a feeling of déjà vu. What do such exercises really achieve?

Ramphal sees the commissions as 'think-tanks' - doing the job which such organizations as the UN would do if their members were not so 'adversarial'. He says, "The multi-national institutions have not been able to rise about the fight - whether between North and South, or East and West - and develop wider vision and give intellectual leadership. This is what the commissions sought to do. Everybody was independent, not negotiating on the part of governments. We were working in a truly global context."

The Brundtland Commission gathered its facts in a series of public hearings on five continents. These gave the Commissioners a chance to hear firsthand from the people most affected by the destruction of their environment.

"We were deeply moved by the testimony of farmers, herders, fishermen, city dwellers," Mrs. Brundtland said at the Report's launching in London. "It was they who convinced us of the human costs of this destruction, of how it impoverishes them, how it limits their potential to build their societies and nations, and how it robs their children of the means to prosper, and in some cases just to survive."

The Brundtland Report is a new nail in the coffin of the old fallacy that economic growth and environmental concerns are mutually exclusive. The Commissioners are unequivocal in their assertion that growth is essential if developing countries are to survive. What matters, they say, is that growth builds on strong ecological foundations. The catch phrase is 'sustainable



*Listening to the people at one of the Public Hearings held on five continents by the Brundtland Commission.*

development' which they define as **"development which meets the needs of the present, without compromising the ability of future generations to meet their own needs."**

The Commission's recommendations are the sort from which one's attention recoils - including restructuring of international and national organizations, the development of environmental law and conventions, national audits of natural resources as a basis for planning, an increased flow of funds to the Third World, reforms of world trade and agriculture, and a UN Programme of Action on Sustainable Development.

This vagueness is the Report's major shortcoming, according to James Gustave Speth, President of Washington's World Resources Institute. However, he welcomes the way it is breaking through the barriers between one-agenda pressure groups in the US who are accustomed to approaching development, population, consumer and environment issues in isolation from each other. "The Report's principal value here, so far, has been to interest a group of people who aren't really involved in global environment issues," he says. "It could become a central document

for the entire NGO community that's concerned. But it has not yet broken into non-volunteer groups."

Donatus de Silva, Sri Lankan Director of Regional Programmes for the Panos Institute in London is more caustic. "Six million dollars were spent on this commission. It was perhaps the only opportunity, for a long time, to say clear, important, straight things to leadership. The Report has turned out to be a 'damp squib'. The Commissioners," he says "could have used their independence to challenge governments and élites in both North and South to change their ways. Instead they have gone for something bland and 'safe'."

But what can the person in the street do? "Everything!" says Ramphal. "Ordinary people have the greatest aggregate power to act - but first they have to become aware and care. That's where the Commission can help. Twenty years ago I thought that enlightened governments could save the world. Now I'm convinced it's enlightened people that have to save both governments and the world."

Excerpt from  
"FOR A CHANGE", October 1987

*"We in Asia, I feel, want to have an equilibrium between the spiritual and material life. I noticed that you have tried to separate religion from the technological side of life. Is that not exactly the mistake in the West in developing technology, without ethics, without religion? If that is the case, and we have the chance to develop a different kind of technology which has as its base not only the rationality, but also the spiritual aspect? Is this a dream or is this something we cannot avoid?"*

Speaker from the floor  
WCED Public Hearing, Jakarta, 26 March 1985

## A GUIDEBOOK FOR SURVIVAL,

What follows is not the Report of the World Commission on Environment and Development, which is better known by the name of its Chairman, as the 'Brundtland Report.' That study, of 483 pages, is more than three times longer than this summary and guide.

Therefore, some of the WCED Report's detailed reasoning is missing, as well as some of the 'fine print' recommendations.

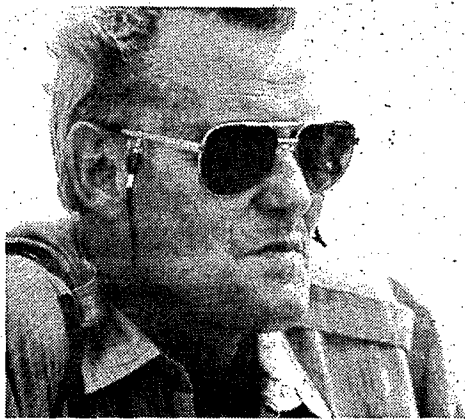
There are additions to this version, as well as some deletions: extrapolations have been made from WCED data, illustrations have been added, quotations inserted. All of this is in an effort to make this most-vital 'study-of-the-century', better understood and more relevant to all who read it.

Some liberties, however, have not been taken. For example: all the major recommendations of the Brundtland Report are here; whenever the words 'must' or 'should' appear in urging response and action, they are rooted directly in the recommendations and convictions of the WCED - they are not the fanciful imaginings of this writer.

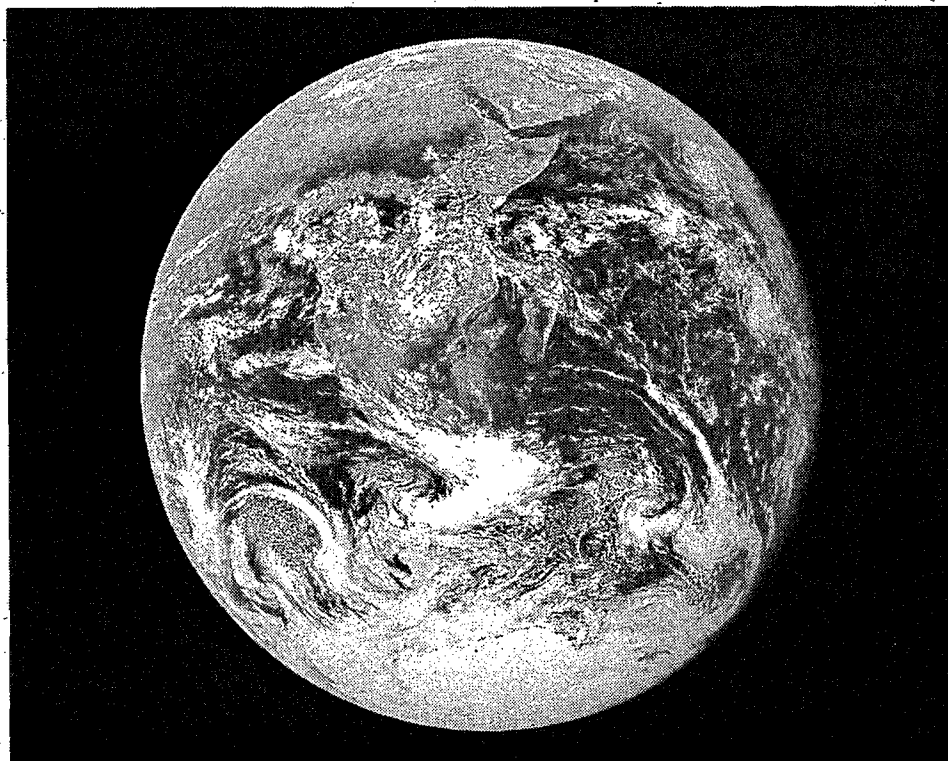
## GUIDEBOOK TO SURVIVAL

We have the means within us to diagnose our planet's ills - and the strength, among us, to cure them. What has been lacking is the itinerary - the 'Michelin Guide to Global Survival', which the Brundtland Commission has now given us in this crucial Report.

What has also been missing is the will to act against, literally, the 'sea of troubles' we face - along with those in the atmosphere, the soil, the plants, and the animals.



Warner Troyer, who wrote *Tribute's* analysis and commentary on the Brundtland Report



## Spaceship EARTH

## SECURE AND PROSPEROUS

We have lacked the will, partly because we were not prepared to contemplate a downward spiral into 'zero growth' - a static state in which more creature comfort, more prosperity and more security would be unattainable. The WCED Report demonstrates that we need fear no such threat. **Security**, states the Brundtland Report, is possible only with growth and development. We cannot have **security** without **prosperity**.

Beyond that, our concern for environmentally-sound development has been hobbled by our ignorance. The massive research studies which were commissioned, gathered, and brilliantly analysed by the World Commission on Environment and Development should end that state of suicidal tunnel-vision and ignorance.

After the Brundtland Report, we need no longer imitate the destructive behaviour patterns sometimes seen in other species, with whom we share this tiny, fragile, global village.

## EXPERIENCE OR REASON

For instance, an animal when fed a dish of food which makes it ill, may readily eat the same unsafe food tomorrow, not being able to make the connection between something eaten at eight in the morning and vomiting at noon. So also with infants or small children who will, if hungry, scrape the plaster from the wall of a hut (or an inner-city ghetto tenement) or eat 'mud pies' and even faeces.

Extrapolation and analysis are impossible without intelligence, a capacity for abstract thought - call it an ability to imagine "what if?" - and the ability to reason from experiences. Animals can learn from experience; once burned, no cat will ever again venture onto a stove. Learning and reasoning are, however, very different - no cat can be taught that the stove is safe when the electricity is turned-off!

## LESSONS OF HISTORY

We are supposed to be the one species which can learn from experience. We do extrapolate - sometimes - but too often, not enough nor quickly enough. (If we used our reasoning potential, every tobacco manufacturer would, by now, be bankrupt!) Arnold Toynbee said his years of scholarship persuaded him that mankind never learned the major lessons of history.

The punishment, of which we have all been warned, is that:

**"Those who do not remember the past are condemned to relive it."** That proscription would be bad enough, were it the whole story. However, it is not. There has been a quantum change in our global village since George Santayana's warning.

With our technology, we can now create conditions which are unprecedented in all human history. If we destroy the ozone layer, or cause the continuing deforestation and desertification, or acidify our lakes and forests, and poison our ecosphere, there will be no possibility of our grandchildren being forced to repeat our sad history, for there will be no environmental resources and no viable ecosphere left for them to

destroy. Thus, we could shorten that rubric, (if we refer to current history), to read: **"Those who do not remember the past are condemned."**

## INTERCONNECTIONS

The WCED (or Brundtland) Report is about **connections**. It concerns itself with the forms of analysis and/or extrapolations mentioned above. The Commissioners have documented and demonstrated the utter madness of viewing the world's myriad problems in isolation, with their arguments made irresistible by being grounded in massive, meticulous research. The WCED has made the **connections** as plain as an anatomy chart demonstrating once and for all, that economics and environment are interlocked. We can now draft and prove environmental equations, showing the links in our chain of global grief.

An example of one such series of connections is as follows:

a) if creditors (some Industrial Nations and banks) charge Developing Nations high interest rates for aid money and development funds, then...

b) those Third World nations will have to increase their production of marketable goods to raise hard currency for interest payments, which means...

c) farmers will over-cultivate even marginal land, causing erosion, and even desertification, leading with stunning speed to...

d) flooding, drought and the loss of farmland of any value in future, as well as...

e) much higher rates of hunger and starvation, of water-borne illness, which will, in turn...

f) quickly make it impossible for poor nations to pay their debts, though they will try, not the least by...

g) diverting funds normally used for education, health, economic development and provision of services to debt payment, which will...

h) exacerbate the spiral of poverty with all its attendant disasters, leading to a situation in which...

i) the Industrial World will have to pour in ever greater amounts of aid to the point at which we may see the entire world-economy collapse and, with it...

j) the remorseless and inexorable destruction of our ecosystem as we scramble, ever more frantically, to wrest our needs from a bruised and depleted planet.

## SECURITY AND PROSPERITY



## REVERSE THE EQUATION

In making these connections, the WCED Report does much more: it assures us that **we can reverse the equation.**

By analysing the links, we can replace or repair the weak links in the chains which connect development to the environment. Instead of the doomsday equation sketched above, we can, literally, 'grow our way' to an environmentally-stable and prosperous global village. Those poor nations, we begin to realize, are our neighbours; they can become our partners-in-growth.

But only if we make the connections.

A century ago, Sunday School paper-charity to 'those poor souls' across the seas was regarded, with considerable and pious pride, as philanthropy.

To prove Toynbee wrong, we should now draw a lesson from more recent history. The man who wrote that lesson for us was U.S. General George C. Marshall.

## MOBILIZING ALL

In May 1945, industrial and urban Europe was a charred ruin. Europeans faced starvation; epidemics were triggered by the destruction of water and sewerage services; there was a lack of an industrial base and acute shortages of fuel; there was a monumental shortage of shelter; millions of refugees were helpless to return to their own countries and communities to fend for themselves in any way; hundreds-of-thousands were doomed to spend years in Displaced Persons camps because no one wanted them; schools, where they still stood, were closed - and in any event, children were too hungry, too ill-clothed, and too apathetic to absorb learning; farmland was devastated; and to top it all, Europe's economy was paralysed with debt to the 'New World' which it could never hope to repay. Nor could the European states even plan a recovery and development plan.

There were no 'bootstraps' left by which they could pull themselves up.



*Travelling across the sands of time, what will be our future?*

## GLOBAL INTERCONNECTIONS

Most of the major, individual perils which threaten planet Earth will be examined in this issue of Tribute; as the findings of the World Commission on Environment and Development are reviewed and explained by veteran journalist and broadcaster, Warner Troyer.

He describes and illustrates the connections the Commission makes to arrive at the only viable solution - **the careful and deliberate use of rational and sustainable development** as a tool to save our global village.

## FOR EUROPEAN RECOVERY

Enter George C. Marshall, now U.S. Secretary of State and, under his leadership, the Marshall Plan for European Recovery was initiated.

War debts were written-off. Massive aid, in money, goods and expertise, were funnelled into Europe. Huge training schemes were initiated to replace the storehouse of human skills lost in war, and universal educational systems were set in place.

The entire continent of Europe was devastated. Political confrontation and violent conflict had created a chaotic scene of suffering.

George Marshall rallied the world to change all that. Was it philanthropy? Yes. But looking back with the hindsight of the '80s, we can discern a large fraction of enlightened self-interest in the recipe.

George Marshall knew there could be no United States, as he knew it, without access to the resources - the goods and services and talents of Europe - and the markets of a prosperous Europe. He found a way to create that access. The Marshall Plan was as much a blueprint for the survival of the Americas, as it was for Europe's rebirth.

## GLOBAL PROSPERITY

Just as today, the WCED Report is a Guidebook to global survival, security and prosperity. The analogy is accurate.

The Third World, too, has been devastated by war. Its historic defeats have been in the battles of commodity trade; in the long retreat from economic stability, in the face of overwhelming debt; in the blitzkrieg of drought and illness; in the scorched-earth tactics of erosion, deforestation, and desertification; in the blockades of clean water, sanitation and immunization; in the torpedoes of Bhopal and the

rest; in the massed artillery assaults of pollution; and in the hit-and-run raids on non-renewable resources.

There is gallantry, courage and even hope in the Third World. But their troops in this war are best compared to Polish cavalymen, lances in hand, spurring their horses against Tiger tanks. It is time for the 'Lend Lease' programme and a global 'Marshall Plan'.

## WHERE TO BEGIN

The entire industrial world now faces a similar dilemma, which was resolved for the Americas, in 1945, by George Marshall. What is extraordinary about the Brundtland Report, like the Marshall Plan before it, is its undeniable pragmatism. By now we should all know our capacity to multiply tragedy and sponsor disaster-by-default.

What we must understand and act upon is the **web of connections** through which we can preserve and protect our global village and all who live here with us. The WCED Report tells us where to begin that odyssey.



Noel Moore who edited the chapter extract summaries that follow in boxes

## OUR COMMON CONCERN:

We are beginning to identify and understand the many individual threats to our environment and, thereby, to our survival. Now we know that the future of our ecosystem, and ultimately our children's lives, is inextricably linked to human and economic development at every level.

Most of the major, individual perils will be examined as we review the Commission's findings. So, too, will we review the connections to the only hope for solutions - the careful and deliberate use of rational and **sustainable development** as a tool to save our global village. The possibility of failure is entirely real. The time-frame within which we can ensure survival is short.

## LOSING LAND

We have already lost millions of hectares of arable land. Every year the world permanently loses 6 million more hectares of farmland to become mushrooming deserts.

Numbers of such scale are hard to grasp. But put it this way: 6 million hectares equal 23,156 square miles; that is more than four times the entire area of Jamaica, or an area double the size of Albania, or three times the size of Israel, being lost every year.

We 'grow' more desert every 18 months than the land area of Austria or Belgium - and it is desert we can never reclaim. Consider all of Greece laid waste in just 2 years, all of Japan reduced to sand and rock

in six years, or the entire United Kingdom as sterile as the moon in just four years. We lose an area greater than Denmark every 30 weeks! The problem is not modest.

Many species of both plants and animals are extinct - we killed them. In Western Ecuador alone, where forests have been laid waste to establish banana plantations, as many as 50,000 different animal species were destroyed between 1960 and 1985!

Even among the living, tens of millions of children and adults, their minds and bodies stunted by malnourishment in infancy, have been permanently robbed of the possibility of ever becoming full and contributing members of society.

## LOSING SIGHT

As a direct result of vitamin "A" deficiency, a half-million children are blinded, in the Developing World, every 12 months. Every 10 years (to put the numbers in context), our global village has a new sub-stratum of permanently-blind children - more than enough to populate a city the size of Berlin, Caracas, Boston, Rome, Sydney or Athens.

One more child becomes blind, in the 60 or so seconds it takes you to read this paragraph; and in the Third World, with few centres for rehabilitation, each blind child will become a burden on society, and not a contributor to development.

For those children, for the now-extinct animal species, and for the ravaged farmland which has been forever deprived of its food-production potential, any 'window-of-opportunity' has passed. These random examples are grim but salient.

## LOSING TIME

Time is not on our side. Appalling though they are, our losses in the war for global survival have, until now, been only skirmishes and isolated battles. The decisive engagements lie ahead - but not far ahead. We now know that all the enemies to our survival are linked in an **axis of assault**. We can fight them only with a fully co-ordinated battle-strategy. Neither isolated, national 'Maginot Lines' nor ad hoc border raids will do.

The supreme, if tragic, irony is that the injuries to our global body-politic are self-inflicted; in a real army they would constitute court martial offences. In the memorable words of Walt Kelly's 1950s comic-strip character, Pogo, "**We have met the enemy and he is us!**"

## THE WORLD IS ONE

So one threat over-rides all others - the possibility that those with the power to do something in the global village may fail to act together. "The earth is one, but the world is not", the Brundtland Commission warns.

## HANG TOGETHER

The evidence cited indicates we seek our own individual, national, or at best regional goals with little regard for the consequences of our acts on other people and on other countries. However banal the phrase may sound, we will truly hang separately (or our children will) if we do not 'hang together'.

The best evidence of our capacity to endure - to ensure survival - lies in our recent history. **We have** made progress; **we can** fashion broad, strategic goals and work in unison to achieve them.

- The 'killer smogs' are no more in London; there are fish, again, in the Thames.

- The industrial nations are taking the lead out of gasoline and paint.

- We have stopped using the phosphate detergents which were choking our waterways less than two decades ago.

- In the time since 1950, in the developing world, the percentage of children dying before age five has been reduced by half.

- Over the past 35 years, human life-expectancy in our global village has risen a dramatic 30 per cent - from 46 years to 61.

- In 1970, just 13 out of every 100 rural families in the Third World had access to safe drinking water; today the proportion is 44 per cent.

- Adult literacy, world-wide, has rocketed from 55 to 72 per cent since 1951.

- In the Third World, in 1946, fewer than half of all children even started school; now 95 per cent at least begin.

- In 1970, only one in 20 of the globe's children had been immunized against disease; today we protect four in 10.

Still, there is no time just yet for the luxury of self-congratulation. The equally-devastating time-bombs of growing poverty and the tunnel-visioned pursuit of short-term prosperity, at any cost, are still with us; their fuses are not very long; and they are all inter-connected.

## THERE IS REASON TO HOPE

Our best hope is in the growing global constituency of concern. We cannot move effectively without universal, public demand and support. 'Public will' soon translates into 'political will' in any culture or nation-state. But public will, uninformed, is impotent at best, and dangerous at worst.

So we must identify the enemy - the **causes** of our jeopardy; each enemy leaves its own unique fingerprints on the ecological systems of destruction which we witness.

By tracing our vulnerabilities from symptoms to causes, we may then seek the new approaches needed to draft our marching orders. Let us begin with a brief overview of those symptoms and their causes.

## IF WE ARE HONEST

We generally measure or identify damage to our global village by noting, even quantifying, what is called 'environmental stress'. The term is a handy grab-all phrase or shorthand, but with strong overtones of Orwellian 'New-Speak'. Like many specially-coined contemporary phrases, it seems more designed to lull anxiety than to heighten awareness. One is reminded of the Canadian Air Force manual description of 'helmets, anti-buffeting' in place of 'crash helmets', or of the more horrendous U.S. military jargon covering 'body counts' and 'mega-deaths'.

Similarly, 'environmental stress' covers a multitude of horrors, from dead lakes and extinct species to mass starvation, moribund national economies and the steadily-increasing migration of literally millions of unemployment-generated refugees.

If anyone speaks of environmental problems, we tend to blame over-use of resources and pollution as the chief villains. But there is another cause of those problems.

## POVERTY IS THE ENEMY

Poverty may be the greatest single enemy of our environment. The poor and the hungry destroy their own environment and another fraction of the globe's capacity for survival, in their effort to stay alive just one more day or one more year. Forests are cut for the income from timber, and to open-up more land (though often only marginal land) to farming. Grasslands are overgrazed. Hillsides are stripped and cultivated, causing erosion and the permanent loss of the thin mantle of life-sustaining topsoil.



Poverty - coping with the drought in Ethiopia

## A THREATENED FUTURE

When the land is exhausted, those people migrate to the cities, in a crushing human wave of folk who can neither be employed nor provided with the basic needs for survival by overburdened municipalities.

### PROGRESS AND PROSPERITY

None of this is to suggest untrammelled development is the best way to solve the problems of poverty. The indiscriminate use of resources, chemicals, energy, and synthetics is as real a danger as any we can imagine.

It is also necessary to understand the dangers of the 'instant gratification' syndrome of industrial development, with its misguided economic goals and principles.

Environmental costs **must** be included as a part of any cost/benefit analysis, whether in banking procedures, plant construction or commodities distribution.

It is a truism in industry that 'retrofits' are 40 times more costly, on average, than solutions built into the original design.

**Preventive strategies** are the only strategies which make economic, as well as environmental, sense. Increasingly, polluters are getting caught, and are being forced to repair the damage and modify the faults in their processes or products.

The environmental lawsuits of the past decade are sufficient evidence of the bad economics of pollution, to say nothing of the monumental sums needed to modify faulty systems. (Ask any auto manufacturer the cost of a single 'recall').

### POVERTY AND POLLUTION

So the battle for survival in our global village has two enemies - two targets which we once supposed were unrelated.

- The first is insufficient development; call it **poverty**.
- The second is mindless development; call it **pollution**.

Both are economically untenable and unsustainable. We have already begun to realize they are fatal, in both environmental and human terms.

But the third factor in the equation of survival, (or conversely, the equation of disaster) is economic; and it is this recognition, the Report suggests, which gives us the understanding we need to save ourselves and our fragile planet.

### EACH ONE HAS CONSEQUENCES

Let us look, first, at the consequences of poverty. We should begin by understanding the reasons for the failure of some traditional forms of foreign aid to help solve the enigma of poverty.

As with industrial retrofits, much of our aid money goes for crisis management. That is essential in times of flood, famine and natural disaster, but quite useless in regard to eliminating global poverty. But let us get some perspective on this situation.

Proportionately fewer of the world's population go hungry now than in 1970. But in **absolute** numbers, **more** people are so short of food they suffer permanent physical stunting and brain damage. This is, of course, because of the increase in our global population.

Similarly, while the **percentage** of Third World families with access to safe drinking-water is up, the **number** of people who have no access to the 'health insurance' afforded by clean water is up, too. Urban migration has enormously swelled the numbers (well into tens of millions) of slum and shanty-town dwellers in the Developing World; they live in cardboard or palm-thatch shacks, in sewer culverts and ditches.

### WE CANNOT AFFORD POVERTY

Consider the most pragmatic consequences of enduring and escalating poverty. First, as we know, the poor are a back-breaking burden for any but the richest of societies. The provision of services to the poor - from food, health care, shelter and energy to education - is beyond the capacity of most Developing Nations. Look at just that one facet of the evidence. The world simply cannot afford poverty.

- In Third World nations, from 25 to 70 per cent of all hospital beds are occupied by patients suffering from water-borne or water-related disease.

- At the same time, from 50 to 60 per cent of all health care costs in Developing Countries are directly triggered by unclean water. (The World Health Organization calculates, however, that those nations would recoup, in reduced health and hospital costs over a period of five to 10 years, the entire cost of providing safe water for every citizen on earth. Surely an amortization plan like that would satisfy the most hard-headed business or industrial economist.) There is more.

### FOR HUMANITY:

## Poverty or Prosperity ?

Humanity is embedded as an integral part of the global environment, and as such, is part of a single system. This did not become obvious until scientists studied the shots of Planet Earth taken from outer space.

It was the challenge of launching a satellite into orbit, in the first place, that led to the wide-scale application of systems analysis and theory, and this, in turn, has led to the

realization that the biosphere of the planet is a vast, interconnected system.

We are beginning to identify and understand the many individual threats to our environment and, thereby, to our survival", the WCED Report emphasizes, while warning that the future of our ecosystem which sustains life on our planet, is inextricably linked to human and economic development at every level.

### POVERTY IS BAD BUSINESS

Human costs aside, here is another example of how poverty exacts huge costs from **everyone** in the world, and not just those in the poor nations. The poor overcultivate their land, eliminate their forests and denude their slopes and hills. They also settle-on and farm any available land - in river valleys prone to flooding, or on unprotected coastal plains. The result is not just soil erosion or even desertification, but also severe flooding.

In the '60s, 5.2 million people were flood victims. In the '70s, floods claimed 15.4 million victims. When the figures are all in for the '80s, trends indicate they will be even higher.

During the '70s, six times as many people died from 'natural disasters', **every year**, as they did in the '60s. The figures for the '80s will almost certainly add to the exponential curve of tragedy. Why? Not because of angry gods or sunspots. Most of those were not 'natural' disasters at all.

Look instead to the high interest charges on Third World debt, and to declining world commodity prices, as the **direct cause** of those disasters. Then consider the nearly-incalculable cost to the Industrial States, in emergency aid, to succour those struck by drought, flood, famine, epidemic.

Western governments, fearful of the consequences of their national deficits, might look to the vast sums squandered annually on poverty. The global village is, indeed, living beyond its means.

- Each year, 10 million of our neighbours, in the global village, die of water-borne disease. (That is the equivalent of the combined populations of Rio de Janeiro and Beijing wiped-out, each year; or every three years, it would be as many deaths as in World War Two.)

### HIGH COST OF DEATH

- If they had lived, each of those individuals, as adults, would have contributed to their societies maybe 50 dollars annually, in direct and indirect taxes. (Aggregate taxes, world-wide, vary from 30 to 70 per cent of gross national product; the figure for Canada, for example, is now almost 50 per cent. Even the poorest of Third World nations have a per capita GNP of nearly 200 dollars U.S. Over a lifetime of earnings, each of those people would, therefore, have added at least 2,000 dollars to the tax revenues of their communities - money which would have been available for services and development.)

- Each such individual, in the poorest nation on earth, would contribute at least four times more, say 8,000 dollars, to their nation's GNP over a lifetime of work.

### HIGH COST OF FAILURE

Now consider the purely economic loss, to us all, of our failure to provide clean drinking-water to the Third World.

With 10 million dead from impure water this year, our global village has lost 20 billion dollars in future tax revenue, and 80 billion dollars in future GNP. We will suffer the same loss, every year, until we spend just five per cent of the annual loss - according to World Health Organization estimates - to provide safe drinking-water for every man, woman and child on the planet.

## (Continued)

**WE CANNOT AFFORD IT!**

The luxury we can no longer afford is world poverty. Poverty burns-out the heart and substance of any society it strikes, as surely as an out-of-control forest fire. We have to recognize, now, that there are no international 'fire breaks' which we can build to protect the Industrial World from the conflagration raging in the Third World.

Economic and ecological hazards and disasters have long since stopped being contained by any man-made frontier. "One World" and "Our Common Future" are not just catchy slogans. They are simple, literal statements of fact - there is only one world for us to share. We **do** share a common future - of hope or of despair.

Our problems stem from insufficient development, or **poverty**, and indiscriminate development, or **pollution**.

**WE ARE GROWING**

But there is a further dilemma. We are growing globally:

- Annual fossil-fuel use has increased 30 times in the past century. Three-quarters of this increase occurred after World War Two.
- Industrial production is up to 50 times its level of a century ago; 80 per cent of that expansion has been since 1950.
- We have cleared more land for human settlement in this century, than in all of recorded human history combined.

The benefits of economic growth are clear: better health; longer life-expectancy; universal education; better shelter; higher living standards and a better 'quality of life' - at least for those of us who share in that prosperity. But growth can skew consumption and, thereby, the availability of resources needed for survival. Here are some quick examples.

**AND CONSUMING MORE**

Consumers in the Industrial Nations use 160 times more energy, per person, than those in the Developing States. The records show they use 10 times more paper products; they consume, each day, 50 per cent more calories, 100 per cent more protein and 110 per cent more fat.

The Industrial Nations, per capita, use 30 times more water, 15 times more steel and a 13 times disproportionate share of other metals. There is not much room here for the Third World to catch up.

Modern technology has helped Industrial Nations reduce resource consumption (especially in the field of energy) while maintaining, and even increasing, productivity. But rising incomes, and populations, in Developing Nations will keep the pressure on finite resources.

Our survival demands that we learn to understand the fragile connections between our global resources. There are some thresholds which we must not cross in our race to develop new products, accelerate growth and increase prosperity. The overall fabric of our ecosphere can be damaged beyond repair by unthinking activity in any one area.

Each compartment of our ecosphere is linked to all others, as surely as the segments of a submarine (or the Titanic). Pierce the watertight integrity of one compartment - punch one hole in the hull - and everyone drowns. And that 'multiplier effect' applies to our earth's surface.

An example: The 'greenhouse effect' caused by burning fossil-fuels, which creates an accumulation of carbon dioxide in the atmosphere, leads directly to environmental degradation and, in turn, to even more poverty, with the spiraling consequences we have examined.

We can no longer afford to play 'Russian roulette' with our planet. It will be no use, when the 'wounds' are fatal, murmuring that "we didn't know the gun was loaded!" It may already be too late to repair the hole in the ozone layer over the Antarctic caused by aerosol emissions. Acid rain can do far more than end trout fishing in tourist areas: the loss of whole forests means more soil erosion, more climatic changes and, long-term, more flooding and siltation.

**AND DISPOSING MORE**

The WCED conclusions recognize this fact, and recommend the use of a systems approach to solving the problems created by technology and the population explosion.

Our disposal of toxic wastes - more accurately, our failure to dispose of toxic wastes **safely** - means we are leaving a lethal promissory note for future generations.

Some 'experts' of this generation regard the risks of accumulating radioactive wastes as 'acceptable'. But **they** will not bear the risks of these poisons - poisons which will be active for centuries; it will be their descendants who learn whether our gamble on their lives was justified. **They** have not been consulted!

We are 'willing' those hazards, which we have created, to the children not yet born. We are also 'exporting' hazards without the consent or knowledge of our neighbours in the global village. The movements of our air and water have made pollution the globe's leading trans-national activity.

What must concern us most is our **ignorance**. We simply do not know when some of our crimes-of-omission will cause the environmental degradation to snowball into a critical mass, a chain reaction beyond our control. No scientist can say when we will cross a final threshold - when the greenhouse effect will cause climatic changes sufficient to destroy civilization as we know it.

**BEGIN TO ACT**

We **do** know that time is short. The global 'survival clock', however out of focus for us, is surely in its last hour. More research, more study, more analysis and more understanding are **essential**.

But we need not wait for more information to begin acting in our own interests. When a child has pneumonia, we do not decide that more research is needed before giving antibiotics and oxygen! When floods threaten our homes, we do not go off to design a hydro-diversion scheme before we build the sandbag barriers to hold-back the water!

Of course we want a deeper river channel or diversionary canal to prevent next year's flood. But first, though, let us keep that child alive and that home standing.

**TIME IS SHORT**

We know enough, now, to stop much of the mounting danger and to remedy much of the damage which has already occurred. Refusing to mobilize the knowledge and skills we do have, constitutes a kind of global, environmental suicide.

No search for a secure future can have meaning without a universal effort to end the greatest and most final of all environmental 'hazards' - the real and persistent possibility of nuclear annihilation.

**NO ECONOMIC BARRIERS**

None of these concerns can be addressed without tackling and overcoming the economic crisis, which will otherwise make any progress impossible. The documentation shows how high international interest rates, falling commodity prices and higher energy costs can destroy any nation's best efforts to sustain even minimal standards and services.

Between 1980 and 1984, for example, plummeting commodity prices cost Developing Nations 55 billion dollars in lost earnings; and this while debt servicing costs (rising interest rates) were making Draconian cuts in personal income and available resources. As a direct result, virtually every Developing Nation (excluding India and China) experienced a drop in GNP during those years.

Nor is the cost of the world economic crisis being shared either with justice or logic. The poor of our global village are bearing the heaviest burden; their consequent over-exploitation of already meagre resources, for short-term survival, will inevitably leave us all the poorer.

We must revitalize the waning enthusiasm for international and multi-lateral co-operation. Recent trends to protectionism and trade wars can only hurt us all, it states.

**ISOLATION IS SELFISH**

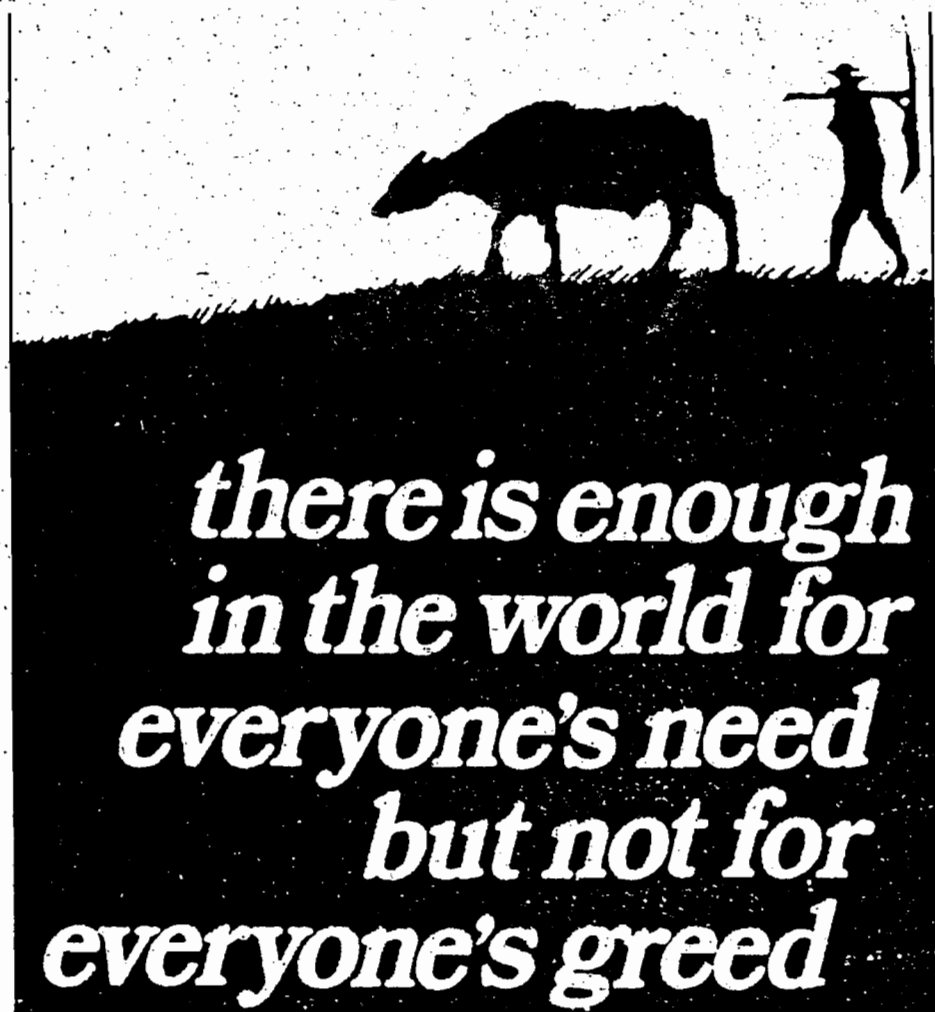
Any economic or industrial 'Fortress America' or 'Fortress Europe' could be built only on economic and environmental quicksand. There is no bunker deep enough to permit the **selfish luxury of isolation**. Indeed, the only sensibly 'selfish' attitude remaining to us requires that we extend the 'self' in that word, to all of humankind.

**TINKERING DOESN'T WORK**

In the past we have relied on ingenuity and technical innovation to solve our problems. They are no longer enough. Our ad hoc approach had more to do with 'tinkering' than fixing or curing.

Without a holistic approach to environment and development we have no hope of success, or even of survival. Trying to deal with acid rain, for example, while ignoring the global financial crisis would make about as much sense as bandaging a blistered foot while ignoring someone threatening to cut one's throat. All of those 'environmental stresses' are linked and interconnected.

Moreover, the indivisible fabric of environmental hazards is linked, just as surely, to economic circumstances and to development. Energy policies relate directly to the greenhouse effect, to acidification, to the disruption of wildlife habitat and to the flooding of arable land; world trade in agriculture has a direct impact on the degradation of water, soil and forest.



Environmental stresses threaten economic development. Equally, mindless economic development exacerbates environmental strains. Both environmental and economic concerns are directly influenced, every day, by political and social policy.

Rapid increase in population, for example, has profound environmental and economic impacts, as do national, political policies. And these are both 'two-way streets'. The consequence of environmental stress or uneven economic development **will always** influence political and social stability.

### EVERYONE IS NEEDED

Without improving the lot of the world's women and protecting the vulnerable in our global village, by building mechanisms for local involvement in decision making, there will be no stability for any of us - not in terms of the environment, of development, nor even socially and politically.

Though we can split the atom, or some of its parts, the systemic and integral nature of environment/development/society/body-politic can be ignored only at a cost we cannot afford. These four, as surely as the 'air, water, earth and fire' of our forebears are the essential, interdependent forces governing our destiny and survival.

They are, literally, symbiotic. If we can understand and manage them for our mutual benefit, they can be synergistic. But the 'we' in that last sentence is a very large one indeed.

Just as we have parsed and compartmentalized our problems in the past, we have isolated and fragmented the assignment of jurisdiction and responsibility - and with equal futility.

### NOT JUST GOVERNMENTS

Those environmental ministries and institutions whom we had expected to protect us, have had no control over the processes they were assigned to monitor. Environmental protection, even within a single government, becomes a lottery when it depends on whether the environment minister has as much cabinet 'clout' as his colleagues in energy, agriculture, finance, and forestry.

So environment ministers have mostly had to concern themselves with reactive, rather than proactive, policy; they have become fire-fighters, hosing-down blazes, which could have been prevented if they had been permitted to require fireproof building materials, sprinklers, smoke alarms and the rest.

The watch words have been 'reforestation' instead of 'afforestation', 'urban renewal' instead of 'urban planning', 'restoration' of natural habitat instead of 'protection'. Instead of being the designers and engineers of a stronger economy and environment, we more nearly resemble that small Dutch boy with his finger in the dike, trying to keep out the North Sea.

To change the system for our benefit, let us begin with the simplest of realizations that survival is **everybody's** business. If we are to survive, every ministry must make the environment - and the need for environmentally-sustainable development - a primary goal, indeed, **the** primary goal. So, too, with every industry, business, economist, and, yes, every family and each individual. Treating symptoms will not be enough, anymore. When the pain-killers are no longer effective, there may not be enough time left to ask why we have failed to eliminate the illness!

Economists and bankers have to start talking to farmers and primary producers. We cannot continue to dump surplus or subsidized agricultural products on any world market, for example, while expecting the Third World to repay foreign debt in a world community where they can no longer compete with their products.

Nor can we continue signing the names of our children, and their children, to environmental and developmental I.O.U.'s - and espe-

cially not, when we are, at the same time, spending their birthright of resources at a rate designed to leave them environmentally bankrupt.

### A NEW APPROACH

Every nation will have to develop policies and procedures appropriate to its unique needs and aspirations. But if they are not co-ordinated into a **global strategy**, then there can be no enduring stability - anywhere.

### INFORMED CONSENT

We have to incorporate the democratic principle of '**consent**' into all of our international mechanisms and agreements; that means '**consent**' in its fullest sense - which is '**informed consent**'. In mediaeval times, most communities had a '**common**' - a meadow or square where everyone's livestock grazed, where all members of the community shared a resource and a responsibility. Today that '**common**' spans the globe. It is not too late to save the '**Global Common**'. If we share the concern and the responsibility, we may also live to share the hope and the rewards.

*The strategy for sustainable development aims to promote harmony among human beings and between humanity and nature. The pursuit of sustainable development requires:*

- a political system that secures effective citizen participation in decision-making;
- an economic system that is able to generate surpluses and technical knowledge on a self-reliant and sustained basis;
- a social system that provides for solutions for the tensions arising from disharmonious development;
- a production system that respects the obligation to preserve the ecological base for development;
- a technological system that fosters sustainable patterns of trade and finance; and
- an administrative system that is flexible and has the capacity for self-correction.

*These requirements are more in the nature of goals that should underlie national and international action on development. What matters is the sincerity with which these goals are pursued and the effectiveness with which departures from them are corrected.*

The conclusion, p. 65 "Our Common Future"



**SUSANNA AGNELLI,**  
Italy

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# WE MUST PROSPER AND

We must develop to survive, while remaining aware that the impact of development does not recognize national borders and that it affects the future as well as the present. This could be brought about by:

a) development which meets the needs of the present, and, equally,

b) development which does not rob future generations of their opportunity to survive and prosper."

Development has no definition in a social vacuum. It has meaning only if, and as, it serves human needs and aspirations. We have to decide what development we want, and how much.

## WE NEED GUIDELINES

The following guidelines are suggested, if we are to justify our plans for growth: 1) what do we need? and, 2) what limitations must we recognize in deciding what we want and need?

- We "need" enough development to eradicate global poverty. It is clear we cannot preserve our environment unless we achieve that goal.

- We "need" enough development to provide nourishment, shelter, education, and employment to all the citizens of our global village.

- We "need" enough development to preserve hope.

## WE HAVE LIMITATIONS

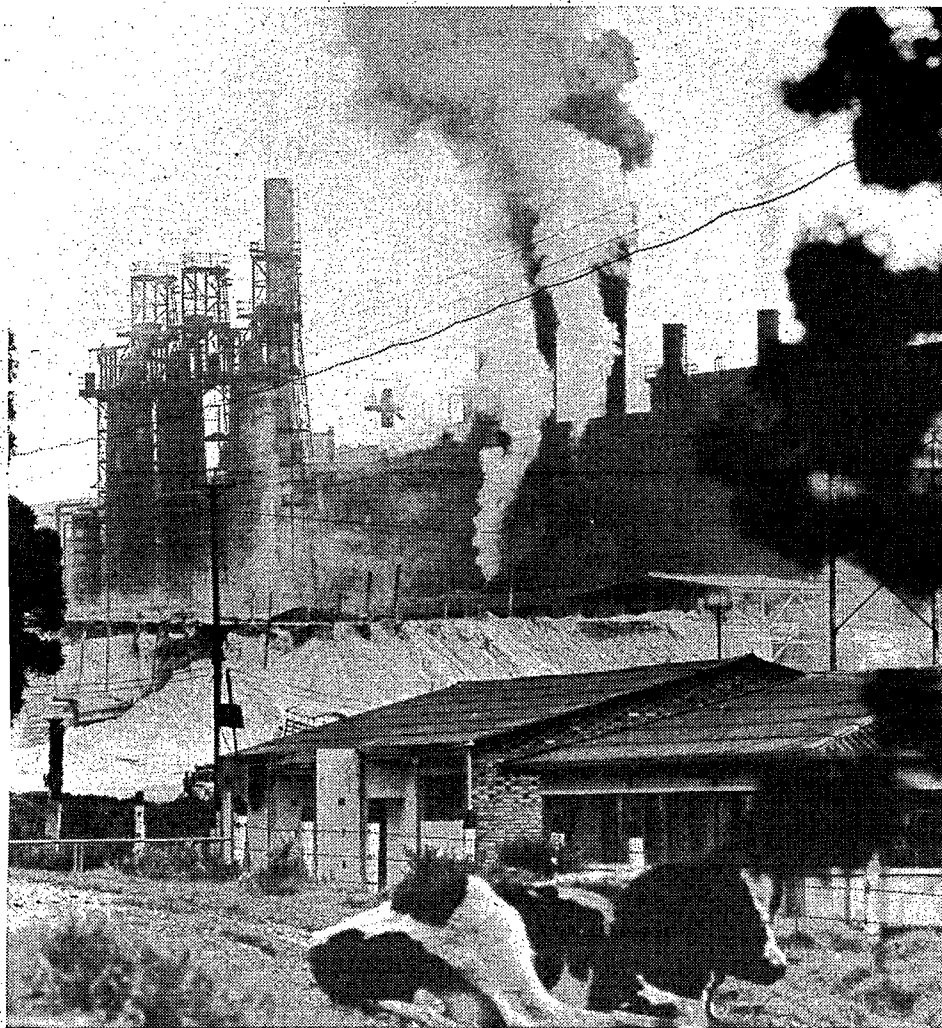
- We are limited by acts which will destroy any sector of our fragile and interconnected ecosphere.

- We are limited by those available natural resources which are finite.

- We are limited by technological state-of-the-art.

- And, most profoundly, we are limited by a lack of social organization within our global village. We are, and will continue to be, environmental and developmental paralytics until the public/political-will and co-ordination mechanisms are in place.

But we have learned that 'growth' and 'development' are not 'four-letter words'. Rather, they are what we now call 'sustainable development' - that is, development which is within the limits imposed by the simple, direct need for self-preservation. So we have to examine the dimensions and boundaries of our 'envelope of freedom' to grow and to act.



United Nations photo  
*A chemical works in Colombia which creates serious pollution problems and yet provides employment and saves foreign exchange for imports*

## OUR NEIGHBOUR'S NOSE

U.S. Supreme Court Justice, Oliver Wendell Holmes, was once required to rule on a civil suit in which one man sued another who had broken his nose at a baseball game. The defendant said he had only been exercising his right to swing his arms, in excitement, during a critical play. Said Holmes, "every man has a right to swing his arms; but that right is circumscribed by the proximity of his neighbour's nose!"

We have already 'bloodied many noses' in our rush to have bigger autos, more comfort and higher incomes. Living on the surface of this time-machine called earth, we now risk 'breaking noses' well into the next century.

## GROWTH IS CRUCIAL

To meet the needs of our global village, the achievement of our full growth potential is crucial, **within** the limits we have discussed. Coupled with this is the absolute need to realize an equally-full potential in the **distribution of resources**. We have already accomplished miracles of growth.

- World cereal production has increased 250 per cent since 1950.

- Industrial production has been multiplied 40 times in 35 years.

- Gross world production is up more than 20-fold since the turn of this century.

## BUT FOR EVERYONE!

At the same time, the gap between rich and poor has widened. 'Progress' and 'prosperity' have been the preserve, increasingly, of a small minority. To say that miraculously-high production can co-exist with widespread poverty is no theory; it is the pervasive fact of this century.

## POSITIVE INTERVENTION

It is time to turn our mastery of natural systems to the common good and the preservation of the global common. Human societies have been 'intervening' and 'interfering' with the natural order of things for at least 10,000 years.

The process began when we first gave-up nomadic life for settled, cultivated, agricultural communities. Today, the descendants of those first people to 'tinker' with nature can use nuclear physics to transmute lead into gold, or genetics to create entirely new life forms. So what must we do to ensure development 'we can live with' - sustainable development - and ensure equity in the future distribution of benefits from new development?

## ADEQUATE EDUCATION

We must ensure that there is adequate education; that there is environmental regulation, inspection and enforcement; and that institutions are created to research, design, and co-ordinate environmentally-sound development.

Those affected by environmental hazards must be empowered to influence the events leading to their distress. We know of countless examples of the ways in which individuals, communities, whole nations and regions are afflicted with environmental damage, and over which they have no control.

## MAKING LINKAGES

- If a farmer takes more than his share of irrigation water, the crops of the small-holder downstream will not grow.

- Hot water discharged from a thermal nuclear plant may destroy the livelihood of hundreds of fishermen whose potential catch has been killed.

- Construction of a new highway may expose all the children living nearby to lead poisoning from passing traffic.

- Careless use of agricultural pesticides may poison the wells of neighbours through contaminated ground-water; and there is, as yet, no technology to purify contaminated ground-water.

- An economic decision to reduce hydro costs, by burning cheaper coal in generating stations in one country, may multiply acid rain to the point of destroying a forest industry in another, thousands of kilometres away.

## RESPECTING LAWS

All our social conventions are based on the assumption that most of us will respect laws and borders. We have difficulty coping with outlaws. But pollution and environmental degradation are international outlaws. They recognize no rules nor international boundaries; they neither carry nor recognize any national flag. No science fiction writer ever invented an enemy more pervasive.

Like some ghostly starship; pollution is able to circle the globe and inflict suffering and destruction on humanity today, into the next century and beyond. To combat a threat which now crosses the boundaries of both time and space, we need new institutions, new tools and new weapons.

## TAKING STEPS ALONE

It has been said that the longest journey begins with a single step. But to begin at all, we must begin with the smallest unit - the individual. However, few of us are willing to initiate change, unless we feel our neighbours will do the same. Until we can reassure one another that we will act responsibly, most of us will go on basing our plans on narrow self-interest. So we must start with education - and education in the broadest sense.

## PROTECT OUR CHILDREN

### AND TOGETHER

(Law, for example, can have an educative element; witness the changes in the use of auto seat belts; think of the improvement in behaviour toward minorities, as human rights laws have been adopted in Industrial Nations. New laws have made some forms of behaviour socially unacceptable.)

Regulation does work as a social inhibition; not just from fear of penalty, but from the knowledge that the majority of our peers will disapprove. We do not want to be embarrassed by seeming to be out-of-step: fewer people inflict their 'sidestream' tobacco smoke on others anymore; fewer drive after drinking alcohol. Both regulation and public education campaigns have been effective in those cases.

### REGULATION IS LIMITED

However, the trans-national nature of pollution, in all its forms, adds a new dimension to the problem of regulation. Canada cannot regulate acid rain emissions in the United States. Tahiti cannot legislate a stop to ocean oil-spills, which may pollute its beaches and destroy bird and plant life.

Argentina cannot control interest-rates in Germany or Britain, which may cripple its ability to provide for its people. Malaysia cannot dictate the price of tin in France, nor India the price of tea in Holland. Bluntly put, no one nation can, any longer, control or protect unilaterally its own economy or environment.

Sweden could not have prevented Chernobyl, though it will suffer the consequences. There are, today, many river-basins and bodies of seawater contaminated by the ships and industrial emissions, not of the countries adjacent to them, but of a hundred other nations far away.

### 'THE COMMON GOOD'

The only cure lies in our urgent recognition of a common interest in survival. An important first step, having recognized our interdependence, will be to embrace it, to distribute economic decision-making power and to trade policy-clout more widely.

The closer our embrace, the more we will feel moved to co-operate effectively and be confident that our efforts will be recognized. **We can scarcely expect those not invited to the party, to help pay for the entertainment!**

Co-operation, if we want it, must come soon. The more threadbare our environment, the greater the gaps and the resentments between rich and poor.

## TOWARDS SUSTAINABLE DEVELOPMENT

Until recently, human activities and their effects were neatly compartmentalized within nations and within sectors - such as energy, agriculture and trade. Now those boundaries have begun to dissolve, as evidenced by the various global crises over the past decade.

"These are not separate crises which can be categorized neatly as a) an environmental crisis, b) a development crisis, and c) an energy crisis. They are all one", the WCED Report warns.

The planet is passing through a period of dramatic growth and fundamental change. Our human world of five billion must make room in a finite environment for another human world. The population could stabilize at between eight and 14 billion people, sometime next century, according to UN projections.

"More than 90 per cent of the increase will occur in the poorest countries, and 90 per cent of that growth is already straining to the limit the facilities of cities", the WCED Report states.

Economic activity has multiplied to create a 13 trillion dollar world economy, and this could grow five or tenfold in the coming half century. Industrial production has grown 50-fold in the past century - 80 per cent since 1950 - and these figures reflect and presage profound impacts on the biosphere.

Poor farmers suffer first and foremost as the land deteriorates, because they cannot afford anti-erosion measures. When mineral resources are depleted, those last 'at table' - the newly-industrializing Developing Nations - endure the greatest hardship. They have no stockpiles, no guaranteed supplies.

When urban air quality is threatened, the poor, who live in the industrial belts and beside the rail lines near the factories where they work, are the first to suffer.

But the wealthier people in the suburbs and on the airy hills, will suffer, too, in time. It would best serve those wealthy families and nations to witness the examples of potential disasters already evident in the neighbourhoods of their less-prosperous peers and nations.

"The mainspring of economic growth is the new technology, and while this technology offers the potential for slowing the dangerously-rapid consumption of finite resources, it also entails high risks, including new forms of pollution and the introduction to the planet of new variations of life forms, that could change evolutionary pathways", the Report warns.

Meanwhile, the industries most heavily-reliant on environmental resources (and most heavily-polluted), are growing most rapidly in the Developing World, where there is both more urgency for growth and less capacity to minimize damaging side effects.

We are now forced to concern ourselves with the impacts upon our economic prospects of ecological stress - degradation of soils, water regimes, atmosphere and forests. Ecology and economy are becoming evermore interwoven - locally, regionally, nationally, and globally - into a seamless net of causes and effects.

"The Industrial World dominates in the rule-making of some key international bodies and already uses much of the planet's ecological capital. This inequality is the planet's main 'environmental' problem; it is also its main 'development' problem. Most of the Developing Countries face enormous pressures, both international and domestic, to over-exploit their environmental resource base", the Report states.

The deepening and widening environmental crisis presents a threat to national security - and even survival - which may be greater than well-armed, ill-disposed neighbours and unfriendly alliances. Already, in parts of Latin America, Asia, the Middle East, and Africa, environmental decline is becoming a source of political unrest and international tension.

"Globally, military expenditures total about one trillion dollars a year, and continue to grow. In many countries, military spending consumes such a high proportion of GNP that it does greater damage to these societies than any outside military threat", the Commissioners warn.

The arms race - in all parts of the world - pre-empts resources that might be used more productively to diminish the security threats created by environmental conflict and the resentments that are fuelled by widespread poverty. The results of the present profligacy are rapidly closing the options for future generations.

Most of today's decision-makers will be dead before the planet feels the heavier effects of acid rain, global warming, ozone depletion, or widespread desertification and species loss. However, most of the young voters of today will still be alive. In the Commission's hearings it was the young - those who have most to lose - who were the harshest critics of the planet's present management", the WCED Report states.



**MANSOUR KHALID,**  
Sudan

*Vice-chairman of the Brundtland Commission. Deputy Prime Minister 1976, Minister of Education 1975-76, President, U'N Security Council 1972, Minister of Foreign Affairs 1971-75, Minister of Youth and Social Affairs 1969-71*

## THE CANARIES ARE DYING

One hundred years ago, coal miners carried canaries into the pits. If a canary lost consciousness, the miners knew there was gas in the tunnel and they got out - if they could. The Industrial Nations, however innocently, have been using the Developing World as a global 'pit canary'. It is time we recognized the danger signals we have been getting.

The global village is no Welsh coal mine! We cannot leave the canary and run for the surface; but we can clear away the gas.

An essential first step will be both to increase and to redistribute income in the Third World. If absolute poverty is not eliminated, there is little hope, as we have seen, of preserving the global environment or the global economy.

The task is less Herculean than it might seem. It is estimated that extreme poverty in the developing world, where it may affect half the total population, could be reduced to a scourge afflicting only 10 per cent of those people, with an annual per capita increase in income of just three per cent.

Compare that figure with the most recent collective bargaining agreement of which you have read. Given population statistics and projections, that would mean an increase in GNP of from five to six per cent in Africa, Asia and Latin America. Possible? Yes!

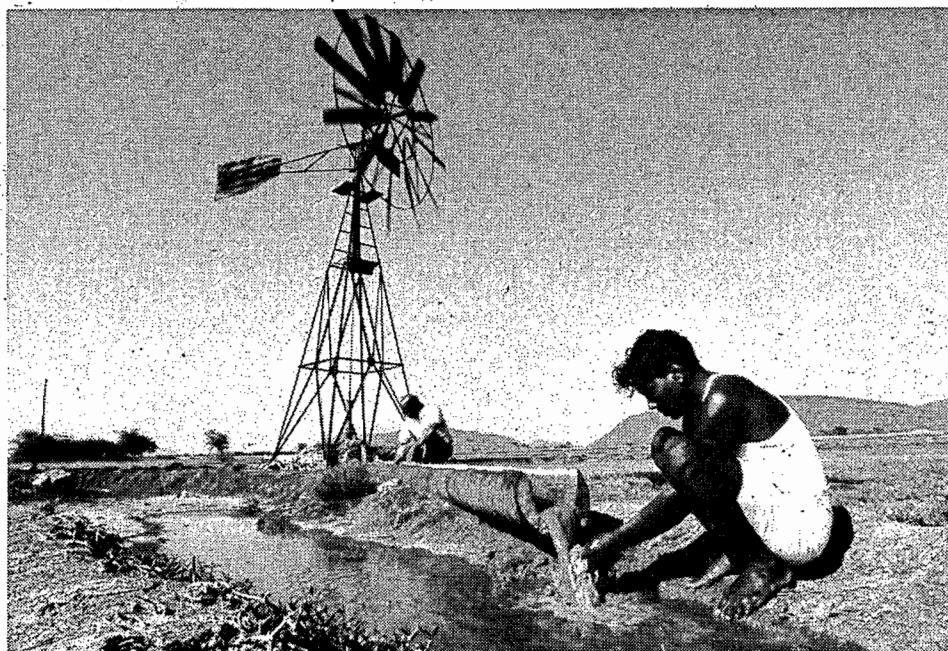
## NECESSITY IS A SPUR

A five per cent increase in GNP is realistically attainable in most Asian countries, including India and China. Latin America had growth rates of five per cent in the '60s and '70s; they were terminated by the international debt crisis. An increase of this order will need a more difficult structural change in Africa. Moreover, those improvements will not just happen; it will take a global effort. But necessity is a great spur, as Samuel Johnson observed: "depend upon it, Sir. When a man knows he is to be hanged in a fortnight, it concentrates his mind wonderfully."

## BAIL THE BOAT!

In hard truth, with regard to the rigid laws which govern the environment/development equation, we are all in the Third World. It is a very small lifeboat and all of us had better be prepared to bail! So global economic equity is a pre-requisite; and so is greater equity within individual nations.

For example, in most Third World nations, income distribution is approximately like this: the top one-fifth of households have 50 per cent of national income; the bottom



*Harnessing the natural energy of wind to irrigate the fields in India is one way of ensuring food for tomorrow.*

Dilip Mehta

half of families have only about 15 per cent. So, if these ratios are unchanged, overall national income would have to double, to reduce the fraction of families below the poverty line from 50 per cent to 10 per cent.

## KEYS TO SURVIVAL...OR

However, if just 25 per cent of new income were diverted to those below the poverty line, a mere five per cent annual increase in GNP would achieve the same effect within one generation. In seeking higher incomes for the Third World, as well as greater productivity in the industrial West, the key to survival lies in **monitoring the quality of growth.**

Industrial Nations have learned to produce more, with less energy, with better management of resources, and even by recycling material which formerly added to our stockpile of pollutants and toxins. In most Industrial Countries, to some extent we are turning garbage into energy, manure into biogas, and waste petroleum sludge into fuel oil. In urging that technology be used to solve economic problems suggests we must find ways, however, to enlarge these areas of expertise, and to transfer those skills to the Third World.

## SCRAPHEAP OF HISTORY?

To control the 'quality of growth' we must also begin adding **all the factors** to our development balance sheets. An industrial economist's spreadsheets which ignore potential environment deficits, are incomplete. Economists or industrial planners who regard sound ecological planning as bad business, or irrelevant to their futures, belong on the same scrapheap of history as those who claim smoking is good for one's health.

The words 'ecology' and 'economics' spring from the same Greek root 'eco'. The Greek 'oikos' described either a house or the management and stewardship of a household. Stewardship is a fair description of the task we face in our global household; and we will need total understanding of both ecology and economics to meet that challenge.

## THE YEAST OF DEVELOPMENT

In considering both the quality of growth and the potential for it, people must always be seen as the centre of our environment. Healthy, literate and well-fed people are the yeast of development, the essential ingredient. Unhealthy, ignorant and hungry people are the greatest obstacle to our survival.

The most basic of all human needs is the means of earning a livelihood; that is fundamental to the other needs of food, shelter and clothing. By the year 2000, we will have 900 million more people in the global village job market; jobs will have to be found for 60 million of them, each year. If they have jobs, they will be on their way to providing proper nourishment for themselves and their families. And that is no mean task.

## TO EAT WELL

If our neighbours, in the Developing World, are to eat as well as those in Industrial Countries by the year 2000, it will take:

- Annual increases in consumption, in Africa, of five per cent in calories and 5.8 per cent in protein.
- Increases of three to four per cent in Asia and Latin America.

To achieve these goals, considerable increases in protein production will be needed, whether from the cultivation of pulses and oil seeds,

the development of dairy industries, or the establishment of family 'fish farm' ponds.

## ENERGY IS CRITICAL

As many as three billion people may live in areas with little or no fuel-wood by the end of the century. Alternate fuel and energy sources must be found and made available. Solutions will range from the fuel-efficient, hand-made, clay 'Hyderabad stove,' to the potential use of super conductors to distribute hydro. The restoration of 'forest cover' by the widespread planting of trees is a vital priority for almost every nation.

Population stabilization is a major goal if we are to manage our ecosystem rationally. Ironically, children born in the Industrial World impose a far greater burden on the environment through their vastly disproportionate use of resources. But while the Industrial World's population will rise only from 1.2 billion to 1.4 billion by the year 2000, Third World populations will almost double, from 3.7 billion to 6.8 billion. The processes which reduced birth rates in Western nations - increased prosperity, economic and social development (including education) are at work in the Third World - but not quickly enough.

## CITIES ARE 'EXPLODING'

Exploding urbanization is equally critical in Developing Nations. Nearly 90 per cent of Third World population increase will be in the cities; and the cities cannot serve their existing populations. Smaller, satellite cities must be planned. Rural families must be encouraged to stay on the land in the only way practical - by making their lives rewarding.

The continuing pressure on our finite resources and the over-use of our renewable resources can only delay Third World development. People without alternatives do not look to the future, when their bellies are empty today. So fishermen increase their catch by using dynamite, and thereby foreclose the potential for next year's fish harvest.

## CONSERVATION CRITICAL

If their fair share of profits was not pre-empted by middlemen and distributors, or shrunk by world commodity price-wars, they might be able to resume normal fishing practice and husband their only income resource.

Above all, the Industrial Nations must help the Third World avoid the dangerous mistakes of Western industrialization. We would have virtually no resources at all if Developing Nations squandered water, energy, food and the rest with the same profligacy inflicted

on our planet by the West over the last half century.

We must undertake major research aimed at adapting materials technology, energy conservation, bio-technology and the other recent industrial state innovations, to Third World needs. We must, too, concentrate more on 'social products'.

### BEGIN WITH CLEAN AIR

Begin with clean air and water; then consider longer 'product life' and more 'uniformity' of products and parts. We can not afford 'planned obsolescence' with our shrinking resources; nor the irrationality of enormous resources used to design and produce parts for products which are 'unique' and useless as replacements excepting for one particular brand and model of auto, razor, refrigerator; nor should we allocate vast resources dedicated to designing a fancier way of wrapping cigarettes, or designing and building machines with the sole function of packaging a candy-striped toothpaste.

### ANTICIPATE HAZARDS

We need, too, to anticipate and plan ahead for ecological risks and hazards, if we are not to rely on spasm-response and ad hoc crisis management when there is a Bhopal, a Three Mile Island, a Rhine River, or a Love Canal disaster. This implies a trans-industry, a trans-sectoral and trans-governmental system of co-ordination to assess and minimize risks.

This is because, while several individual industries may each operate within the letter of environmental regulation, the combined impact of their activities may be deadly. Add lead fumes from autos to acid rain from industry and the 'multiplier effect' may be fatal.

### WITCHES BREW

We can no longer settle for 'adequate' limits for individual ecological hazards. Their total, synergistic impact is what matters. The grieving mother of a dead child will not be comforted by the knowledge that the amounts of mercury, cadmium, lead, PCB, pesticide and dioxin ingested were each at a 'safe level', if the aggregate witches' brew was lethal.

### COMMUNITY INVOLVEMENT

We will have to change the laws if we are to survive. But without informed and active community participation, even world-wide regulation is 'toothless'. Resource management must be decentralized, and the public encouraged to participate at all levels of decision-making. All the components of growth and development policy must be measured against environmental need.

Tax laws, resource development schemes, industrial expansion



*It is the future of our children, and of our children's children, which the Brundtland Report is all about*

plans, trade programmes, agricultural subsidies, investment programmes, energy developments - all must meet environmental criteria nationally and internationally.

In many areas of society we have agreed the 'innocent until proved guilty' philosophy is inadequate to insure public safety. In these areas of so-called 'onus legislation' the accused must prove themselves innocent.

So, for example, we must demonstrate that we have a valid driver's permit; new patent drugs must be proved safe before they are marketed; food products must be proved to be free of contamination.

### ONUS LEGISLATION

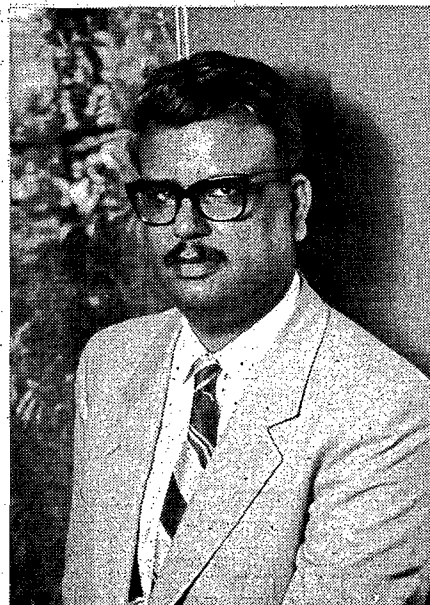
Perhaps it is time for 'onus legislation' in our total environment, rather than just on our highways, in our pharmacies and in our grocery stores. Allowing a 'presumption of innocence' and a 'benefit of doubt' to deadly chemicals does justice neither to their distributors and manufacturers nor to the involuntary consumer, when those killers find their way into our soil, water and air.

Sustainable development can bring about harmony, balance and justice between peoples - and between our human species and nature. It can, however, only come with single-minded and unalterable devotion and effort. Not one of us

on the global common is exempt from the dangers of environmental disaster. So not one of us can 'be excused' from the exercise of our individual and mutual responsibilities.

### NO OBITUARIES

The rules-of-survival are as immutable as the laws of physics. There will be no 'pardons' for us if we fail to obey and respond to the iron imperatives we now recognize and understand; there may not even be anyone to write our obituary!



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## DEVELOPMENT

This century's vast improvements in communications and transportation mean the impact of industrial nation policies on developing-world economies and environments are practically instantaneous.

When any sector of the business, finance, and industrial community in 'the West' catches cold, Third World nations begin to sneeze - and they have far fewer resources to combat the globe's economic ills. ("The West" clearly now includes East Europe and the industrialized states of Asia.) In most cases, in the period since World War Two, 'First World' economic decisions have been against the interests, even the survival, of the Third World.

To ensure development we can live with, two pre-conditions are essential. First, we must guarantee the survival of the ecosphere, everywhere on the planet; and second, 'East-West' or 'North-South' economic partners must be satisfied of the justice of their mutual arrangements.

## DO UNTO OTHERS

So far, the world is largely divided into 'those who do,' and 'those who are done-unto'. What the Industrial Nations have been 'doing to' the Third World scarcely bears scrutiny. The governments of industrial nations, along with their trans-national banks and industries, still seem to be unaware of the dangers we all face, when our neighbour's house is on fire.

## THY NEIGHBOUR'S HOUSE

The danger to one's own home and security can only be exacerbated when one owns the mortgage on the neighbour's house as well! The wiser of our trans-national agencies and corporations have been smelling the smoke for the past two decades. It is about time we organized an international 'bucket brigade'.

Some efforts to rationalize international trade and finance, in line with the needs for sustainable development, have been made; but there has been little evidence of the sense of urgency needed to move as quickly and aggressively as we must.

## FEAR NOW, DIE LATER

Winston Churchill summed-up the need rather well, in a speech to Britain's Parliament in February, 1944. "It is better to be frightened now than killed hereafter." And in 1946, speaking in the United States, at a university in Fulton, Missouri, England's wartime leader made direct reference to the ungoverned dominance of technology and the possible consequences



Maria Antonietta Péru

*Group discussion in Wau, Sudan, ensures that there is understanding about a development project which will lead to local commitment*

for mankind. "The Dark Ages may return; the Stone Age may return on the gleaming wings of science. Time may be short."

Briefly put, the economic and trade policies of the Industrial World have chiefly served to multiply and compound the problems - economic and environmental - of the Developing World.

Increasing debt charges and falling commodity prices have forced Third World countries to abuse and over-exploit resources; they cut timber faster than it can be replaced, causing soil erosion and future flooding, as well as wiping-out a renewable resource base; the same too often applies, as we have seen, to farming and fishing.

## SCREWS AND SPIRALS

Every increase in interest rates, every drop in commodity prices, every new tariff, and every screw tightened in the growing structure of Western protectionism adds to the momentum of the Third World's headlong spiral into poverty and environmental disaster.

Five nations in the Sahel region of Africa (south of the Sahara Desert) - Burkina Faso, Chad, Mali, Niger and Senegal - increased their cotton production 6.78 times in the period between 1962 and 1983 (from 27 million tons to 154 million tons).

While production was rising during these two decades, world cotton prices fell steadily; so even vastly increased production failed to let these sub-Saharan nations keep-up with escalating international debt. At the same time, the Sahel region set a less salubrious import record:

In the early '60s, the Sahel region as a whole, imported 200 thousand tons of cereals annually. In 1984 the region had to import 1.77 million tons of cereals - almost nine times the figure of 20 years earlier.

Some of the increase can be laid at the door of larger population: more blame is attributable to land taken out of food production to produce the cotton needed for export to pay debt charges. But even this equation fails to be a factor in the destruction of arable land by over-cultivation of cotton crops.

## FALL FROM GRACE

The Western world has, to its credit, moved effectively in emergency aid with regard to the drought in sub-Saharan Africa, the floods in Bangladesh, and other crisis areas. But almost every industrial nation has failed to meet the foreign aid goals all have accepted (three-quarters of one per cent of annual GNP). The consequence, for the Third World, is that net flows of resources - money and goods, have actually fallen in real terms in the past decade.

Moreover, the amount of capital expected to be sent to the Third World in the balance of this decade represents only half the amount needed to restore economic growth and stem the rising tide of poverty.

Larger volumes of resources from the rich nations to the poor, in loans and aid, in trade and technology, are vital to the survival of the global village. Those resource exchanges must improve both in quantity and in quality - the targeting of processes and procedures to foster development we can live with.

## LATIN BURDEN

The charge that, despite recent flows of capital, the Third World has moved into a deficit position is not just theory. For instance, in 1979, there was a 'net transfer' to the Third World of 41.4 billion dollars. (This includes loans, aid and investment, after allowing for Third World costs of interest payments, returns on investment to foreign developers.) In 1985, these same countries, excluding Latin America, had a net deficit of 31 billion dollars. In Latin America, the area with the greatest burden of foreign debt, the numbers changed from a net inflow of 15.6 billion dollars in 1979 to an outflow of 30 billion in 1985!

Overall, the Developing Nations are losing ground steadily. Between 1980 and 1985, population growth out-ran economic growth in almost every developing state.

## IMPOSED AUSTERITY

In their desperate efforts to survive, many Third World nations - most especially those in sub-Saharan Africa - have accepted austerity programmes dictated by the International Monetary Fund; this is a prerequisite to receiving the credit they must have, just to meet international debt interest payments.

As a direct result of these Draconian measures, all those nations have had to severely cut social and environmental programmes. Austerity, it turns-out, is merely a new and painful form of slow-motion economic suicide; this is the burgeoning poverty created by austerity - the rising unemployment, hunger, urban crowding et al merely feed more fuel on the flames of environmental destruction, via over-use of resources and declining standards of health and education.

It has been said "truth is the first casualty of war". It would seem, in our war for the survival of the global village, rationality is the primary victim. It is both ironic and self-destructive that conservation is generally ignored in times of economic hardship when it is most needed.

## POVERTY AND HUNGER

Poverty and hunger lead to environmental destruction - which leads to more poverty and hunger.

Higher interest rates and lower commodity prices lead to lower savings and less investment - which mean more poverty, fewer services, less employment and an explosion of poverty, hunger and all their economically-disastrous consequences.

## WE CAN LIVE WITH

### THE VICIOUS CIRCLE:

Witness South Asia where a '60s crisis, similar to today's situation in Africa and Latin America, has been turned around. In South Asia, generally, population growth is down; savings, investment and employment are up; literacy rates, food production, even life expectancy, have begun to rise; environmental management and long-term technological development and planning are becoming the norm.

That is not happening in Africa. Despite massive increases in production, cash income from trade had dropped 10 per cent in sub-Saharan Africa between 1970 and 1985. In the past decade, prices for cotton, sugar, timber, rubber, copper, iron-ore, cocoa and ground nuts (peanuts) have all fallen sharply.

### DEBT SERVICING EARNINGS

In 1980, the sub-Saharan African states had to use 15 per cent of their export earnings to pay interest on foreign debt. By 1985 the proportion of earnings diverted to debt-servicing had more than doubled, to 31 per cent.

Hungry people, it must be remembered, are inefficient workers. They produce less, earn less, and help their nation's recovery less. The long-term aid now planned for Africa is not enough. Without dramatic change in the levels of aid, the problems will get worse.

### ENDANGERS STABILITY

International debt threatens the Industrial World's stability as much as that of Developing Nations. This is, not the least, because people who are deeply in debt stop being consumers. Here are two cases in point.

- 30 per cent of the globe's international debt (of roughly 950 billion dollars) is owed by four Latin American nations - Mexico, Brazil, Venezuela and Argentina.

- Latin American imports from the Industrial World have fallen by 40 per cent, in real terms, over the past three years.

There is no coincidence there - simply cause and effect. Almost 40 per cent of Latin American export earnings, now, are used just to service international debt. That leaves very little hard currency to buy any products or services from the West.

### ASK YOUR BROKER

Ask any investor, any international banker, and any executive of a trans-national industry what is their first priority when operating in a foreign state. All will give the same answer - stability.

## The Role of the International Economy

Our civilization now has the ability to make development sustainable. It is the only way to meet the needs of the present without compromising the ability of future generations to meet their own needs, the WCED Commissioners conclude in Chapter Three of their Report.

The concept of sustainable development, the Commissioners state, incorporates two key concepts. Firstly, the concept of needs - in particular, the essential needs of the world's poor, to which over-riding priority should be given.

Secondly, the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs. There are many warning signs throughout the Report telling us we have already reached the limitations on the ability of the biosphere - that part of the planet which sustains carbon-based life - to absorb the effects of human activity.

"The Commission believes that widespread poverty is no longer inevitable.

Poverty is not only an evil in itself, but sustainable development requires meeting the basic needs of all and extending to all the opportunity to meet their aspirations for a better life.

"Sustainable global development requires that those who are the most affluent adopt lifestyles within the planet's ecological means", the Report states. Motivating people to do this requires a change in mindset.

Instead of regarding world population-growth as a harbinger of doom, people, the Report states, should be regarded as a country's greatest natural resources, valuable assets which can be used to guarantee sufficient for all in a pleasant environment.

Breakthroughs in any field of human endeavour, from industry to agriculture, are always a result of hundreds and thousands of small improvements and increments by working people, rather than major breakthroughs by a single individual. This is why the WCED Commissioners say that community participation and local initiatives are the keys to sustainable development.

"In the end, sustainable development is not a fixed state of harmony, but rather a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development and institutional change are made consistent with future, as well as present, needs.

"Thus, in the final analysis, sustainable development must rest on political will", the WCED Report states.

### START AT GRASSROOTS

In the past, loans for fishing, farming, timber and industrial projects have tilted towards short-term profits, rather than enduring, sustainable development. Broadly speaking, small-scale development holds the best hope for environmentally-sound growth. We need to 'tie' less of our aid to Western commodities and materials and put a much larger proportion of aid into grassroots programmes.

Happily, the World Bank has now decided to make environmental factors central to its loan decisions and project evaluations. This is crucial because other lending institutions - and governments - tend to use World Bank procedures and priorities as bench-marks for their own activities.

The International Monetary Fund should follow the lead of the World Bank. Beyond this, the World Bank and IMF should develop new methodologies for environmental impact studies and plans for integrated or sustainable development, which can be implemented by Third World nations.

### REVERSE THE TIDE

In trade terms, the Developing Nations cannot survive, let alone prosper, if the rising and self-defeating tide of Western protectionism defeats their efforts to diversify their economies.

As of now, in what are called the 'least developed nations' - the poorest of the Third World countries - 73 per cent of all exports are from sales of primary commodities. That

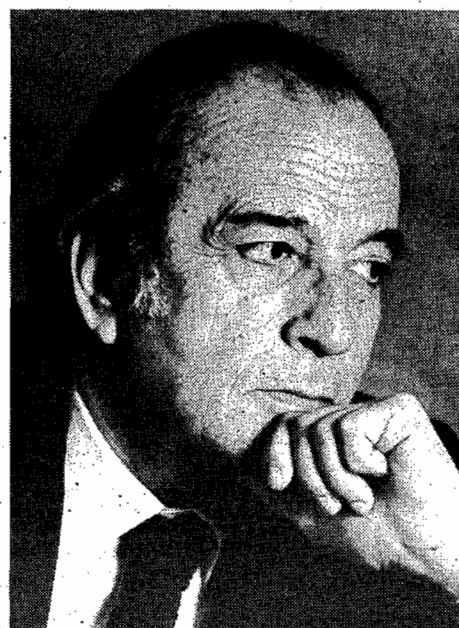
Stability is unlikely in any country where social and educational services are being cut, unemployment increasing, and urban crowding and dislocation are exploding - largely because of rising foreign debt payments, slumping commodity prices and accelerating Western protectionism.

Global stability is crucial to the Industrial World where, between 1960 and 1980, the share of mineral imports from the Third World used in manufacturing (other than oil) rose from 19 to 30 per cent.

### FAIR WEATHER BANKS

Yet commercial and international lending to the Third World has fallen sharply during the same period. The bankers have proved to be 'fair weather friends' to Developing Nations. When times were good, the Western banks were competing to loan money to the Third World; when global recession tightened the noose on growth and interest rates rocketed to historic levels the 'tap was disconnected'.

Simple survival dictates large increases in the money made available to the World Bank (the International Bank of Reconstruction and Development - IBRD) and through the International Monetary fund (IMF) - and increases in global lending by the commercial banks. But the 'quality' of loans is a paramount consideration.



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Mexico

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## (CONTINUED)

figure is a recipe for economic disaster. In 1985, the United Nations Conference on Trade and Development (UNCTAD) estimated world commodity prices (excluding oil) had dropped 30 percent since 1980 - in both real and dollar terms.

**"SURPLUS DEPRESSION"**

While the Industrial World has begun to pull-out of the recession of the early '80s, the Developing Nations have failed to improve their lot - commodity prices are still at their lowest point - not the least because, desperate to earn funds to pay foreign debt, the Third World nations have accelerated production and, thereby, created stock-piles and surpluses which have depressed prices even further.

**NO SHOCK ABSORBERS**

Developing Nations do not have the shock-absorbing price supports offered to farmers, mineral producers and others in Industrial Nations. Some system of price stabilization is fundamental to Third World prosperity and growth.

Where non-renewable resources are concerned, Third World governments should ensure that any leaseholder-exploiter should guarantee to undertake exploration sufficient to prove new reserves, at least equal to those being removed; that the ratio of production to proven reserves must be kept at a fixed and sustainable level; and that funds generated by royalties should be used in a way that compensates for the declining income when the resource deposit is exhausted. (A Canadian example would be the "Heritage Fund" instituted in Alberta, where, by petroleum royalty revenues are intended to finance new development, 'after oil'.)

Those who exploit or 'develop' resources must have responsibility for environmental control measures and the restoration of land and other resources dislocated during extraction of resources.



UNICEF/Ray Witlin

*Teaching reading and writing skills to these Bolivian women is one way to ensure they will be able to participate in community decisions.*

**NUDE MOUNTAINS**

A classic example of the failure of industry in this area can be seen in the barren, eroded hillsides and valleys of Appalachia following strip-mining in the U.S. states of Kentucky, Virginia, and Missouri; another example can be seen (by air) on the West coast of British Columbia, in Canada, where 'clear cutting' of timber has created irreversible erosion of denuded mountain-sides.

Most Third World nations lack the experience, the expertise, or the resources to police resource-development efficiently. They need help. The World Bank, the IMF, Western aid agencies and UN agencies could, and indeed should, develop further their work on model contracts and guidelines incorporating these principles.

**BITTER SWEET HARVEST**

The industrial West has been promoting the production of sugar beets, to the detriment of sugar-cane exporters. Let us see why that matters.

a) Sugar-beet production is highly capital-intensive.

b) Sugar-beet production depends heavily on the use of chemical herbicides, and, because of the way it leaches nutrients from the soil, has much less capacity to regenerate and produce in successive years than does sugar-cane.

c) There are 30 million Third World people who depend, for their entire livelihood, on sugar-cane production. The national economies of many nations, such as Fiji, Mauritius and several Caribbean islands (including Cuba) depend entirely on sugar-cane exports.

d) Sugar-cane can be produced much more cheaply, is labour intensive, does far less ecological damage, and can preserve a number of Third World national economies. Yet the Industrial World persists in promoting sugar beet production.

**HIDDEN COSTS**

There are 'double standards' at work throughout the Industrial World's relations with the Third World. If industrialized state transnationals had to meet the same pollution standards, required of them 'at home', in their activities in the Third World, their costs, in 1980 alone, would have risen by 14.2 billion dollars! These costs relate only to environmental pollution, and not to the economic 'damage' costs associated with resource-depletion and ill-health.

**NO LOCAL LAWS**

Sadly, as industrial states 'export' environmentally - and occupationally - dangerous technology, which is no longer acceptable in Western countries, Third World politicians often see the transfer of destructive technologies and 'pollution intensive' systems as an 'opportunity' to develop industry and employment and they do not

enact the local legislation necessary to protect their own environment. This factor means, therefore, that Western imports that do conform to Western standards, cannot compete with local products.

So Indonesia and other nations have a whole new generation of 'grannies' - young women whose sight has been afflicted by the fumes from solvents used to clean micro-chip components in radio, computer and television assembly systems.

Tobacco companies send their high-tar products to the Third World, with the rationale that 'people in the Third World like stronger cigarettes'!

**DOWNSTREAM EXPORTS**

Environmentally-obsolete or downright dangerous technology, products, and processes too often find their way to Developing Nations. In Canada, when U.S. markets closed to asbestos products, the government invested millions to market that life-destroying product in the Third World, where there was, in the memorable words of a senior spokesman for the Department of Mines, 'less market resistance'.

A typical Third World result of such self-serving, myopic policies can be seen in a Sri Lankan ditch, where lethal asbestos fibres are to be found floating in the water emitted by an asbestos factory built with foreign aid.

**SLOW-MOTION BHOPALS**

The trans-nationals of the Industrial World must, like their governments, begin to play a direct role in fostering sustainable development. There are too many slow-motion 'Bhopals' en route to disastrous fulfillment in the Third World.

The trans-nationals dominate the world in primary commodities trade. So the world's environmental development problems cannot be solved without their participation. Nor can the trans-nationals survive this century or the next without those solutions.

We have already observed the utter futility of assuming Developing Nations can resolve all their own problems without outside help. They lack not only the resources, but also the control.

**RESTRICTED PARTIES**

As an example, between 80 and 90 per cent of all the world's trade in tea, coffee, cocoa, cotton, forest products, tobacco, jute, copper, iron-ore, and bauxite is controlled, in each case, by a cartel of the three to six of the largest Western trans-nationals.



Credit: The Ottawa Citizen, 18 September, 1987

So it is not that the trans-nationals 'will have' a role to play - they are major players now. What is needed is a change in the ground rules and a reassessment of the objects of the game.

Many corporations have recognized the need to share marginal skills and technological know-how with host-country nationals, and to pursue profit-seeking objectives within a frame-work of long-term sustainable development. But most Developing Nations must bargain from weakness, when dealing with the trans-nationals.

Not only do these international giants control most commodities as noted above, but the annual budget of most major trans-nationals is often greater than the entire GNP of the Third World countries where they operate. Small wonder that these often tiny and usually-poor nation-states take what they are offered - which is too often the 'export' of pollution-intensive industry to the Third World coupled with their unregulated exploitation of non-renewable resources.

At present, for example, about one-quarter of all direct investment in the Third World by the United Kingdom, Japan and the United States is in the chemical industry - maybe the industry with the highest rate of environmental risk. Agriculture, mining and other extractive industries use-up another 25 to 30 per cent of major Western investment in the Developing Nations.

## LEVEL PLAYING FIELDS?

Until there is 'a level playing field', as between the industrial conglomerates and the politicians of the Third World, there can be neither equity, trust nor effectual plans for a safe environment.

It is both a critical and an urgent task to strengthen the bargaining position of Third World nations in their dealings with trans-nationals. Regional and international institutions can and must help. Technical assistance and advisory teams must be made available to work with individual countries when they go to the bargaining tables.

## GLOBAL 'SWAT' TEAMS

These 'squads' of skilled advisers would function as roving global 'SWAT' teams - protecting the environment and its chief dependents, the citizens of each nation. The resources brought to each negotiation by those environmental/developmental strike teams would include comprehensive data on the standards applied to environmentally-hazardous processes and products in the home countries of the trans-nationals; this would help guarantee those same levels of environmental protection are exported to



the Third World, along with investment and other elements of development.

There must also be an urgent and concerted effort to add the pragmatic realities of environment and sustainable development to the 'rules of the road' for trans-nationals operating in the Third World. Both the OECD and the United Nations should take a lead in adding these critical issues to current discussions of international, corporate Codes of Behaviour.

## TECHNOLOGY HOARDING

A far greater exchange and transfer of technology is crucial to developing the kind of growth we can live with. An organized and deliberate effort to develop new technology is essential; but a far greater freedom of exchange, with regard to existing technology and equipment, is fundamental to the survival of our global village. Corporations and governments cannot, anymore, justify hoarding information. To claim patent, copyright or vested-interest protection of crucial knowledge in today's shrinking world is an act of wanton, global negligence. It is as though, seeing a man bleeding-to-death on the roadside, we refused to explain how to tie a tourniquet.

In 1980 alone, developing countries paid the industrial West about two billion dollars in royalties and fees for scientific and technological data and products. That system may make short-term economic sense to individual corporations, but given the thin resources of Third World nations, it makes a mockery of efforts to sustain resources.

## SHARING PLAGUES

Even in terms of Western survival, the system of charging Developing Nations for essential technological knowledge is about as sensible as charging our neighbours for cholera vaccine, when we know their plague will surely infect our children, too, if we do not help them avoid the disease.

Proprietary rights spring from a system the world may no longer be able to afford. We all share proprietary rights in global survival; we can only protect those rights through a system of international co-operation and control.

## PROFITS AND PROPERTY

Infinitely more research is needed - though not necessarily infinitely more money. Most international

research and development funds are now spent in pursuit of military goals; a much smaller amount goes to enhance the commercial objectives of large corporations.

One assumes the globe would survive without the investment of millions of dollars to research and develop an infantry rifle weighing four ounces less than the current model; the sum could better be spent developing new generations of productive cereal seed, economic village biogas systems or a safe-water technology.

Bio-technology is an acutely vital area of development for Third World survival and success. Developing Nations can do a lot through the establishment of co-operative, co-funded regional research centres. But the Industrial States must help.

## KICK-STARTS NEEDED

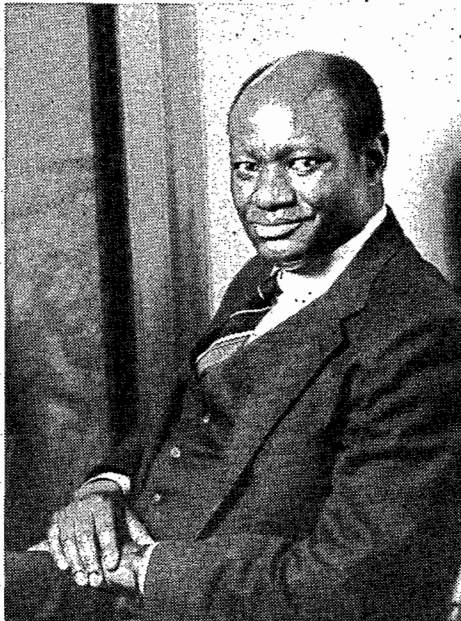
The West must also assist Developing Nations in their expansion of export trade - especially in areas which will sustain rather than demolish resources. The economies of Third World states must be given the 'kick start' needed to bring them to the level at which they will become self-propelling. But this means reversing current trends. Rising protectionism and declining international co-operation and multilateral agreement have been the depressing pattern of the past decade. Isolationism and a pre-occupation with self are no longer luxuries we can afford.

## CIRCLING LIFEBOATS

Our global lifeboat is almost dead in the water; if we leave all the rowing to those people on the other side of the vessel, we will continue to simply turn in circles of futility. We have adequate charts for survival, and sound compasses to locate the direction of sustainable growth; but both are useless as long as we rest on our oars.

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Zimbabwe

*Minister of Finance, Economic Planning and Development; Chairman, Development Committee (the World Bank and the International Monetary Fund); Member, UN Committee for Development Planning; Member, Board of the World Institute for Development Economics and Research; Director, Commodities Division, United Nations Conference on Trade and Development (UNCTAD) 1968-77; Deputy Secretary General, UNCTAD 1977-80*



# HUMAN RESOURCES

There are a series of ironic equations associated with population. Here are some examples. Poverty breeds population. When a large proportion of infants and children die, large families are the only 'pension plan' poor families can arrange.

Some aid-giving nations (most specifically, the United States) disapprove of, politically, some methods of population control such as state-supported abortion; so they refuse to support Third World population control schemes. This can only exacerbate the problems of exploding populations which have to use much of their 'development' aid funds in medical and food relief.

The finite resources of our global village cannot support an infinitely-growing population. But we do need more people to develop the resources we have - especially trained and skilled people.

That said, the present rates of population growth cannot continue if we are all to survive. At the beginning of 1985, we were 4.8 billion people; 80 million more were added to our number in that year alone. More critically, however, most population growth is to be found in poor families and in regions where resources are already stretched to the breaking point.

## WEST WINS: 1:30

Another irony is that one child added to the population of the Industrial World will use at least as much of the globe's resources as 30 or more children would use in the Third World!



20 TRIBUTE  
to Aljo Serrano

Just as we must improve the quality of aid and development, some must increase the quality of life for our neighbours in Third World Countries. They must be encouraged and helped to be more resourceful, to realize their full potential and to improve individual, human productivity. At the same time, social support systems are essential to persuade poor rural families they need not have so many children to guarantee a source of income when they grow older.

## LITERACY VS. FERTILITY

Literate women marry later, space their children, and have smaller families. No global effort to reduce population growth can be effective without a major and calculated effort to foster women's rights. So self-determination for women is basic to the salvation of our global village. Education and the increment in self-determination, which follows, are dependent on development.

## GROWING UP!

Thus, we can only 'grow' our way out of the population explosion. For without more development, we cannot hope to curb the current, ungovernable increases in population.

Another point to note is that regardless of current efforts, the world's population will continue to expand over the next 30 years, or more. The momentum already in place cannot be reversed in this generation. It has been said that the half km-long super oil-tankers, if thrown into reverse, cannot stop in a distance of less than six and half kilometres - because of their momentum. Our population growth is like that.

## BULGE IN THE BOOM

In the Developing Nations, in 1980, four people in every 10 were under 15 years of age. Contrast those figures with the Industrial World where, in the same year, only two in 10 were 15 or younger. The consequences are inevitable. The youthful population 'bulge' in the Third World means populations will continue to grow over the next two or three generations, as those children reach marrying and child-bearing age.

In contrast, 11 per cent of Industrial State citizens are more than 65 years old, as compared with a mere four per cent in Developing Nations; so, in the Western nations, more and more resources will go to the support of the elderly, who already use a vastly disproportionate share of medical and social budgets.



Dirk Aberson, Brandon Sun photo

## NO MAGIC FORMULA

We must, in any event, begin with the realization there is no 'magic' formula, and no immediate panacea for population growth. Family sizes are being reduced and population is stabilizing in much of the world - most notably in Asia. But in the global context, the population is going to grow a lot more before it finally stabilizes, no matter how intense and effective our efforts may be.

The obvious question is can we feed that growing number of inhabitants in our global village? The answer is a conditional "yes". A joint study by the Food and Agriculture Organization (FAO) and the International Institute for Applied Systems Analysis indicates we can feed one and a half times our projected population in the year 2000 - which would then be 6.1 billion people. And we can do this even with a low level of agricultural technology.

## CAN WE FEED OURSELVES?

The survey covered 117 nations and provides figures for aggregate food production. The situation, however, is less optimistic in many individual nations - where 64 countries with a total population of 1.1 billion cannot now feed themselves.

Even with advanced agricultural technology, there would be 19 countries unable to produce sufficient food for themselves. However, those countries, which are mostly small island states, have generally high incomes, and they can afford to import foodstuffs.

The 'theoretical' potential for global food production is stunning. Given the best appropriate technology, it is estimated that roughly 1.5 billion hectares which is now under cultivation could yield two and a half times as much food as at present - up from an average of two tons of grain, or its equivalent, to five tons per hectare, per year. And there is an approximately-equal amount of arable land which is now used as permanent pasture, much of which could be cultivated.

Ignoring for the moment, however, that vast reserve of pasture, if we add the production from rangelands and from marine resources, the annual total of food production is believed to be capable of reaching 8 billion tons of grain or its equivalent annually - which is enough to feed 11 billion people at current consumption levels!

In the Third World, however, those estimates are grossly inadequate. If nutrition levels are to rise

## IN THE GLOBAL VILLAGE

### COMMON CHALLENGES: POLLUTION AND HUMAN RESOURCES

Urgent steps are needed to limit extreme rates of population growth. The issue is not just numbers of people, but how those numbers relate to available resources. Thus the 'population problem' must be dealt with, in part, by efforts to eliminate mass poverty, and by education to improve human potential to manage those resources", Chapter Four of the Brundtland Commission Report concludes.

But, the Commissioners state, there will be no real change in the world until the governments and major institutions which run it are themselves changed. Governments have failed to understand and act upon the simple but obvious realization that people are the ultimate resource.

"Governments must work on many fronts to limit population growth, to control the impact of such growth upon resources, and to realize human potential, so that people can better husband and use resources", the Report states. The means of accomplishing these goals will vary from country to country, but all should keep in mind that sustainable economic growth and equitable access to resources are two of the more certain routes towards lower fertility rates.

In the final analysis, and in both the developed and developing worlds, the population issue is about humans and not about numbers. It is misleading and an injustice to the human condition to see people merely as 'consumers'.

"Their well-being and old age security, declining child mortality, and health care are the goals of development. Almost any activity that increases well-being and security lessens people's desire to have more children than they, and the national ecosystems, can support", the Report says.

Governments and international organizations should assign top priority to environmental and development concerns and adapt their management structures to reflect this new reality.

Human resource development is a crucial requirement - not only to build-up technical knowledge and capabilities, but also to create new values to help individuals and nations cope with rapidly changing social, environmental and development realities.

Knowledge shared globally would assure greater mutual understanding and create greater willingness to share global resources equitably. Human resource development demands knowledge and

skills to help people improve their economic performance.

Sustainable development requires changes in values and attitudes towards environment and development - and indeed, towards society as a whole - at work in the home, on the farms, and in the factories.

The world's religions could help provide direction and motivation in forming new values that would stress individual and joint responsibility towards the environment and towards nurturing harmony between humanity and the environment.

"Improved health, lower fertility, and better nutrition will depend on greater literacy and social and civic responsibility. Education can induce all these, and can enhance a society's ability to overcome poverty, increase incomes, improve health and nutrition and reduce family size.

Indigenous or tribal peoples remain isolated because of such factors as physical barriers to communication or marked differences in social and cultural practices. Such groups are found in North America, in Australia, in the Amazon Basin, in Central America, in the forests and hills of Asia, and in the deserts of North Africa.

The isolation of many such people has meant the preservation of a traditional way of life, in close harmony with the natural environment. These communities are the repositories of vast accumulations of traditional knowledge and experience that links humanity with its ancient origins.

It is a terrible irony that as formal development reaches more deeply into rain forests, deserts and other isolated environments, it tends to destroy the only cultures that have proved able to thrive in those environments.

The starting point for a just and humane policy for such groups is the recognition and protection of their traditional rights to land and other resources that sustain their way-of-life - rights they may define in terms that do not fit into standard legal systems. And this recognition must also give local communities a decisive voice in the decisions about resource use in their area. These are some of the highlights of the recommendations in Chapter Four which are expanded and analyzed on this page by Warner Troyer.

to a reasonable and healthy level, the world's 'carrying capacity', with regard to the food/population equation, is nearer 7.5 billion.

#### PROSPERITY VS. POPULATION

Economic development reduces fertility rates. So international policies which impede Third World development - including Western protectionism and low commodity-prices - have a literal and direct effect, which is counter-productive to population planning in Developing Nations.

Conversely, almost any activity to increase material comfort, well-being and human security reduces the tendency to have more children than individual families (and the nations where they live) can comfortably sustain.

#### EMIGRATION VS. BRAIN DRAIN

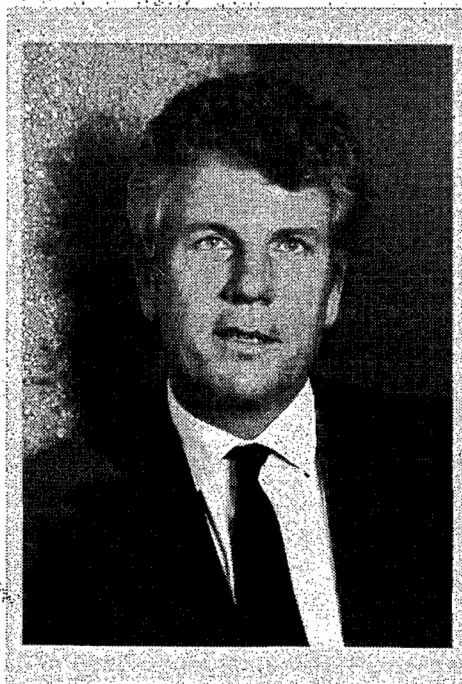
Population explosions are no new phenomenon. They began, in the mid-1700's, with the Industrial Revolution, and the parallel improvement in farming techniques. Our more recent and urgent problems date back only to around 1950.

In the Industrial World of Europe, Japan and North America, populations multiplied by a factor of five between 1750 and 1950. But the industrial West had a safety valve. Between 1880 and 1910 alone, 20 per cent of the population increase was siphoned off by emigration. No comparable solution is available in the Third World today; indeed, today's Third World emigrants, unlike Europe's of the 18th and 19th centuries, are not crofters and factory workers, but businessmen and professionals whose skills are most urgently needed at home.

#### 10.2 BILLION LEVEL-OFF

Current estimates state the world will have a population of 8.2 billion by the year 2025. If the world's population stabilizes by 2010 (a difficult goal) the globe population will 'level-off' at about 7.76 billion people by 2060. If, however, stabilization is not reached until the year 2035, the total world population will 'level-off' at about 10.2 billion in 2095.

If we fail to halt our population explosion until 2065, (eighty years from now) by the year 2100, we will have a population of 14.2 billion. Since, at the best estimates,



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(CONTINUED)

we can feed only 11 billion, one has to assume mass starvation - in the order of as many people as are now alive on earth - in such a 'worst case' scenario.

## OVERLOAD SYSTEMS

Demography plays as great a role in population equations as do birth rates. Since 1950, for example, the total number of city dwellers has quadrupled in the Developing Nations. The subsequent social, economic and political pressures have been horrendous, and they will multiply as those cities continue to grow.

For example, in Colombo, the capital city of Sri Lanka, the antiquated water and sewerage system, installed by the British almost 100 years ago, was meant to serve a population one-tenth the size of today's figures. No Third World government has the means to refurbish, modernize and expand such systems to meet today's needs, let alone those of next year - or the next century.

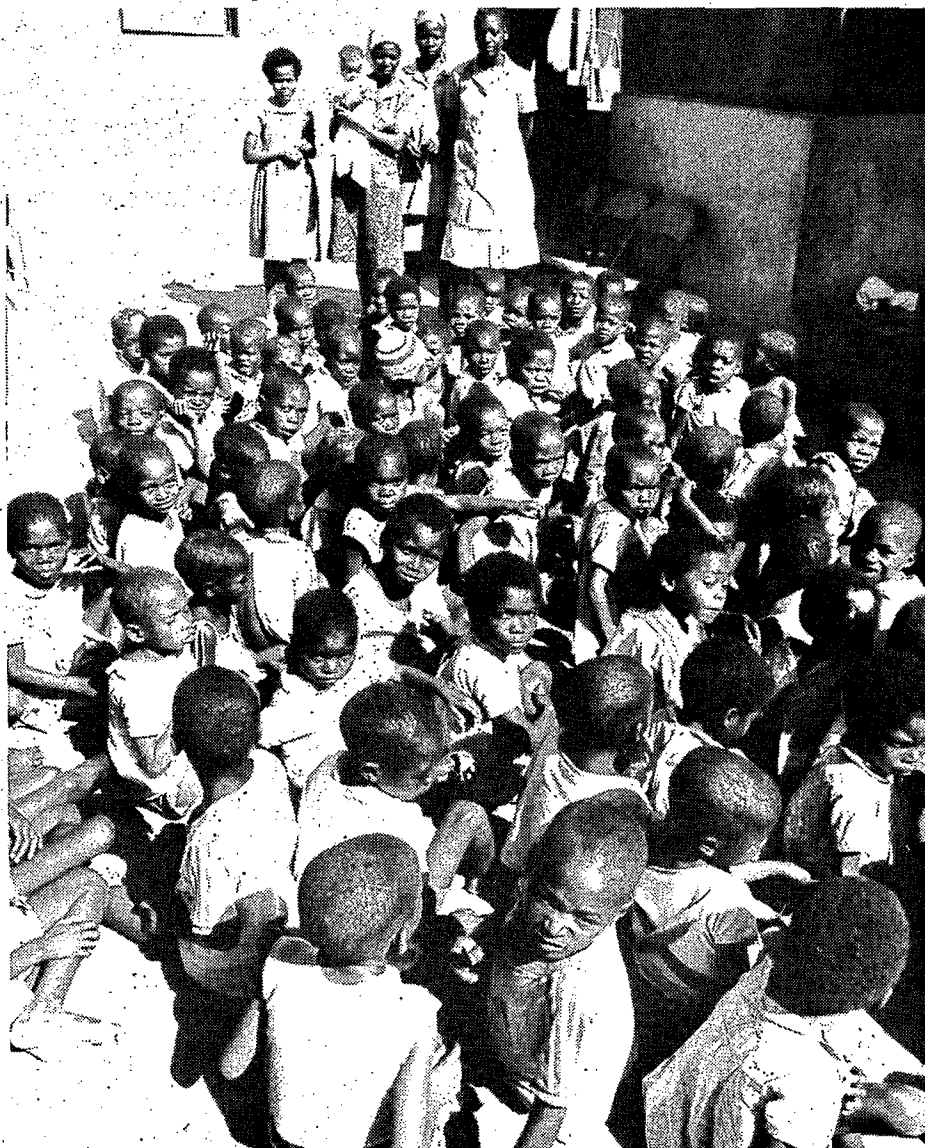
## RISING EXPECTATIONS!

It is interesting to note that life expectancy has risen and infant mortality rates have fallen almost everywhere in the world. It is interesting, too, to observe that similar changes were experienced in the industrial West, before the advent of modern antibiotics and other 'miracle drugs'. In the West, 50 years ago, as in the Third World today, the major change followed improved education, nutrition and hygiene.

Let us consider a further point, lest those in the West become arrogant about their progress. In 1920, life expectancy was lower, and infant mortality rates higher, in New York, Tokyo, Berlin, Paris, Rome, Moscow and London, than is now the case in Bangladesh, Haiti, Ethiopia, Brazil! The Third World is, in terms of ten thousand years of recorded human history, just a 'hic-cough' behind the Industrial World.

Poverty, alone, is not the barrier. In some areas, India's south-west Kerala state, and Sri Lanka are notable examples, high literacy rates have resulted in low fertility figures, low infant mortality and high life-expectancy, despite average incomes much lower than in surrounding areas.

These successes must be duplicated throughout the Developing World if we are to manage our global village for everyone's benefit - and for everyone's survival. For a start, politicians and other policy-makers must understand that 'productive' and 'economic' policies are indivisible from 'social' policies.



A UNICEF project in Angola providing shelter and an extended nutrition programme to the many orphans in that country.

## BUILDING PEOPLE-POWER

Increasing human potential towards its ultimate capacity is our greatest challenge. That can only be accomplished, in the Third World, with a reduced size of families, and the freedom and power-of-choice that those changes will bring to women and, thereby, to their families.

At this time, only 15 cents of every 10 dollars spent on foreign aid goes to help in population programmes. That is not enough.

Moreover, family planning and child-spacing programmes are usually isolated from other development goals. The most successful schemes are those which have combined family planning with rural development, water and sanitation projects:

In Zimbabwe, early efforts to help women 'space' their children have led, unexpectedly, to greatly reduced family size. Zimbabwe now leads all sub-Saharan Africa (which is still the area of highest fertility in the world) in reduced birth rates.

## COUNT THE TAPS!

When many children die, parents decide to have larger families. It matters, therefore, that 1.7 billion people (more than enough to populate every major city on the globe) still lack access to safe water supplies. And almost as many (1.2 billion) have no functional sanitation facilities.

To assess the potential for a healthy existence in any Developing Country, do not count the number of available hospital beds - count, instead, the water taps, the latrines, the safe wells and the school-rooms in the villages.

Industrial and growth policies must, in future, be governed and assessed on the basis of their impact on public health, environment, occupational safety, and their effect on human settlements. No other criteria are appropriate.

## HEALTH FOR ALL?

The World Health Organization's "Health For All by the Year 2000" strategy must be broadened far beyond concern for medical workers and clinics - for only holistic measures can save the global village. Until we make concerns for primary health and the training of community health workers the central priority of every developmental activity, "Health For All" will remain a bitter illusion, not a realistic aspiration.

Current world-wide efforts to make immunization and oral rehydration therapy for diarrhoea victims universally available are fundamental to our mutual self-respect and our survival. One child dies every six seconds, in the Third World, from the dehydration caused by diarrhoea. That is five million deaths, every year, which is as many children dead every six years, as all the people killed in World War Two!

## ONE EVERY SIX SECONDS

Another child perishes every six seconds from lack of immunization. Last year, measles killed two million children - a number equal to the entire population of Montreal or Toronto.

As lifestyles change in Developing Nations, new threats to health arise. In the 1700's, Europe 'exported' syphilis, typhoid, small-pox and tuberculosis to the New World. Today's 'exportable' illnesses will include cancer and heart disease (and especially so long as Industrial Nations ship their highest-tar tobaccos to Developing Nations). Better public health education, therefore, is mandatory for the Third World.

## AIDS: NO SAFE PLACE?

We must stop being shy about Acquired Immune Deficiency Syndrome. AIDS is now a fact of international life. Millions are going to die of AIDS; in parts of the Third World, whole societies and economies may be disrupted. This is another case of 'our neighbour's house is on fire', and this time, our house is on fire too. Now is the time to summon the fire brigade. Unfortunately, many powerful resources to aid in our mutual survival are being ignored, or are under-exploited.

## HOLY BOOKS HELP TEACH

For example, in Egypt and other Muslim states, UNICEF uses Koranic verses to emphasize the lessons of sanitation, child health protection, immunization, et al. and the "imams", or religious leaders, read the verses in the mosques. Religious organizations around the world represent an enormous tool for development, health and survival.

So, too, do such groups as Boy Scouts and Girl Guides: already, 25 million of these youngsters have been enlisted to help implement global immunization programmes. Rotary International's POLIOPLUS campaign is the largest effort, in dollar-terms, ever launched by a non-governmental organization.

## ONE IN FOUR CAN'T READ

But still we are falling behind. The gaps between rich and poor are spreading. Illiteracy is rising, despite major efforts to improve educational-access in the Third World. By the year 2000, there will be 900 million of our global neighbours who can neither read nor write. That is one person in every four, living today, who is unable to write his or her name on a voters' list. Those people will be unequipped to make life and death decisions for themselves or their children about health care, immunization, nutrition, occupation.

In Ethiopian nursery schools, four and five year old children must each plant a tree on their first day in class - and water and cultivate that seedling daily. Such lessons in conservation, reforestation and survival are essential to reclaiming, restoring and retaining our global village.

We still are not doing enough in public education. Architects regularly dedicate one per cent of the total cost of an office tower to 'aesthetics' - fountains, sculpture, ceramics and murals - but many agencies fail to allocate a sou/nickel/farthing/yen to public education.

### NEW TEACHING TOOLS

Radio and television probably offer the best teaching tool since the original log with an instructor sitting on one end and pupil on the other, but we have failed to use, to their full potential, these best-of-all-possible means for changing attitudes and upgrading skills.

Finally, in examining the globe's population, it is time we devoted some special attention to those small pockets of tribal and 'indigenous' peoples who have been the chief victims of much recent development.

### CULTURAL GENOCIDE

Many such groups live in isolation; in Latin America, many have suffered near cultural-extinction at the hands of developers. We owe those global village neighbours the right to some choices.

We must not either keep them in artificial isolation or destroy their lifestyles and cultures through development. Nature has countless examples for us of the strengths of diversity. We can no more afford to sacrifice any human culture than destroy any strain of plants, any animal, fish or bird species.

Winston Churchill told the British Parliament, 50 years ago, "no man is free while any man is unjustly imprisoned." So too, today, we can say, "no man or woman is safe, in our global village, when their neighbour is threatened."



UNICEF/Ray Witlin

*Part of the mass immunization programme in Bolivia, sponsored by UNICEF, in co-operation with NGOs*

*"Demographic phenomena constitute the heart of the African Development problematique. They are the data that lead most analysts to project a continuing crisis in Africa. There is no doubt of the imperative and urgent need for a far-reaching population policy to be adopted and vigorously implemented by African governments.*

*One issue of relevance that requires further research is the use of the tax system as a means for controlling population growth and discouraging rural-urban migration.*

*To slow down population growth, should families without children be given a tax incentive or tax break? Should a tax penalty be imposed for each child after a fixed number, considering that the tax system has not solved the population migration problem?"*

*Adebayo Adedeji*

*Executive Director, Economic Commission for Africa  
WCED Public Hearing, Harare, 18 September 1986*



**LAMINE  
MOHAMED FADIKA**  
Cote D'Ivoire

*Minister of Marine Affairs;  
Chairman of the National  
Concil for Environment;  
Secretary of State for Marine  
Affairs, 1974-76*

# OUR DAILY BREAD: SUPPLIES

Despite population increase, we now produce more food per capita than ever before in human history. Cereals and root crops are still the primary source of food, globally; in 1985 we grew nearly 500 kilos for everyone who was then alive in the world.

However, all the cereal and tuber foods produced were not "for" all of us after all; in that same year, there were 730 million without enough food to function normally and productively.

That is to say, more than three times the entire population of the United States went hungry in 1985 - so hungry that they lacked the physical and mental stamina to work or study effectively.

The causes of food shortages clearly vary with regions; in some places too little food is grown; in some areas there is enough food, but families have no money to buy it. In other regions, the greatest threat to future food supply is over-production today, and the consequent soil-damage in the future.

## WE HAVE THE SKILLS BUT LACK THE WILL

We have the skills, the knowledge and the technology to feed everyone. We do not have, however, the policies to see food produced and distributed according to human need. Nor have we fully acknowledged the slow-motion disasters which are created by chronic malnutrition.

Starvation, it is true, kills. But chronic malnourishment is the assassin of hope; it saps the will to achieve, it cripples and wastes both mind and body, and it leaves its victims an easy prey to both physical and social ills.

World food trade has changed dramatically in the past 35 years. Cereal production increased two and a half times during that period - but North American food-grain exports increased 24 times (from five million tons to 120 million.)

Meat production more than tripled in Europe during that same period, and global meat exports rose five and one half times, from two million tons to over 11 million. Pound-for-pound, the four billion cattle, sheep and pigs in our global village now outweigh the human population.

## UNEVEN TECHNOLOGY BOOM

The increased food production, since World War Two, owes much to changing technology. Twice as much land is now irrigated as was in 1950; we are using nine times



*Bringing home the food in Grenada*

Dilip Mehta

more chemical fertilizer and 32 times more pesticides - we are also polluting the ground water over much of the planet. But the production increases have not been uniform.

In Africa, food grain production relative to Europe has dropped by as much as 20 per cent in some nations, to an alarming 50 per cent in others.

While large scale 'agro-industry' has developed in the Industrial States and the 'green revolution' has taken hold in the lush heartlands of many Developing Nations, in most of sub-Saharan Africa and the remote areas of Asia and Latin America subsistence farming is still the rule - and hunger the norm.

## PROGRESS NOW SLOWING

Moreover, progress is slowing. After the surge of the '50s and '60s, the necessary three per cent annual growth in food output has been extremely difficult to maintain into the '80s.

Africa has been experiencing an average one per cent drop in per capita food production since the start of the '70s. In Latin America, food production has kept pace with population growth; but the degradation of agricultural land accelerated by over-farming marginal lands to help foreign debt repayments, presages serious future difficulties.

## LOCAL SUBSIDIES WITH GLOBAL CONSEQUENCES

Farm subsidies and surplus food supplies in the Industrial States are posing critical problems for the Third World. In the U.S. alone, farm subsidies rose about nine times (from 2.7 billion dollars to 25.8 billion) in the five years between 1980 and 1986.

There was a corresponding increase of four and a half times in the European Economic Community in the decade following 1976 - from 6.2 billion U.S. dollars to 26 billion.



Dilip Mehta

*In India, selling the food in the market is women's work*

In Japan, rice prices are kept at an artificial level, five times the world average; and Japanese farmers are 'protected' by law making it a criminal offence to import even a few kilos of rice. Japan spends 10.5 billion dollars in annual farm subsidies. Canada spends 3.4 billion dollars each year.

World-wide, more than 150 billion dollars is spent on subsidies every year. In many countries, Japan and Canada included, farm subsidies cost every man, woman and child between 100 and 150 dollars a year. That is an amount equal to between a quarter and a half of

the entire per capita gross national product of many less developed nations.

In many of these Third World nations, GNP is so low, in part because local farmers are being undercut and discouraged by subsidized Western-world produce - be it grain, butter or sugar beets. In this context alone, Industrial World farm subsidies are being paid in a real, if indirect, sense by 'picking the pockets' of Third World farmers and their children.

## PRICE SUPPORTS DEPRESSING

Heavily subsidized food exports from Europe and North America depress world prices; and, by forcing down the income of Third World subsistence farmers, any incentive to increase domestic food production in Developing Nations is destroyed.

At the same time, 'protected' and subsidized food production in the Industrial World has contributed to soil degradation, nitrate pollution of ground water through over-fertiliza-

tion, and the destruction of marginal farmlands through clearing and over-cultivation.

## PIPE DREAMS WELCOME!

The disruption of world markets by Western, subsidized agriculture must be eliminated.

In this context, the U.S. initiative announced in July, 1987, is more than welcome. The United States told a Geneva meeting of GATT (the General Agreement on Tariffs and Trade) that it wanted to end the global agriculture 'war'. (A war, one might add, in which the Industrial States are using the

## FOR OUR GLOBAL VILLAGE

### WE GROW ENOUGH FOOD, BUT WE MUST SHARE

Growth in world cereal production has steadily outstripped the growth of world population, yet each year there are more people in the world who do not have enough food. Although we grow enough food for all, it is often not available when and where it is needed.

Food production in industrialized countries is frequently protected from international competition. Often it is highly subsidized; such subsidies encourage the over-use of soil and chemicals, the pollution of water resources and foods with such chemicals and the steady degradation of the countryside.

Much of this effort has produced food surpluses and their associated financial burdens. Some of this surplus has been sent, at concessionary rates, to the Developing World, where it can undermine the farming policies of the recipient nations.

There is, however, growing awareness of the environmental consequences of such practices, and the emphasis is shifting toward conservation.

"On the other hand, many

Developing Countries have suffered the opposite problem - that of farmers not being supported. In some countries, it is true, improved technology and price incentives with government-aid have produced major break-throughs in food production. But elsewhere, the food-growing small farmer has been neglected, and many are pushed onto marginal lands, which are too dry, too steep, and lacking in nutrients," the Report states.

The trade terms need to be turned in favour of small farmers in underdeveloped countries. Industrialized Countries should alter existing systems in order to cut surpluses and to reduce unfair competition with Underdeveloped Countries, as well as to promote sound farming practices.

Food security requires equity among farmers and attention to improved distribution. Hunger often arises from lack of purchasing power, rather than lack of available food. Land-reforms and policies to protect vulnerable subsistence farmers are required. Their greater prosperity will depend on integrated rural development,

which increases work opportunities both inside and outside agriculture.

Efforts to promote literacy should focus attention on functional literacy covering the efficient use of land, water and forests. Small farmers must also be more involved in formulating agricultural policies.

Women play a critical role in agriculture but their access to education and their representation in research, extension help and other support services is woefully inadequate. Women need the same educational opportunities as men and should be given more power to make decisions regarding agricultural and forestry programmes.

In many countries, women do not have direct land rights - land titles go to men only. In the interests of food security, however, land reforms should recognize women's role in growing that food. Women, especially those heading households, should be given direct land rights.

The application of the concept of sustainable development to the effort of ensuring food security

will require systematic attention to the renewal of natural resources. It needs a holistic approach, focused on ecosystems at national, regional and local levels, with co-ordinated land use and careful planning of water usage and forest exploitation.

The agricultural systems built-up over the past few decades have contributed greatly to the alleviation of hunger, and to the raising of living standards but many have outlived their usefulness; they were built for the purposes of a smaller, more fragmented world.

The new realities, however, reveal the inherent contradictions of those systems. These realities require agricultural systems that focus as much attention on people as they do on technology, as much on resources as on production, and as much on the long-term as on the short-term. Only such new agricultural systems can meet the challenges of the future, Chapter Five of the WCED Report concludes.

equivalent of economic atom-bombs against Third World bows and arrows.)

The U.S. has proposed, in the next 10 years, that the world should abolish **all** direct agricultural subsidies; abolish **all** indirect agricultural subsidies; abolish **all** protective barriers, such as import quotas and tariffs; and, abolish **all** indirect barriers, such as health regulations, by adopting international standards.

Canada recently stopped, most effectively, 'outside' competition from low-cost imports of Danish bacon and ham for its domestic pork producers by declaring 32 of 34 packing plants in Denmark to be 'unhygienic'.

Some observers and critics call the U.S. proposals 'unrealistic', 'unachievable', and even 'pipe-dreams'. They are, however, absolutely essential.

#### FARMERS NEED CO-OPS

Small farmers in the Third World, particularly in Asia, have shown a marked ability to use modern technology, when they are shown how. But small, cash-crop farmers do not have the money to invest in expensive equipment for their individual farms of one or two hectares.

Even the purchase of a small, two-wheeled hand tractor is far beyond their means. The encouragement and stimulation of co-operative ventures maybe represents the best hope for a more efficient and economic use of those smallholder farm plots.

#### GAIN NOW, PAIN LATER

At present, global agricultural policy seems predicated on the principle of short-term gain, with the built-in certainty of long-term pain.

There is soil erosion in North America; in Canada alone, erosion steals one billion dollars annually from farmers. In Europe, the cardinal problem is soil acidification. Asia, Africa and Latin America suffer from both desertification and deforestation.

Industrial policies, too, can steal precious farmlands from our children. Before our grandchildren are old enough to bear children of their own, global warming caused by energy use and industrial production may cause flooding of vital, coastal farm lands.

#### SOIL-DOWN; SILTS-UP

By the late '70s, soil erosion exceeded soil formation on one third of U.S. croplands, and effected 30 per cent of all farmlands in India.

According to an FAO study, we will eventually lose 544 million hectares of rain-fed cropland.

More graphically, this means one third of the world's farms will be destroyed - which is an area of 1.87 million square miles, and **equal to the combined land areas of France, Germany, India, Italy and Spain!**

But soil erosion does more than denude farms. The topsoil, which is washed away down the rivers, eventually silts-up ports and water reservoirs, increases flooding, and ultimately presents an exorbitant bill to aid-giving nations.

Even irrigation, when not carefully planned, can bring hazards, including salinization, alkalization and the waterlogging of soil. These problems are now causing farmers to abandon 10 million hectares of irrigated land every year - which is as much as the land area of **Hungary, the whole of Austria or the entire American state of Maine.**

#### CHEMICALS CAN KILL

The over-use of chemicals in agriculture destroys more than land; though even that damage eventually results in hunger and human death. More directly, however, 10,000 people in the Third World are being

killed by pesticide poisoning alone, every year. Almost a half million individuals, roughly equal to the total population of Oslo or Cleveland are severely, and often permanently, stricken.

Again the Industrial World bears a heavy responsibility. A brief case in point shows that 'Phosvel', a very effective insecticide, was banned from production and sale in the U.S. a decade ago, after factory workers were shown to have suffered irreversible nerve damage while manufacturing the stuff. The insecticide, however, is still being marketed, by U.S. firms, in Central America.

Another pesticide, DBCP(dibromochloropropane) cannot be sold in the U.S., as it destroys human sperm and renders men sterile. After it was banned almost a decade ago, millions of pounds were shipped to Costa Rica for use as a 'wormicide' on banana plantations. An estimated 2,000 Costa Rican plantation workers are now sterile, and countless others have a drastically-reduced sperm count.

Documented medical evidence shows the American manufacturers, Dow Chemical and the Shell Company knew the health hazards of DBCP 20 years before the product was banned in the United

## (CONTINUED)

States. Cancer rates among farm children, in Costa Rica, under seven years of age have doubled in just 10 years. Pesticide use has also doubled during that same period. Costa Rica now has the highest rate of child leukemia in the world - the leukemia rate has doubled in the last 20 years!

**EXPORTS NO ANSWER**

We cannot solve the world's food problems by exporting food to the Third World. Developing Nations which import food are, in effect, importing unemployment, as the farmers are forced-off the land.

We have three key tasks. We must shift production to the areas of greatest need; we must ensure a decent living for the globe's rural poor; and we must conserve

Price supports and controls generally benefit urban dwellers more than the farmers; and they distort crop production patterns, while adding to the destructive pressure on our shrinking base of farmland.

**FOOD-TRADE GROWING BUT WILLY NILLY**

International agricultural trade has increased six times since 1950, but there is still no rational pattern to

pest control, more use of biogas or wind generated pumps for irrigation. The Industrial States must clamp down on the controls related to the export of agricultural chemicals - and especially pesticides.

**RURAL FAMILY HAS KEY ROLE**

Local, rural families in the Developing Nations are both the victims and the agents of deforestation, soil erosion and desertification. They must be directly and personally involved in both the reclamation and in preventive measures. 'Agro-forestry' techniques can produce both food, fuel and timber on the same land. Well-chosen crops reinforce one another in this system. In Asia, the method is centuries old where, today, pineapple is often planted between rubber or coconut palm trees in a system called "inter-cropping".

**MORE FISH FARMING, AND**

Fish farming is essential to developing enough protein for global consumption. Already one tenth of all fisheries production, planet-wide, is from 'aquaculture', or fish farming. By the year 2000, aquaculture production could equal the 100 million tons of fish we will be taking annually from our seas, rivers and lakes.

**FOOD RESEARCH IS NEEDED**

Most technical advances in agriculture, in recent decades, have been best-suited to fertile, stable soil conditions with good water supplies. Major research is needed to develop systems appropriate to the vast land masses with uncertain rainfall, uneven topography and less-nourished soils.

**FOR EVERYONE TO SURVIVE**

If we are to feed everyone on earth, there will have to be major increases in funds available for agricultural research and field extension work. Those activities use up about 1.5 per cent of gross farm income, in prosperous nations, but only 0.9 per cent in the Developing World, where farm prices are also depressed.



*Winnowing the corn in Rwanda*

Paul Chiasson

**DESERTS ARE SPREADING**

We lose, permanently, six million hectares of land to desertification, every year - that is nearly 24,000 square miles, an area one third more than the entire area of Switzerland or The Netherlands, which is lost each year.

**FOOD NEEDS INCREASING**

Against such grim statistics is our naked necessity. We must increase global food production from three to four per cent every year, just to stay alive. To begin with, we can look to large areas of Latin America, North America, the Soviet Union and sub-Saharan Africa, where unused lands could be brought into production. Caution and careful study are essential, however, as the quality of those untapped areas varies greatly and some are ecologically vulnerable.

resources.

**REVISE FARM POLICIES**

Government farm policies must be examined and redrafted so they will:

- include the environmental criteria which mostly suffer at the hands of short-term planners;
- develop the flexibility to assist with local and regional needs, rather than strapping all farm policies to a rigid national policy, unlikely to be suitable for every area of special topography, climate, and soil; and
- stop over-protecting farmers and stimulating the forms of over-production which, in the long run, can only harm the global agricultural industry.

our trade policies. If we are to leave our children a fertile planetary garden:

- we need to identify global 'stress points' (where land is endangered), and we must protect them as we now protect our cultural and historic sites;
- we must begin to reclaim lands lost to acidification and deforestation (and in this regard, the current UN 'Plan of Action To Combat Desertification' urgently needs more cash support);
- we must identify areas which, while not suitable for intensive cultivation, can be used for fruit orchards, grazing land or forestry; and
- we have to encourage more use of organic plant nutrients, more emphasis on natural methods of

*"I think that at a forum like this there always tends to be someone standing up and saying you forgot my issue. I think my issue, as an NGO, is rather important; it is the issue of women. And I am sure that most of the people here have a serious sensitivity to women's role vis-à-vis the environment*

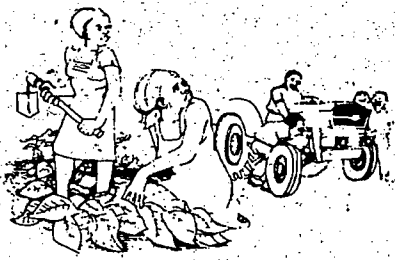
*Especially in Africa, I think it has been clearly stated over and over again that women are responsible for between 60 to 90 per cent of the food production, processing, and marketing. No one can really address the food crisis in Africa or many of the other crises that seem to exist here without addressing the question of women, and really seeing that women are participants in decision-making processed at the very basic all the way through up to the highest level."*

*Mrs. King  
The Greenbelt Movement  
WCED Hearing, Nairobi, 23 September 1986*

Almost all the training and technology for improving agriculture is given to men...

50 per cent of the agricultural production and all of the food processing is the responsibility of the women.

Source: New Internationalist, No. 89



### GENE BANKS PRICELESS

As we noted in the last Chapter, proprietary interests may also have to be re-evaluated. As of now, 55 per cent of the world's patented plant genetic resources are controlled by institutions in Industrial Nations, though many originated in the Third World. All else aside, these Developing Nations may soon decide to stop sharing their genetic resources with Western organizations who are intent on sequestering the knowledge, and profiteering on the proceeds of that information.

### WOMEN & LAND REFORM

Land reform, also, is an inescapable necessity. Any scheme must be worked out nation-by-nation, and region-by-region, as the circumstances vary widely. In each case, however, there must be a reform of tenancy arrangements, guaranteed security of tenure, and a clear recording of land titles.

This matter is directly related to the need to make full use of our human resources - and in terms of food production, one might more accurately say **female** resources.

In Africa, for example, women do:

- 30% of the ploughing;
- 50% of the planting,
- 70% of the hoeing and weeding,
- 60% of the harvesting,
- 80% of the storing of food crops,
- 90% of the processing,
- 60% of the marketing.

### NOT EVEN TITLE

Yet, in many nations, women cannot even have title to the farmland. In most nations, women are ignored at all levels of farm training and agricultural extension services. That situation **must** be reversed, if we are to feed ourselves and our children.

### FOOD-BANKS VITAL

Finally, Developing Countries must be assisted in building 'food banks', in surplus years, to provide reserves against drought and crop failure. Emergency food relief from the Industrial World is but a 'frail reed'. The globe now has a reserve supply of only about one-fifth of average, annual need; two-thirds of



UNICEF/Horst Cerni

*Bolivian students from San Andres elementary school prepare a nutritious but traditional bread for the school lunch*

that is in the industrial West - and half of the balance is in India and China.

When food runs short in the Third World, incomes cease at the same time, so farmers are not able to buy what food is available. Food security, therefore, must include systems to give disaster-struck families cash to buy food. UNICEF Executive Director, Jim Grant, introduced this system, called "cash for food", in small parts of Ethiopia during the drought and famine of the mid-'80s. The result was that whole communities, which would otherwise have been uprooted and moved to refugee feeding camps, stayed on their land, dug irrigation canals and reservoirs and, when the rains returned, became self-sustaining, and contributing members of their society.

### STEALING TOMORROW'S FOOD

We can feed ourselves and our descendants. We need not take food from the mouths of our children and theirs, as some present practices threaten to do.

We must acknowledge, however, the fact that most of our current agricultural policies were designed for a much more narrow, fragmented world. That world has now vanished.

### PEOPLE BEFORE PROFITS

New realities demand that we focus future policies on people and not technology, on resources and not production for its own short-term sake, and on the long-view and not immediate gratification.

### PLAN NOW, DANCE LATER

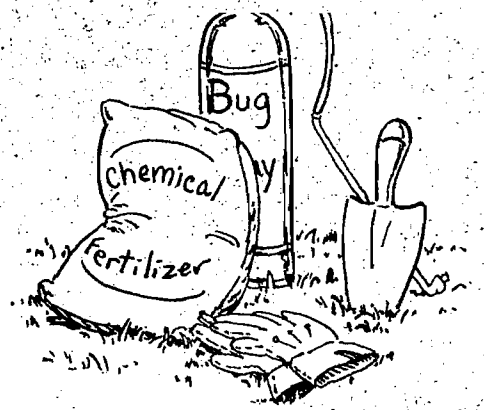
We are, surely, wise enough to avoid the folly of the grasshopper which, in *ÆSOP'S FABLES*, failed to store food for the winter because he was too busy dancing; better the example of his friend the ant, who recognizing the iron reality of future need, ensured his survival between harvests by prudent stockpiling of food.

We had better plan now, and dance later when we have more to celebrate.



UNICEF/Horst Cerni

*Education that includes new methods of growing food gives students practical information to combat malnutrition in their own children*



### PAULO NOGUEIRA Brazil

*Federal District Secretary of Environment, Science and Technology, National Council of Environment; Federal Secretary of the Environment 1974-86; Associate Professor, Department of Ecology, University of Sao Paulo; President, Association on the Defence of the Environment 1954-83; President, Sao Paulo State Forest Council 1967-74.*



# PRESERVE, CONSERVE & PROSPER:

We do not know how many plant and animal species, today, share our global village. We assume there are still a few million 'survivors' of the half billion species which have existed since the earth was formed. Most, however, have been destroyed by nature at a rate of one species every thirteen or fourteen months. Witness, for example, the dinosaur, the woolly mammoth, and even the early ancestors in the family of man.

## SPECIES LOST FOREVER

We also know that humans wipe out entire species, at a rate more rapid than nature's cruellest depredations - and we now know some of the consequences of our depredation.

Usually, we look at the scientific, aesthetic and ethical consequences of eliminating a whole population of whooping cranes, orchids, or a sub-species of whales. But we forget the more wide-ranging economic impact of those lost species.

## NATURE'S MEDICAL TOXINS

Organisms living on our coral reefs survive predators largely through undersea 'chemical warfare'. As a direct result, science has used hundreds of those creatures to develop indispensable medical toxins:

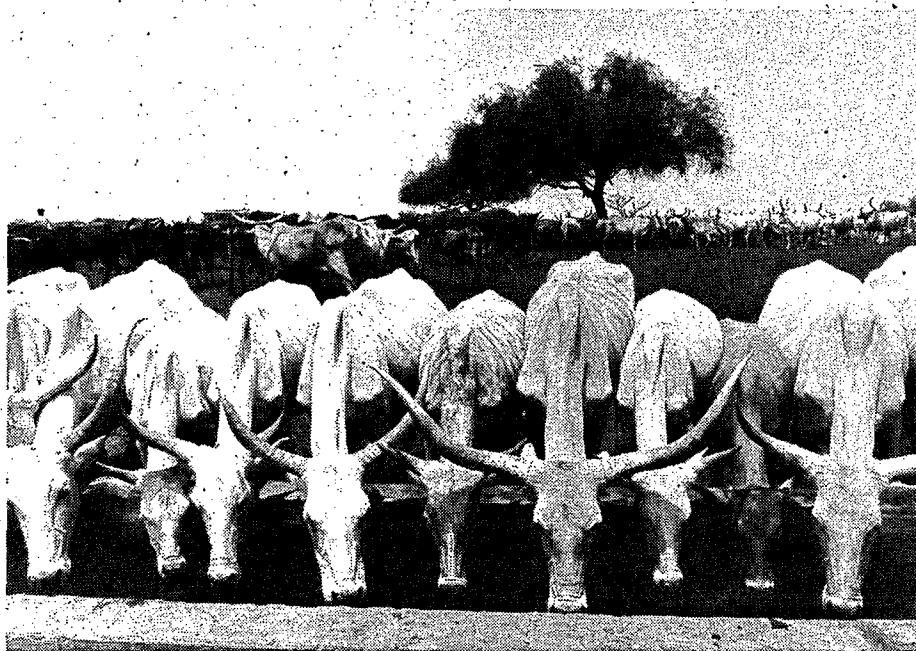
In total, half of all prescription drugs are based on "wild" organisms. World-wide, the annual commercial value of medication, which we would not have without wild or naturally indigenous species, is more than 40 billion dollars. That figure will multiply as we learn and adapt more of nature's secrets, through genetic engineering.

In the United States alone, in 1980, the use of native, genetic plant materials (especially wild species of wheat and maize) contributed more than one billion dollars to farm incomes, and that total is growing annually.

In 1970, the U.S. lost two billion dollars in maize crops to a leaf fungus. However, fungus-resistant, wild strains of maize since found in Mexico mean the problem will not recur.



28 TRIBUTE



"... the barrel-stave ribbed cattle " - Troyer

John Isaac/ UN photo

More recently, the most 'primitive' sub-species of maize was found in Mexico. Three tiny, wild plots, totalling less than four hectares, were about to be destroyed by farmers and loggers. Those few thousand stalks are now being cross-bred with commercial maize. Why?

This wild maize is the only known perennial species of maize. When the cross-breeding is successful, maize farmers, whether in Nigeria or Nebraska, will not have to plough and seed their crops each year. The potential savings, (or call them increased profits), amount to many billions of dollars annually.

## RESINS, OILS, FIBRES

Wildlife-derived products for modern industry include compounds almost beyond count - for example, waxes, resins, dyes, oils, vegetable fats, tannins, fibres, and seeds far more oil-rich than any commercial plants. In Western Amazonia, the 'Fevillea' genus of rain-forest vine produces more oil per hectare, without cultivation, than a hectare of commercial oil palm plantation.

Plant species containing hydrocarbons (instead of the school-science-lesson truism of 'plants being made up of carbohydrates'), can flourish in areas laid waste - for example, by strip-mining of coal.

Imagine rehabilitating vast tracts with an annually-renewable 'petroleum plantation'. With genetic engineering, we may soon discover elements in our world-gene bank to produce food, and even timber, in our deserts and in the salt-corroded lands.

Even were we sufficiently short-sighted to assume that we have all the plant diversity we need, we would be foreclosing huge chunks of our future comfort, welfare and economy, if we were to abandon protection of 'wild' species.

## NO CHOCOLATE BARS!

The world's major cocoa growing regions of West Africa would be out of business, in a generation or so, without the new genetic material from the forests of West Amazonia, on which they are utterly dependent. Imagine a world with no chocolate bars for your grandchildren!

## WILD COFFEE NEEDED

Colombian and Brazilian coffee crops would wither and disappear without regular injections of some strains of wild coffee plants - which mostly come from Ethiopia.

South-east Asia's huge rubber production would skid to a halt without wild rubber germ plasm from Brazil.

Brazil's sugar-cane and soya-bean production would soon dwindle away without similar transfers of plant germ plasm from Asia.

Just as the basic root systems and stalks of the rose bushes in your, or your neighbour's, garden will fail to produce the flowers you want without grafting - grafting from the rose species you could not grow yourself - so too with many of our most vital global crops.

The oil crisis of the '70s taught us the meaning of inter-dependence. We are even **more crucially reliant on one another** for the diversity of species.

## OUR CELLS ARE BLOCKS.

It is said that we reproduce all the cells in our bodies (excepting nerve tissue), every seven years as old tissue ages and dies. We grow new skin cells even faster - witness the scrape on a child's arm.

## OUR BODIES' CLOCKS

But we need proper 'fuel' - healthy supplies of tissue-building 'bricks and mortar' to do that. Even so, our 'genetic clocks' eventually refuse to go on renewing our vital

parts. Those parts wear out, and our lives end - and so, too, with plants:

But we are able to do with rubber and tea, cocoa, coffee and soya-beans, what we cannot, yet, do for ourselves. Given enough germ plasm from 'wild' or natural sources, we can keep them productive indefinitely. This is hardly an option, surely, that we want to abandon?

## OUR SPECIES VITAL

There is one chief difficulty in ensuring species/genetic preservation. The problem is rooted in our failure to recognize the pragmatic, economic imperatives and potentials. Without it, European and North America crops will fade away - as surely as coffee, rubber, and cocoa in the Third World.

## NEED RATHER THAN VIRTUE

Bluntly put, species protection is seen as a **virtue**, rather than as a **need**. We, in the West, think of the 'virtue' of protecting plant and animal species in patronizing terms - as a responsibility of the 'superior' beings which we assume ourselves to be.

So far, though, we have not been 'superior' enough to see in the loss of these species the same elements of our own destruction. **Species protection** is not attractive as a political issue. Its supporters, so far, lack political clout.

The issue is low on the agenda-of-concern of industrialists, politicians, economists, and even journalists. All pride themselves, however, on being 'realists' - but, in this case, ignore one of the most fundamental realities of global survival. We seem, in this situation, more nearly-related to the dinosaur or the ostrich, than even to Cro-Magnon Man.

## GRASSROOTS MOVEMENTS

As is often the case, grassroots movements lead the political leaders in this concern. For example, more than 100,000 school-children now belong to Kenya's Wildlife Clubs. The Audubon Society has over 385,000 members in the United States alone. Nature clubs in the Soviet Union comprise over 35 million members. And there are scores of other examples around the globe.

The salient point is clear. We have a global constituency-of-concern for species preservation. It now remains to harness the **public will** and use it to generate **political will** and action. We have enough knowledge to make a valuable - and indeed an essential - beginning. The problem is not tech-

## PROTECTING OUR 'PARTNERS'

nological, it is political. So what must we do, politically?

### GLOBAL ACTION REQUIRED

First, we must understand the integral links between the survival of our bank of plant and animal species and global development.

Second, we must begin to act on that conviction, both nationally and internationally, in relations and arrangements between countries.

### ABANDON IGNORANCE

We need to do far more research. We have studied, in a serious way, only one per cent of the world's plants - and even fewer of our animal species. We cannot even imagine what medical, industrial, and agricultural riches are being denied to us by our **self-imposed ignorance**. Nor are we aware of the binding interrelationships between plant and animal species. We do know that a single insect or plant may sometimes be the keystone to a whole ecological structure.

### LAY WASTE THE EARTH!

Yet, we continue to lay-waste casually to thousands of species, **before** we understand the potential consequences of that waste, and on which our very survival may even depend.

We know, too, that nature's life-processes can be damaged or slowed-down if we are willing to abandon the preservation of breeding grounds for our animal and fish life, the stabilization of our climate, the protection of our soil and our watersheds, and the maintenance of those vast 'nurseries' of timber and jungle.

### RAIN FORESTS ARE LUNGS

The rain forests of the global village, along with timber stands world-wide, are the lungs of the world. We cannot turn carbon dioxide back into oxygen, but the **trees** can. To destroy our forests for short-term profit is as sensible as setting our house on fire in order to toast marshmallows!

Our descendants will not even know which blessings we have stolen from them, because the species which we are now destroying with deforestation, slash-and-burn farming and the erosion of marginal lands, are precisely those about which we know the least.

### THE GENE REVOLUTION

Governments and international agencies must select those species and strains which are the most vital and the most valuable to our developmental needs - and we must share and exchange both the knowledge and the benefits of that knowledge.

### SPECIES FOR DEVELOPMENT: RESOURCES FOR DEVELOPMENT

A powerful economic rationale, identified by the WCED Commissioners in Chapter Six of their Report, justifies the preservation and conservation of natural resources - such as plants, animals and micro-organisms - as well as the non-living elements on which they depend.

There are literally vast and untapped gene banks for genetic engineering, which is the key sector of the emerging global economy. If trans-national corporations, governments and workers believe they are creating jobs and generating wealth by cutting-down forests, draining wetlands and killing weeds and bugs, then they are 'barking up the wrong tree'. It is just plain bad management.

The genetic material in wild species constitutes our most valuable asset and already contributes billions of dollars annually to the world economy - in the form of improved crop species, of new drugs and medicines and of raw material for industry - and we have only begun to explore the potential of gene-splicing and other techniques.

"Species such as earthworms, bees and termites may be far more important than we realize, in terms of the role they play in a healthy and productive ecosystem. It would be a grim irony, indeed, if just as new genetic engineering techniques begin to let us peer into life's diversity to use genes more effectively to improve the human condition, we

looked around and found that this treasure had been sadly depleted," the WCED Report warns.

Scientists have investigated only one in every 100 of Earth's plant species, yet many of the ecosystems that are rich biologically and promising in material-benefits, are threatened. Vast stocks of biological diversity are in danger of disappearing, just when science is learning how to exploit genetic variability through the advance of genetic engineering.

If nations can ensure the survival of species, the world can then look forward to new and improved foods, new medical drugs, and new raw materials for industry. This - the scope for species to make a fast-growing contribution to human welfare in myriad forms - is a major justification for expanded efforts to safeguard Earth's richness in millions of life forms and species.

"The genetic variability and germ plasm material of species make contributions to agriculture, medicine and industry, alone, worth many billions of dollars every year", the Report states. For example, the remaining gene pools of major crop plants, such as maize and rice, amount to only a fraction of the genetic diversity they harboured a few decades ago.

Conservation of living natural resources is crucial for development. The challenge facing nations today is no longer deciding whether

conservation is a good idea, but rather how it can be implemented in the national interest and within the means available in each country.

A first priority is to put the problem of disappearing species and threatened ecosystems onto political agendas as a major resource issue. Governments can stem the destruction of tropical forests, and other reservoirs of biological diversity, by developing them economically.

Reforming the forest revenue systems and concession terms could raise billions of dollars of additional revenues, promote more efficient, long-term forest resource use, and curtail deforestation. The network of protected areas, that the world will need in the future, must increase.

International development agencies should, therefore, give comprehensive and systematic attention to the problems and opportunities of species conservation. Governments should investigate the prospect of agreeing to a 'Species Convention', similar in spirit and scope to other international conventions reflecting principles of 'universal resources', the Report recommends.

On these pages of Tribute, Warner Troyer analyses the dimensions of the problems and describes some of the initiatives required to translate the WCED's recommendations into action.

Most of our valuable genetic resources are in the tropics - which means in the Developing Nations. It is no longer appropriate to make 'withdrawals from this resource bank' for the vastly-disproportionate profit of the Industrial States.

### HAMBURGER IMPERIALISM

The expansion of livestock herding (still the most costly way of producing protein - in terms of land, feed, and other resources used) threatens many species of plants.

In arid and semi-arid lands, by way of example, plants which have adapted to local climate are amazingly hardy. Many of those have an extraordinary potential in the biochemical industry. Yet we may lose the chance to exploit the liquid wax of the 'jojoba' shrub, the natural rubber of the 'guayule' bush, by losing it to the wandering herds of



**SHRIDATH S. RAMPHAL**  
Guyana

*Secretary General of the Commonwealth of Nations, Minister for Foreign Affairs 1972-75, Minister of Justice 1973-75, Minister of State for Foreign Affairs 1967-72, Attorney General 1966-72.*

(CONTINUED)



IDRC photo

*Agroforestry - growing crops and trees together - allows farmers in Costa Rica to produce food or fodder and timber for building and fuel*

barrel-stave ribbed cattle and the soil erosion attendant on the expansion of those nomadic herds.

#### NO MORE RAIN FOREST

We are, each year, eliminating - totally - an acreage of tropical rain forest equal to the area of Portugal, or double the area of Denmark. By the century's end, there may be almost no rain forest left, outside the Zaïre Basin of Africa and the Western half of the Brazilian Amazonia.

Even these forests are unlikely to last the first few decades of the next century, given current policies of exploitation.

Yet, this does not just entail the loss of forests and of the planet's 'lungs'. It means, too, the absolute and permanent loss of up to seven out of every 10 plant, bird, and animal species in these areas - and the rain forests alone contain, exclusively, half the world's species.

We began with 1.6 billion hectares of rain forest - that is 5.5 million square miles of rain forest on earth, which is almost double the entire area of Europe. Our forests help stabilize our climate. To lose them, as we are doing, will only hasten the 'greenhouse' effect and a dangerous 'warming' of the climate over the next 30 years.

*"It may be possible to restore the population of 'oomurasaki' - our purple emperor butterfly - to the previous level. The forest for oomurasaki requires weeding, planting of trees, care and maintenance. The forest will be handed-down to the succeeding generations. Isn't it wonderful to think that you are linked to the succeeding generations by handing-down the forest where many oomurasaki fly and where people can enjoy themselves.*

*It would be nice if we could develop into the hearts of the children the love and affection for nature. We hope to make the forests we are making our gift to the children who will live in the 21st century."*

*Mika Sakakibara,  
Student, Tokyo University of Agriculture and Technology  
WCED Public Hearing, Tokyo, 27 February 1987*

All our resources, and our uses of them, are closely inter-related. If we damage one resource - if we weaken one brick or timber in our ecological home - we endanger the entire structure. At present, to extend the analogy, we are taking developmental 'sledge hammers' to whole walls, and we have no blueprints because we have not done the research. One day soon, we may, in our ignorance, destroy a main beam and bring-down the whole, interdependent system about our heads. More probably, we will bury our children in the environmental rubble.

#### TAKE THE BEST

Timber harvesting rights, especially in countries with rain forests, are usually short-term. So concessionaires, in order to make a profit, move-in quickly, without thought of any ecological studies.

#### LEAVE THE REST

They take-out only the best trees, and destroy perhaps hundreds of young trees while 'harvesting' each one that they do want. The royalties, rents and taxes, charged by governments, are hardly ever sufficient to reforest and repair the damage.

Third World nations are the Aladdin's Cave of our plant and animal treasures, with over two-thirds being found within their borders. Medical researchers now believe this enormous 'gene pool' will trigger more innovative, life-saving advances in the next 20 years than in the past 200 - and those benefits must be shared with the Third World.



US Park photo

*We have to protect all our endangered species*

#### OUR CONSERVATION STRATEGY

Around the world, we must begin by developing National Conservation Strategies. These can be linked regionally and need not impose on national sovereignty.

#### GLOBAL SPECIES TREATY

But we also need a global "Species Convention", or treaty, with the same international scope and outlook as, for instance, the Law of the Sea Treaty. The International Union for the Conservation of Nature and Natural

Resources (IUCN) has prepared such a treaty in draft form.

Any such agreement implies funding. As one possibility, each nation could contribute to a 'Species Trust Fund'.

#### ESTABLISH A FUND

The chief beneficiaries of our global village resources could contribute proportionately. Payments to Developing Nations could rise and fall as those countries gave pragmatic demonstration of their ability to manage and preserve their resources.

Nationally, where park and nature preserve lands are a key element in preservation, they should more accurately be called "Development Parks", to stress their value as the genetic banks without which future growth is not possible.

International agencies - major lenders, including the World Bank and UN organizations -- must give thorough and deliberate attention, regularly and systematically, to both the problems and the opportunities of species conservation.

#### CONSERVATION MONITORING

There is now a Conservation Monitoring Centre collating data on global species and ecosystems. This Centre makes its data available world-wide. The work of IUCN, working closely with the World Bank, the United Nations Environment Programme and the World Wildlife Fund, should be expanded.

We have national 'protected areas' which now equal the combined land areas of Western Europe. These areas, two thirds of them in the Third World, have grown by 80 per cent since 1970. Too often, however, pious declaration replaces pragmatic protection. For instance, in many tropical areas - Sri Lanka is a case in point - fishermen dynamite and 'mine' coral to supplement their incomes by using the lime-rich coral in the production of otherwise expensive, imported cement. Yet the destruction of coral is illegal in Sri Lanka.



Pat Morrow

*Harvesting new strains of seed in Indonesia*

The consequence is destruction of unique and irreplaceable resources, the growing erosion of coastal land and the destruction of beaches earning precious hard currency, through tourism, for many tropical island states.

### ENFORCEMENT NEEDED

Regulation by itself is rarely adequate. It needs to be accompanied by three provisos:

1) development of alternate income sources for those required to 'stop doing' things destructive to our mutual ecology;

2) education, so people will understand and, in time, demand protection of their environments; and

3) inspection and enforcement.

All three requirements are usually absent in the Developing World. Even the Industrial Nations, with vastly more resources, have only begun to enforce their environmental and protection regulations in the past decade.

In North America, examples of the failures of inspection and enforcement are still more apparent than models of environmental integrity, ecological rectitude and community responsibility.

### EMPATHY FOR THE POOR

Given their daily, hand-to-mouth struggle to survive another day and another week, we, in their place, would want understanding as indi-

viduals among the globe's poor. Both as nations and as individual families, they are reduced to the over-use and degradation of land, and thereby, plant and animal species. They can only change as we provide them with the two resources - opportunity and knowledge - which they must have to alter their lives.

But it is not so with wealthy governments and trans-national corporations. To watch these agencies squander plant and animal treasures we can never replace, is to experience a terrifying nightmare. A pauper, lighting his last bit of fuelwood with his last dollar bill, would seem more rational.

Unfortunately, the currency of environmental treasure is not ours to burn. We are custodians for our children and our grandchildren of the fundamental underpinnings of their lives.

In the field of global energy policy, one might add, we have been about as sensible as that fellow burning the last of his money for one final, tiny pool of light and heat - as we shall see, in the next chapter to be found on page 34.

"How long can we go on and safely pretend that the environment is not the economy, is not health, is not the prerequisite to development, is not recreation? Is it realistic to see ourselves as managers of an entity out there called the environment, extraneous to us, an alternative to the economy, too expensive a value to protect in difficult economic times? When we organize ourselves starting from this premise, we do so with dangerous consequences to our economy, health, and industrial growth.

We are now just beginning to realize that we must find an alternative to our ingrained behaviour of burdening future generations resulting from our misplaced belief that there is a choice between economy and the environment. That choice, in the long term, turns out to be an illusion with awesome consequences for humanity."

Hon. Charles Caccia  
Member of Parliament,  
WCED Public Hearing,  
Ottawa, 26-27 May 1986

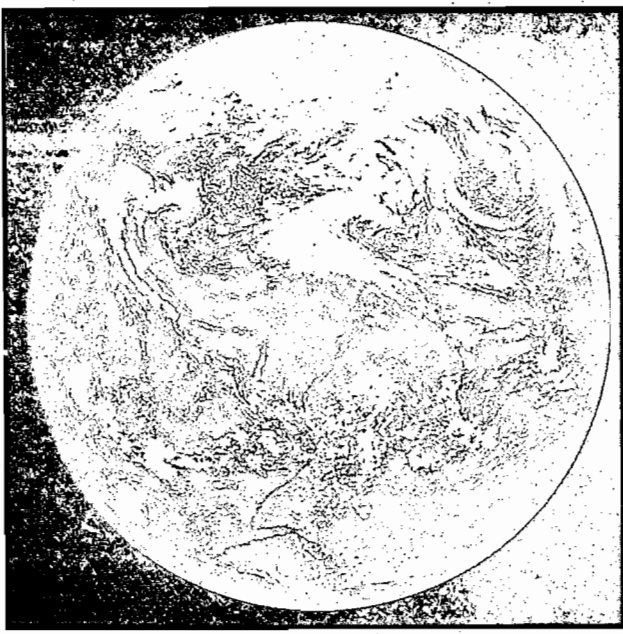


**SABURO OKITA**  
Japan

President, International University;  
Advisor to the Ministry of Foreign  
Affairs; Advisor to the Environment  
Agency; Executive Committee  
Member of the Club of Rome;  
Chairman, World Wildlife Fund Japan;  
Chairman, Advisory Committee for  
External Economic Issues 1984-85;  
Government Representative for  
External Economic Relations 1980-  
81; Foreign Minister 1979-80;  
Member of the Pearson Commission  
1968-69.

# THE TOKYO

*At the close of its final meeting,  
the following as the Tokyo Dec*



The World Commission on Environment and Development was constituted in 1984 as an independent body by the United Nations General Assembly and set out to:

a) re-examine the critical issues of environment and development, and formulate innovative, concrete and realistic action proposals to deal with them;

b) strengthen international co-operation on environment and development, and assess and propose new forms of co-operation that can break out of existing patterns and influence policies and

events in the direction of needed change; and

c) raise the level of understanding and commitment to action on the part of individuals, voluntary organizations, business, institutes and governments.

As we come to the end of our task, we remain convinced that it is possible to build a future that is prosperous, just and secure.

But realizing this possibility depends on all countries adopting the objective of sustainable development as the over-riding goal and test of national policy and interna-

## 1. Revive Growth

Poverty is a major source of environmental degradation which not only affects a large number of people in developing countries but also undermines the sustainable development of the entire community of nations - both developing and industrialized. Economic growth must be stimulated, particularly in developing countries, while enhancing the environmental resource base. The industrialized countries can, and must contribute to reviving world economic growth. There must be urgent international action to resolve the debt crisis; a substantial increase in the flows of development finance; and stabilization of the foreign exchange earnings of low-income commodity exporters.

## 2. Change the Quality of Growth

Revived growth must be a new kind in which sustainability, equity, social justice and security are firmly embedded as major social goals. A safe, environmentally-sound energy pathway is an indispensable component of this. Education, communication and international co-operation can all help to achieve those goals. Development planners should take account in their reckoning of national wealth not only of standard economic indicators, but also of the state of the stock of natural resources. Better income distribution, reduced vulnerability to natural disasters and technological risks, improved health, preservation of cultural heritage - all contribute to raising the quality of that growth.

## 3. Conserve and Enhance the Resource Base

Sustainability requires the conservation of environmental resources such as clean air, water, forests and soils; maintaining genetic diversity; and using energy, water and raw materials efficiently. Improvements in the efficiency of production must be accelerated to reduce per capita consumption of natural resources and encourage a shift to non-polluting products and technologies. All countries are called upon to prevent environmental pollution by rigorously enforcing environmental regulations, promoting low-waste technologies and anticipating the impact of new products, technologies and wastes.

## 4. Ensure a Sustainable Level of Population

Population policies should be formulated and integrated with other economic and social development programmes - education, health care and the expansion of the livelihood base of the poor. Increased access to family planning services is itself a form of social development that allows couples, and women in particular, the right to self-determination.

## 5. Reorient Technology and Manage Risks

Technology creates risks, but it offers the means to manage them. The capacity for technological innovation needs to be greatly enhanced in developing countries. The orientation of technology development in all countries must also be changed to pay greater regard to environmental factors. National and international institu-



*Gro Harlem Brundtland*

## THE COMMISS

The World Commission on Environment General Assembly Resolution 38/161, adopted in December 1983.

That resolution called upon the Secretary-General of the Commission and in turn directed the Secretary-General to select from the half of whom were to be selected from the Dr. Gro Harlem Brundtland of Norway, then Prime Minister, and Dr. Mansour Khalid, the former Minister of the Environment. Together they appointed the remaining members of the Commission.

The Commission has functioned as an independent body in their individual capacities. The Commission has thus been able to address the issues of environment and development and present any proposals and recommendations to the United Nations General Assembly.

# DECLARATION

Tokyo, the Commission issued  
on, dated 27th February, 1987



Credit: Christopher Little / People Weekly

People's Voice!

## AND ITS WORK

development was created as a consequence of  
the 38th Session of the United Nations in the

to appoint the Chairman and Vice-chairman  
to appoint the remaining members, at least  
the world. The Secretary General appointed  
of the Norwegian Labour Party, as Chairman  
of Affairs from Sudan, as Vice-Chairman.  
the Commission.

its body. All its members have served the  
representatives of their governments. The  
to solicit any advice, and to formulate and  
considered pertinent and relevant.



tional co-operation. Such develop-  
ment can be defined simply as an  
approach to progress which meets  
the needs of the present without  
compromising the ability of future  
generations to meet their own  
needs. A successful transition to a  
sustainable development, through  
the year 2000 and beyond, requires  
a massive shift in societal objec-  
tives. It also requires the concerted  
and vigorous pursuit of a number  
of strategic imperatives.

The World Commission on  
Environment and Development  
now calls upon all the nations of  
the World, both jointly and indi-  
vidually, to integrate sustainable

development into their goals and to  
adopt the following principles to  
guide their policy actions.

The Commission is convinced  
that, if we can make solid  
progress towards meeting these  
principles in the balance of this  
century, the next century can  
offer a more secure, more pros-  
perous, more equitable and more  
hopeful future for the whole  
human family.

tional mechanisms are needed to  
assess potential impacts of new  
technologies before they are wide-  
ly used. Similar arrangements are  
required for major interventions in  
natural systems, such as river  
diversion or forest clearance. Li-  
ability for damages from unin-  
tended consequences must be  
strengthened and enforced. Greater  
public participation and free access  
to relevant information should be  
promoted in decision-making pro-  
cesses touching on environment  
and development issues.

### 6. Integrate Environment and Economics in Decision-Making

Environmental and economic  
goals can and must be made mutu-  
ally reinforcing. Sustainability  
requires the enforcement of wider  
responsibilities for the impacts of  
policy decisions. Those making  
such policy decisions must be  
responsible for the impact of those  
decisions upon the environmental  
resource capital of their nations.  
They must focus on the sources of  
environmental damage rather than  
the symptoms. The ability to antic-  
ipate and prevent environmental  
damage will require that the eco-  
logical dimensions of policy be  
considered at the same time as the  
economic, trade, energy, agricul-  
tural and other dimensions. They  
must be considered on the same  
agendas and in the same national  
and international institutions.

### 7. Reform International Economic Relations

Long-term sustainable growth  
will require far-reaching changes  
to produce trade, capital and tech-  
nology flows that are more equi-  
table and better synchronized to

environmental imperatives. Fundamental improvements in market access, technology transfer and international finance are necessary to help developing countries widen their opportunities by diversifying their economic and trade bases and building their self-reliance.

### 8. Strengthen International Co-operation

The introduction of an environ-  
mental dimension injects an addi-  
tional element of urgency and  
mutual self-interest, since a failure  
to address the interaction between  
resource degradation and rising  
poverty will spill-over and become  
a global ecological problem. Higher  
priorities must be assigned to  
environmental monitoring, assess-  
ment, research and development,  
and to resource management in  
all fields of international devel-  
opment. This requires a high level  
of commitment by all countries to  
the satisfactory working of multi-  
lateral institutions; to the making  
and the observance of international  
rules, in fields such as trade and  
investment; and to constructive  
dialogue on the many issues where  
national interests do not immedi-  
ately co-incide, but require negoti-  
ation to be reconciled; it requires  
also a recognition of the essential  
importance of international peace  
and security. New dimensions of  
multi-lateralism are essential to  
sustainable human progress.

## SUMMONING THE ENERGY

A few hundred thousand years ago, 'energy for survival' meant strong legs to escape the sabre-toothed tiger. It meant, too, strong arms and backs to fight and kill the game needed for food. Sometime later, as early members of our species crossed the Mediterranean land-bridge from Africa to Europe, priorities changed.

## WILL WE SAVE TOMORROW?

Cleverness and ability to plan ahead became as vital as strength and speed: the 'fire-tender', who kept alive a few moss-wrapped, glowing coals during nomadic travel, became vital. In Europe's harsh winters, having no fire meant not surviving. Today, we are tomorrow's keepers-of-the-flame.

We are already using or testing many forms of 'renewable' energy, from human and animal muscle, to wood, hydro (water-generated) electricity, cattle dung, biogas, plant-generated energy, solar and tidal power, geothermal energy, wind power and nuclear breeder reactors.

They are as tangible as those prehistoric coals. But our primary sources of energy - natural gas, coal, peat, oil, and even conventional nuclear energy - are non-renewable; each relies on a finite resource-base. Even in the field of renewable energy-fuels, such as timber, plants, and even dung, we often use the available supplies much faster than they can be replaced with the existing policies.

## OR CURSE IT?

In the '70s, when Western Canadian oil producers, in the province of Alberta, could not get the high prices they wanted from Eastern Canada's industrial belt, they coined a half-jesting slogan which soon appeared on auto-bumper stickers - "Let the bastards freeze in the dark!" We would not

want to invoke such a cynical curse on our children, or on theirs. Yet the sum of current global energy policy may inflict precisely that future on our global village.

## FIVE SIMPLE NEEDS

We need no research to understand the future's needs. They are simple and direct:

1. Energy supplies must be adequate to permit a minimum of three per cent annual growth of GNP in all Developing Countries.
2. We need to develop aggressive and effective measures for fuel conservation and energy efficiency.
3. We must build public health factors into all our energy cost analyses.
4. We have to protect both our global biosphere, and our local and regional ecosystems from energy-produced pollution.
5. We have to share energy resources more fairly. At the present time, individuals in Industrial Nations use 80 times more energy than those in sub-Saharan Africa, and one-quarter of the world's population uses three-quarters of the planet's primary energy production.

## TEN BILLION TONS

In 1980, our global village used about 10 'terawatts' of energy - a terawatt (TW) equals the energy released by burning about one billion tons of coal.

If per capita energy consumption holds at today's rates, we will need 40 per cent more by the year 2025 just to cover the increase in population. But if we equalize energy consumption and bring the Third World up to Western energy-use levels, we will have to increase energy production by 550 per cent, in the next 35 years.

## POWER-LESS MEANS POOR

There is respectable, and indeed, overwhelming rationale to bring the energy consumption in Developing Countries more into line with Western consumption. Energy-use is directly related to development and GNP. Lack of sufficient energy, to turn the coin over, means poverty. Here are some examples from 1984. The world's 'low-income' nations, that year, used an average of four-tenths (0.4) of a kilowatt of energy per person. Their average per capita GNP was 260 dollars.

The Industrial World used about 7 kilowatts of energy per person, and had a per capita GNP of 11,430 dollars. In the Industrial Nations, therefore, every individual

benefited from the use of 17.5 times as much energy, and lived in an economy producing 43.9 times as much, per person, in goods and services as in the Developing World.

Not only does easier access to energy mean more income in a direct, mathematical progression - there was actually an observable multiplier effect of two-and-a-half times in 1984. Small wonder that Third World nations are feeling both victimized and determined to seek a fairer portion of the globe's energy.

## HOW TO DO IT?

Even with intense efforts in the field of energy-conservation and energy efficiency, any reasonable level of development in the Third World, combined with continuing development in the West, will probably mean an annual consumption of 35 terawatts, 40 years from now.

An increase of 3.5 over today's energy consumption would have unthinkable environmental consequences; if we were simply to expand our state-of-the-art energy production. We would have to:

- use 1.6 times as much oil each year;
- consume 3.4 times as much natural gas annually;

- burn five times as much coal as the 1980 level; and
- increase nuclear power generation by 30 times over 1980 levels - which would mean installing a new nuclear power-plant about every three days over the next 40 years!

We can reduce those potential power needs by at least half - but it will take an energy-efficiency revolution. No lesser goal is worth pursuing.

## HIGH RISK FUTURE

A high-energy future for the world implies untenable risks:

- climate change caused by the 'greenhouse effect';
- severe urban-industrial air pollution;
- major environmental destruction from acid rain; and
- appalling risks of nuclear accidents and radioactive contamination from waste disposal - not to mention the spiralling dangers of the spread of nuclear weapons, which are directly tied to nuclear power-plants around the world.

Unless we abandon our current energy-use patterns (forecasting a quadrupled rate of coal-burning, increased oil-consumption by 1.4

and double the use of natural gas), we can assume there will be 'significant global warming' over the next 30 years.

But what is 'significant'?

It is only an average temperature increase, globally, of from 1.5 to 4.5 degrees Celsius, as the carbon dioxide released from burning fossil fuels builds the 'greenhouse effect' and traps the solar heat inside our atmospheric envelope.

But why is this significant?

Scientific studies determine that, even at the lower end of the forecast temperature changes, expansion of ocean waters as their temperature rises would lead to melting of the polar ice and would raise sea levels from between one metre plus, to as much as eight metres, which is over the height of a three-story building!

## PERMANENT FLOODING

Low-lying coastal cities, which are often the most populous, and agricultural lands, which are usually the most fertile being in delta regions, would vanish under the world's oceans by the year 2017. At present, no one can guess the economic, social and political disasters which could follow - **beginning 30 years from now.**

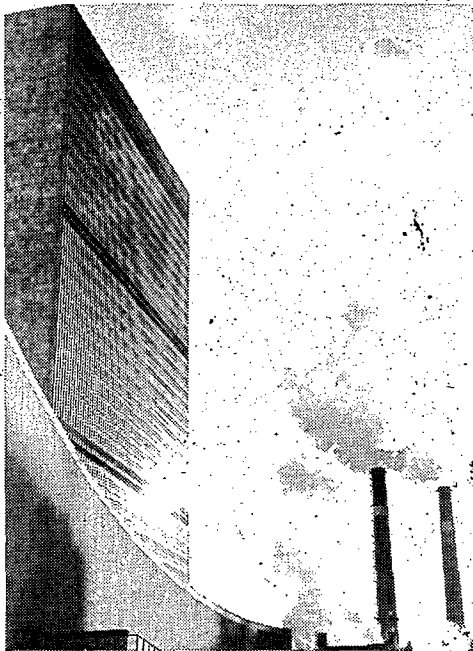
Will it happen? We cannot be certain. How can we be sure it will happen? But by continuing as we are and risking the consequences. You might observe that this is rather like crossing a busy super-highway, on foot, and blindfolded - on the assumption that the statistical risks will, perhaps, be suspended for that moment! Not a very reliable prescription for survival!

## NO INCREASES IN FOSSIL FUELS

Nor is technology going to be our saviour from this recipe for mutual destruction, for there is no technology to remove carbon dioxide emission from burning fossil fuel.

We can reduce sulphur and nitrogen emissions, and thus the danger of acid rain. But to avoid accelerating the 'greenhouse effect', we simply have to stop multiplying our use of oil, gas, coal and the other fossil fuels - and most especially coal.

Many observers cite the need for vast structural and economic changes to develop a 'safe' energy future. They are right. But our present knowledge shows that the globe can reach the development levels we need, (allowing for a 50 per cent drop in per capita energy use in the Industrial States, and a 30 per cent increase in the



U.N. Photo

## TO SURVIVE

Developing Nations), if we use the most energy-efficient technologies and systems we already have - and use them in every sector of our economy.

### TOUGH CHALLENGE

Tough? Of course it is! But we must change to grow and survive. We have no alternatives.

We have already seen, over the past 13 years in the Industrial States, that we can manufacture industrial products with as much as a 33 per cent reduction of energy-use per unit of production.

### RED FACES & WET FEET

To make those improvements universally, and to allow continuing growth and development without destroying the global society that development should serve, we will have to move quickly. There is a lot to do. We must:

- vastly improve and extend monitoring and assessment of hazards;
- increase research dramatically - and globally;
- develop international - and internationally-accepted standards to reduce the emission and accumulation of noxious gases; and
- plan and agree on strategies, now, to deal with the climate change already in process, to minimize damage from rising sea-levels. Many of today's complacent economists, planners and politicians are going to have very red faces - and very wet feet - if we do not plan the technological 'dikes' we will soon need.

### BAN THE CAN!

Even today, about one-third of global 'warming' is caused, not by burning fossil fuels, but from other chemicals - chiefly the chlorofluorocarbons used in refrigeration systems, aerosol 'spray' cans and the manufacture of plastics. If their use is not curbed, those chemicals will cause half of all global 'warming' 40 years from now.

Aerosol cans are already banned in several countries, and industry has developed substitutes for chlorofluorocarbons. But the ban should be universal. The chemical industry, to ensure its own survival, should start crash-programmes to find more industrial substitutes for chlorofluorocarbons.

### STUDY GLOBAL IMPACT

All new development schemes, and especially those hinged on bilateral or multilateral aid, or the participation of the IMF, World Bank or other international agencies, must begin to incorporate, in every feasibility study, impact studies related

## ENERGY: CHOICES FOR ENVIRONMENTAL DEVELOPMENT

It is an ill wind that blows no good. Chapter Seven of the WCED Report states that energy efficiencies, brought about by the 1973 Middle East oil crisis, forced the industrialized countries to make more efficient use of oil and fossil fuels and to develop more cost-effective ways of driving their economies. Thus were empowered the engines of growth required to drive the global economy toward prosperity.

In this crucial Chapter, the Commissioners point to the way the world must go, in the future, if we are not to destroy ourselves in the process, and they document their claim that we do not have too much time left. "The biblical Ten Plagues of Egypt and the Deluge will seem mild in comparison to what could happen if we do not act now", the Report warns.

"A safe and sustainable energy pathway is crucial to global prosperity, but we have yet to find that path", Chapter Seven of the WCED Report claims. To bring Developing Countries up to the levels now used in the Industrialized Countries would require an increase of the energy used at present by a factor of five, which the planet's ecosystem could not stand.

Planet Earth is already 'running a temperature', so we need to put as much money into developing sources of energy as we now put into nuclear research.

The Commissioners recommend a strategy to stop the increasing temperature rise or 'greenhouse effect'. It is changing the world's climate and bringing threats of widespread flooding of coastal areas. Their four-point strategy includes:

- improved monitoring and assessment of the evolving phenomena;

- increased research to improve knowledge about the origins, mechanisms and effects of the phenomena;

- the development of internationally-agreed policies for the reduction of the causative gases; and

- adoption of strategies needed to minimize damage and cope with the climate changes and rising sea levels.

The very real threats of the 'greenhouse effect', or planetary warming and acidification of the environment, rule-out even a doubling of present energy use. So, to increase growth, we will have to develop less energy-intensive methods and design new technologies which use about half the present energy requirements. It can be done, and we can save money in the process.

Policies for greater energy-efficiency must be the 'cutting edge' of national energy strategies. The best measures are economic, by charging consumers for the real cost of energy. Many countries, including the led developed, are adopting such measures as part of their adjustment to a decade of high-cost oil.

The industrialization, agricultural development and rapidly-growing populations of Developing Nations will need more energy. Any realistic global energy scenario must provide for substantially increased primary energy use by Developing Countries.

"Energy efficiency can only buy time for the world to develop 'low-energy paths' based on renewable resources, such as hydro-solar and wind-power and biomass energy, which should form the foundation of the global energy structure during the 21st century", the Report states.

While these new technologies have yet to be developed, they will require much technical research and dissemination. Achieving those use-levels will require a programme of co-ordinated research, development and demonstration-projects, requiring investment on a par with past nuclear energy development.

The generation of nuclear power is only justifiable if there are solid solutions to the unsolved problems to which it gives rise. The highest priority should be accorded to research and development of environmentally-sound and ecologically-viable alternatives - as well as to the means of increasing the safety of nuclear energy.

The cost-effectiveness of 'efficiency' as the most environmentally 'benign' source of energy is well-established. By using more efficient processes and technologies, the energy consumption per unit of output could be one-third to one-half less than that of typically-available equipment.

It is clear that a low-energy path is the best way towards a sustainable future. Within the next 50 years, nations have the opportunity to produce the same levels of energy services with as little as half the primary supply presently consumed. This, however, requires profound structural changes in socio-economic and institutional arrangements and is an important challenge to global society.

"A safe, environmentally-sound, and economically-viable energy pathway, that will sustain human progress into the distant future, is clearly imperative. It is also possible. But it will require new dimensions of political will and institutional co-operation to achieve it", this chapter of the Report concludes.

to health, climate and to the environment.

Similarly, all over the world, the most energy-efficient and environmentally-sound technologies should be fundamental to all new industrial or energy-utility development.

### ACID, LUNGS AND DEATH

No one can project or estimate the global damage already done by acid rain. The World Health Organization estimated, in July 1987, that the health of 600 million people was at risk from this cause alone - as many people, that is, as the entire population of Europe.



**MOHAMED SAHNOUN**  
Algeria

*Algerian Ambassador to the United States; Chief of Algerian Permanent Mission to the United Nations 1982-84; Algerian Ambassador, Paris 1979-82; Algerian Ambassador, Bonn 1975-79; Deputy Secretary General Arab League 1973-74; Deputy Secretary General, Organization of African Unity 1964-73.*

(CONTINUED)

In the U.S., a group of medical researchers and physicians told the American Senate that, after smoking, they now regard acid rain as the leading cause of lung cancer.

In Europe, acid rain damage to forests and lakes is extensive, and may already be irreversible.

In Japan, there are studies that show crop losses of up to 30 per cent from acid rain in grain and rice production.

### OR STOP THE RAIN

We are sacrificing our forests, our lakes, our food production - and even the health and sometimes the lives of our children. Yet we could stop acid rain at a cost of two or three per cent more on our electricity bills. That is all it would take!

We would not be prepared to put up with a neighbour firing random rifle bullets through the walls of our home. So why do we allow the equally direct and intimate invasion of our communities and our lungs, of wind-borne, trans-national killers such as acid rain? Equally, why do we persist in firing those same shots through our neighbour's windows, with the puerile excuse we "need more research" to see whether the gun is loaded?

### CHERNOBYL SYNDROME

Similar riddles and contradictions of rational behaviour attend our development of nuclear energy. Experts, including leading spokesmen for the nuclear-industrial complex, freely predict that there will be more 'Chernobyls' - even without a further spread of nuclear generating-stations.

Opinion polls show 90 per cent of us fear nuclear accidents; well over half the world's citizens say they do not believe the reassurances of the nuclear industry, and they do have cause.

### ADVANTAGES VANISH HAZARDS REMAIN

Many recent revelations have shown consistent 'cover-ups' (by both government agencies and industries) of nuclear hazards, and of inadequate design, safety - and monitoring-procedures in atomic energy plants.

Even in terms of pure economic arguments, divorced from the costs and risks of obvious hazards, the predicted advantages of nuclear power generation, over conventional forms of power, have evaporated with lower petroleum prices.

### NUCLEAR SKELETONS

Few of us would light a brush fire beside our own homes, if we lacked both the knowledge and the equipment to put it out before we lost our home and belongings. Yet, with thousand of tons of radioactive waste now stockpiled from nuclear generating plants, we still do not know how, safely, to dispose of those most lethal poisons ever created.

There are now 366 operating nuclear power-plants in the world, and another 140 are in the active planning stage. The potential for tragedy increases with every new plant - and not just localized tragedy, as northwest Europe learned after the Chernobyl disaster.

Here is the blunt truth. **There can be no justification for building nuclear power-plants until we can find bullet-proof solutions to the lethal risks we are creating.**

We must:

- have universal agreement on notification, internationally, of all nuclear accidents and hazards, together with an effective surveillance and monitoring system;
- plan ahead for emergency responses to those accidents we know we are going to have;
- establish international agreements on the transport, and storage, of radioactive materials across any national boundaries;
- develop international standards of training and licensing of the men and women who operate our nuclear power-plants;
- apply, world-wide, minimal safety standards;
- develop global standards for radioactive waste storage;
- develop global standards for the dismantling and decontamination of nuclear plants, as they end their span of productivity;

### WOOD-SMOKE AND BURNS

Let us now turn from corporate to personal challenges and problems of energy production.

About 70 per cent of the Developing World's population still depends on wood for fuel, heat, even light, but the hazards are many and varied.

In many areas, wood supplies are dwindling faster than they can be replaced. While villagers and farmers mostly tend to gather dead branches and twigs, Third World city dwellers often rely on timber cut from diminishing forest stocks and trucked to the urban areas. As supplies shrink, prices rise.

In Ethiopia's capital city, Addis Ababa, many families have to spend as much as half their entire income on fuel for cooking, and to survive the cold nights at over 3,000 metres above sea level.

There are several models of 'fuel-efficient' stoves being used throughout the Third World. Most can be built, at literally no cost, from mud and straw bricks, baked in the sun. Most are at least four times as fuel-efficient as the traditional, three-stone, open fire. When a fuel-efficient, mud-brick stove was used at a large feeding centre in Ethiopia, the cooking time to prepare a large pot of rice was reduced by four and a half times; the fuel consumption was cut six times; and the food was cooked both more thoroughly and more evenly.



Dilip Mehta

*Wind power in Barbados*

Pneumonia death rates, especially among infants and children, are extremely high in societies where family huts are constantly filled with wood-smoke from open, three-stone fires. In some areas (such as the highlands of Ethiopia) over half of all small children hospitalized are suffering severe burns caused by falling into the cooking fires.

### OR GRASSROOTS CHANGE

Fast growing varieties of firewood could be 'farmed' on small lots, especially on hilly terrain where they would help retain soil moisture and prevent erosion.

Ethiopian technicians have developed a solar cooker for family use. It is simply a molded, parabolic mud dish, baked hard in the sun and covered in metal foil. This 'solar dish' is adjustable according to the height of the sun, and has a hook on which to hang a cooking pot.

The solar cooker boils a litre of water in eight minutes, at no cost in fuel. But villagers, seeing the water boil with no visible flame, fear the 'evil spirit', or 'magic', used in this glittering contraption. The moral of this example is that progress always depends on education, and on the creation of, and not just the acceptance of, a demand for the product at the grassroots.



As of today, the development of renewable energy sources is at about the same stage of human, technological evolution as the stone axe, or 'slash and burn' farming.

### HYDRO'S HUGE POTENTIAL

About 21 per cent of world-wide energy-consumption today is from renewable sources. The remaining potential, especially in hydro-power, is immense. However grave environmental hazards associated with major hydro projects must be carefully studied.

Benefits could be spectacular if, for example, neighbouring nations and regions would develop hydro potential co-operatively, and then share those resources. The continuing development of 'superconductors' is a particularly exciting prospect in this regard.

### SOLAR COULD BE CHEAPER

Solar power generation, with photovoltaic cells, now costs about five dollars per 'peak-watt', as compared with one to two dollars for conventional electricity. However, that five dollar figure is down from 600 dollars a mere decade ago - it will surely soon reach the competitive price level. In the meantime, solar power is still cheaper, in remote areas, than construction of long-distance power grids or the importation of fuel.

In California, experience indicates that wind-generated power will be competitive with conventional electricity within a decade.

### ALCOHOL BEATS OIL

In 1984, Brazil produced 10 billion litres of ethanol fuel alcohol from sugar-cane. The cost was competitive with the 1981 world oil prices. With a drop in petroleum prices, however, Brazil's advantage is that it still saves 60 per cent of its former hard-currency costs for importing energy-fuel.

### TAPPING EARTH'S FURNACE

Even geothermal energy generation - tapping into the earth's subterranean furnaces - has increased 15 per cent annually in recent years, and no one knows the ultimate potential of this energy source.

### SMALLER CAN BE BETTER

A great advantage of the non-traditional and renewable energy systems is that they are mostly labour-intensive and best-suited to small-scale, community or family enterprises. So they generate employment and, at the same time, are safe from international swings in prices, foreign exchange rates and security of supply.

We have most of the technology we need. The real hurdles now are political and institutional. National energy policies must increase dramatically the emphasis on renewable energy and on experimental pilot-projects.

The means must be found to dynamite the log jam of government regulation and corporate inertia, which prevent the giant electrical utilities from venturing into new systems, or accepting power supplied by smaller and less conventional systems.

A kerosene-dipped wick, to be explicit, has the same illumination that one would get from a 2-watt bulb - if one could imagine such a small bulb. Yet the kerosene or oil lamp uses the same amount of energy as that which is consumed by the 100-watt bulb. The damage done to lungs, eyes and learning potential adds the waste of human resources to the actual waste of energy.

The Industrial Nations would probably have to face a state verging on civil war - or revolution - if their citizens were suddenly forced

build a huge network of new power-generating stations.

Every nation should require 'energy labelling' to indicate the power consumption of all appliances. People do behave rationally, when they are informed and given choices.

Energy 'book-keeping' is essential in every sphere of activity - as are 'energy audits' of all commercial and industrial enterprises. Current experience proves the pragmatic and immediate economic benefits of those practices to industry.

At the moment, transport accounts for up to 60 per cent of all petroleum use in Industrial Nations. We have seen remarkable improvements in fuel-efficiency in this decade. But we know the current average consumption (of 100 kilometres per ten litres of fuel) could be cut by a further 50 per cent in the next 12 years - with sustained effort. The savings in air pollution alone would be monumental!

### PARACHUTES & SOLAR PANELS

We could have hydrogen energy, safe, renewable, nuclear fusion energy and 'breeder' reactors, and one and half kilometre-long solar panels 'parked' in space to relay 24-hour energy from sun to earth. All these are possible - as well as a gigantic harnessing of the limitless heat which is locked in the earth's core. Such potential untapped, though, has about as much relevance to that Third World mother mentioned earlier, as does a parachute in a cupboard at home to a man thrown out of an aeroplane!

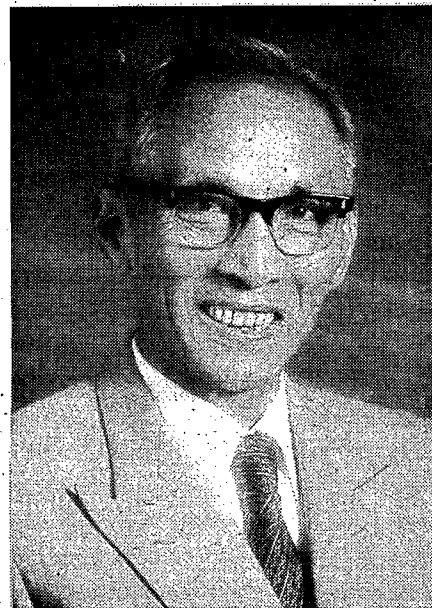
By using the technology that we know about now and by intensifying our pursuit of renewable-energy and energy-conservation, we can buy the time we need, until that global 'energy parachute' is delivered.

If we fail to do these things, however, our landing may be very rough - and very soon!

### MA SHIJUN

Peoples' Republic of China

Director of the Research Centre of Ecology, Academia Sinica; Chairman of the Commission of Environmental Sciences; President of the Ecological Society of China.



*"A forest is an ecosystem that exists under certain environmental conditions, and if you change the conditions, the system is going to change. It is a very difficult task for ecologists to foresee what changes are going to be because the systems are so enormously complex.*

*The direct causes behind an individual tree dying can be far removed from the primary pressure that brought the whole system into equilibrium. One time it might be ozone, another time it may be SO<sub>2</sub>, a third time it may be aluminium poisoning.*

*I can express myself by an analogy: If there is a famine there are relatively few people who die directly from starvation; they die from dysentery or various infectious diseases. And in such a situation, it is not of very much help to send medicine instead of food. That means that in this situation, it is necessary to address the primary pressures against the ecosystem."*

Alf Johnels

Swedish Museum of Natural History  
WCED Public Hearing, Oslo, 24-25 June 1985

There is only one respectable power monopoly - it is the one 'owned' by our children, and theirs, for whom we must guarantee an energy-secure and energy-safe future.

### SPIRAL INTO POVERTY

Ironically, when Third World families are denied the benefit of knowledge, technology and help, it accelerates their spiral into poverty and guarantees their inefficient use of the few resources they do possess. Energy provides a classic case in point.

A rural mother in India, Nigeria or Brazil, cooking her family's meal in an earthen pot, over a three-stone fire, uses eight times as much energy as her neighbour, using a metal pot on a gas-fired stove.

In the Third World, many families obtain their only light from a string or wick which is dipped into a pot of palm oil or a jar of kerosene. In the tropics, where darkness falls at six every day of the year, the traditional oil or kerosene lamp gives only one-fiftieth the illumination of one 100-watt light bulb for the children who are trying to study their school lessons at home.

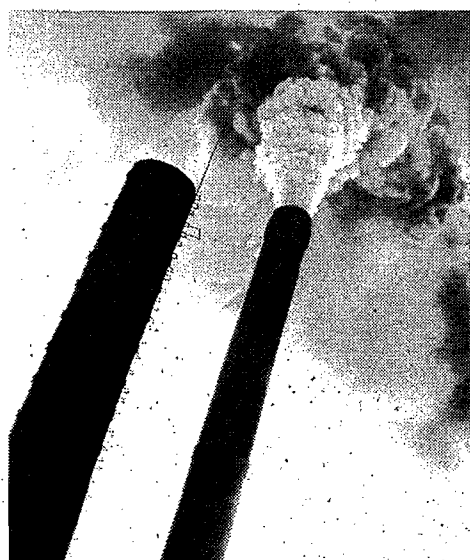
to pay 50 times more for the equivalent energy-use for lighting their homes.

### ECONOMICS OF EFFICIENCY

Another note about the economics of efficient energy. A study in Brazil examined the cost of producing truly energy-efficient products with current technology - from refrigerators and autos to street lights and electric motors. The total investment (much of which would be recovered) was estimated to be four billion dollars.

However, the investment of four billion, it turned out, would save Brazil 19 billion dollars over 14 years, through the reduced need to

# MAKING MORE WITH LESS, MEANS



UN photo

*Smokestacks, such as those in the Saar industrial region of the Federal Republic of Germany contribute to the creation of serious problems through the pollution of air and water, and damage to buildings and to agricultural lands by acid rain.*

Environmentalists have, for many years, had a love/hate relationship with industrialists. The global village must have industrial technology to solve our environmental problems, and industrial production to fuel the 'engine' of development. But, beginning in the '50s, industry was seen as the 'enemy' - the Great Destroyer of our eco-sphere.

Until the middle of this century, London, England took pride in its nickname, 'The Big Smoke' - for two centuries this had implied the concentration of industry, wealth and power.

But with the '50s came London's 'killer smogs' and an epidemic of pollution-triggered deaths from respiratory failure. Industry, of course, was not the only villain - the smoke from one million plus coal-fired household stoves and fireplaces added greatly to the accretion of deadly smoke.

Our awareness of pollution costs grew with the Los Angeles smogs, the 'death' of Lake Erie, and the profound degradation of major European rivers - including the Elbe, the Meuse and the Rhine. The late '50s brought us the epidemic of mercury poisoning in Minamata, Japan, and in northwest Ontario, Canada. We began hearing horror stories of asbestosis in plant workers and lead poisoning in slum children.

## EXPLOITERS & CRIMINALS

As our understanding of pollution hazards grew through the late '50s and the '60s, the battle lines were drawn. On one side, the environmentalists were calling for the

scalps of polluters; on the other, industrialists who were accustomed to being seen as social benefactors - providing employment and wealth - were now being portrayed as virtual criminals and unfeeling exploiters.

At the extremes, environmentalists saw industrial managers as near-monsters; corporate leaders viewed the environmentalists as illinformed anarchists, trying to destroy, indiscriminately, the benefits of industrialization.

"Zero-growth" and "Small Is Beautiful" were the legends on battle flags. Conservationists looked like the foes of all progress to industry; but to those intent on preserving our planet, the globe's industrial plant was a juggernaut, remorselessly grinding nature and man alike under its giant wheels. Both views, as we know now, were as wrong as they were simplistic.

## PARTNERSHIPS WORK

Industry can enhance our eco-sphere as easily as it can degrade it. Environmentalists can, and do, work with industry - as must we all. Industrial production exploded in the two decades following 1950; we now produce seven times more in total goods and services than we did 35 years ago, although growth now seems to have stabilized at about three per cent annually.

Developing Countries, with almost no industry at all when they gained independence after World War Two, now account for about 12 per cent of global manufacturing, and India is the world's ninth-ranking industrial power. Third World nations, however, are still less than halfway towards the goal of 25 per cent of world production, which was set by the United Nations Industrial Development Organization meeting in Lima, in 1975.

## PROGRESS, BUT...

New industries in Developing Nations are not always 'good news'. The majority of them are capital-intensive, heavy industries, in the fields of chemicals, metal products, machinery and equipment - which are, generally, the worst polluters.

Unfortunately, Third World countries usually lack the expertise and resources needed to assess environmental risk, to monitor manufacturing and to enforce adequate pollution controls.

## STILL LOSING GROUND

There has been, especially in Industrial States, a considerable and visible reduction in pollution, with marked improvement in the environment, but we are still losing ground in many areas.

Fertilizer and sewerage run-off are increasing, the latter exacerbated by mushrooming populations in Third World cities. So, globally, there is an increasing incidence of fish-kill and increasing quantities of poisoned water, leading to destruction of plant life on land and in our seas. Atmospheric levels of sulphur and nitrogen oxides are rising in many areas. Lead pollution is endemic in Third World cities, where emission controls on autos, trucks and buses are non-existent; and most vehicles, which are kept on the road twice as many years, on average, as in the West, are poorly maintained.

## WORSE THAN THE WEST

In many cities in the Developing World, air pollution is already worse than any experienced in Industrial Nations in the '50s or '60s.

Chemical pollution has spread to every corner of the globe. Heavy metals and other toxins have been found in the most remote and isolated birds, animal and marine species of the Arctic and Antarctic.

## CONTROLS, GOOD BUSINESS

Fortunately, the experience of the past two decades has shown us how to attack these problems. Moreover, we have learned that pollution controls are good business and good economics. Even ignoring the plant and animal species preserved, and the vast savings in health and lives, pollution-free industry almost invariably earns or saves more money than it costs. It is noteworthy, for example, that the only steel companies which are doing reasonably well, in the current world-price slump, are those which have made themselves the most environmentally-efficient.

## CLEAN-UP PAYS!

About half of Canada's 80 pulp-and-paper plants have installed, or plan to install, environmentally-safe anaerobic treatment of their effluent discharge. The system costs from three to four million dollars per plant and requires annual operating costs of about 500,000 dollars.

## MEGA-BUCKS PROFIT

But those anaerobic systems generate savings of one million dollars annually. So, after allowing for operating costs, the new treatment schemes generate half a million dollars yearly, which repays their installation costs in six to eight years; after that, they produce a 500,000 dollar annual profit.

As noted in the previous chapter, cleaning-up acid rain would only add from two to five per cent to the average electricity billings. Public opinion polls have shown that most

consumers would happily pay that cost. But there are also actual dollar benefits involved.

## COSTLY CORROSION OR...

In the northeastern U.S., for instance, it is estimated that a full clean-up of the causes of acid rain would cost from six to seven billion dollars a year; but the annual costs, in this same area, of corrosion damage caused by acid rain is nine billion dollars. Add to that the cost of the lakes and fisheries destroyed, the lost tourist revenue, the annual decimation of the maple sugar industry by acid rain damage, and the still-to-be-estimated losses in the forest industry.

## ...POLLUTION PREVENTION

In point of fact, the 'environmental industry' sector, from sewage treatment to PCB control, has become the most certain growth industry in the world. In Canada, for example, there are now 110,000 workers employed in this sector. The environment industry sector employs 12 times more people than those engaged in coal mining; twice as many as all the workers employed in motor-vehicle production; 40 per cent more than the total jobs in every segment of the textile and clothing industry.

## CRISIS MANAGEMENT FAILS

Too often, environmental controls are still 'reactive', rather than 'pro-active'. Often, we only identify a problem when it has become critical - and only then do we 'fix it'.

Every such case of crisis management is a public demonstration of failure.

Anticipation and prevention are always cheaper and much more efficient than reaction-and-cure. Industrial economists or engineers will confirm that fixing or changing any product or plant equipment is, on average, 40 times more expensive than building the modifications into the original design. Auto manufacturers experience those horrendous costs in every vehicle 'recall' - even if it is to add only a small screw, gasket, or clamp.

## CONCORDE FARES, SUBWAY TRIPS

In truth, our spasm-response, fire-fighting system of pollution abatement is the most expensive possible method we could adopt. It is about as sensible as paying Super Concorde fares for a subway trip to the office.

Let us examine the scale of growth we are going to need (which will have to be monitored and which must have environmental controls):

# MORE FUTURE WITH LESS PAIN

## INDUSTRY: PRODUCING MORE WITH LESS

"Pollution is a form of waste, and a symptom of inefficiency in industrial production. But there are limits to what society can expect industry, operating in competition with other industries, to do voluntarily. Regulations imposing uniform performance standards are essential to ensure that industry makes the investments necessary to reduce pollution and waste and to enable them to compete on an equal footing", the Report states.

Governments have a vital role to play in this. The WCED Report outlines 'three key principles' which must be enshrined in existing or future international conventions, and which have particular relevance for Canada and the U.S. along the world's longest undefended border.

They are:

- the responsibility of every state not to harm the health and environment of other nations;
- liability and compensation for any damage caused by trans-frontier pollution; and
- equal rights of access to remedial measures by all parties concerned.

Developing Countries could skip the horrors of the industrial revolutions that devastated the social and environmental landscapes of the Developed Countries and move into the post-industrial age without too much disruption to the peace of the planet, if we, in the Developed Countries, would help with technology and know-how, Chapter Eight of the WCED Report concludes.

Industry is the 'engine' of growth and without it the Developing Countries will not be able to feed their growing populations. They will need a five to 10-fold increase in manufacturing output by the time their populations peak in the next century, just to stay abreast of current population growth trends, and to reach current levels in the Industrialized Countries, the WCED Report states.

This can be accomplished without further pollution or degradation of the environment, because the Industrialized Nations have demonstrated that anti-pollution technology is cost-effective and profitable. It pays dividends in better health, while avoiding environmental degradation. Although economic growth in the Industrial Countries has continued, consumption of raw materials has held steady or even declined.

These lessons can be applied to Developing Countries. "Nations have to bear the costs of any inappropriate industrialization, and many Developing Countries are realizing that they have neither the resources nor the time to damage their environments now and clean up later", the Report states. The lessons learned by the Industrialized Countries demonstrate this. So what can be done?

First of all, Developing Countries need help and information from the Industrialized World in order to choose the right mix of technologies to drive their economies.

Trans-national corporations have a special responsibility to smooth the path of the countries in which

they operate. It should be a real partnership. That the trans-nationals make money from the raw materials, cheap labour and markets of the Developing Countries, makes it only fair that they should reciprocate. They should provide more access to information and know-how on the installation and operation of technology and of management procedures.

Emerging technologies offer the promise of increased productivity and efficiency and of decreased pollution. But many such technologies also bring risks of new toxic chemical wastes and of major accidents on a scale, and of a type, beyond our present ability to contain.

"There is an urgent need for tighter controls over the export of hazardous industrial and agricultural chemicals. Present controls over the dumping of hazardous chemicals need to be tightened-up all over the world", the Report states. Pollution and environmental dangers do not recognize political boundaries.

These are all areas where the trans-nationals can play an important role. They can share the environmental-protection and resource-conservation policies and programmes they are now obliged to use in the Industrialized Countries, as well as the new technologies and industrial processes which would reduce pollution and increase profits.

Information technology based chiefly on advances in micro-electronics and computer science is of particular importance. Coupled with rapid, advancing means of communication, it can help improve

the productivity, energy and resource efficiency, and organizational structure of industry.

"Such technologies can also help the Developing World reduce the ultimate costs and stretch scarce resources. They can also learn from the mistakes of Developed Countries," the Report states.

"No longer are economies of scale always the primary consideration. New technologies in communications, information and process-control allow the establishment of small-scale, decentralized, widely-dispersed industries, thus reducing the levels of pollution", the WCED Report states.

Trade-offs can be made - small-scale raw-material processing, for example, is often labour-intensive and widely-dispersed, but it is intensive in the use of energy. Such dispersed industries could relieve big cities of some of their population and pollution pressures.

They could provide non-farming jobs in the countryside, produce consumer goods that cater to local markets and help spread environmentally-sound technologies. Resource and environmental considerations must be integrated into the industrial planning and decision-making processes of government and industry.

"This will allow a steady reduction in the energy and resource-content of future growth, by increasing the efficiency of resource-use, by reducing waste and by encouraging resource-recovery and recycling", the Report concludes.

• If we are to raise Third World consumption of manufactured goods to Industrial Nation levels to create markets, raise living-standards and sustain world development, global industrial output will have to increase 2.6 times over current production.

• Given the expected population growth rate, we will need from five to 10 times more industrial production by the time our global village census levels-off, 50 to 75 years from now.

Much of this expansion must occur within the Third World. This is not the least because the youthful 'population bulge' in Developing Countries will soon throw millions of young people onto the job market; they cannot be employed in agriculture, where there are no jobs.

### FORTY-FOLD JUMP

To put those numbers into perspective, remember we have increased global industrial production 40 times, in the past 35 years. We need the projected growth we have discussed in order to build prosperity in the Third World, as well as to create stable markets for Western development.

Have we the basic resources for such growth? Can we grow so much and still protect our environment? The answer to both questions is "yes", but a very qualified "yes".

### LEARN FROM MISTAKES

Developing Nations can learn from our mistakes. They cannot muster the resources to 'industrialize now, and fix the problems later', as has happened in the West.

*"Why must we gamble with the lives of innocent children in order to generate plutonium for bombs? Even to contemplate dumping radioactive waste in waters that belong to all of us as part of our global heritage is an outrage."*

*Peter Wilkinson, Greenpeace; WCED Public Hearing, Oslo, 24-25 June 1985*



**MAURICE STRONG**  
Canada

*President, American Water Development Inc.; former Under-Secretary General and Special Advisor to the Secretary-General of the United Nations; Executive Director of the United Nations Office for Emergency Operations in Africa 1985-86; Chairman of the Board, Petro-Canada 1976-78; Executive Director, United Nations Environment Programme 1973-75; Secretary General, United Nations Conference on the Human Environment 1970-72.*

(CONTINUED)

In any case, given the multiplier effects built into pollution, they would not have the time.

Let us also take a critical look at much of our 'conventional wisdom'. For example, those 'conventional wisdom goals' of manufacturing, such as 'the economies of scale', are no longer necessarily the hallmarks of efficiency and profitability they once were.

In the Third World, smaller, less capital-intensive and more labour-intensive enterprises often make for a better 'bottom line'.

**SMALL SCALE PLANTS**

New communications, information and process-control technology permit small-scale, decentralized industries to be scattered across a nation. Clearly, dispersion reduces impact on local environments and makes controls easier at individual sites.

Further, small-scale processing of raw materials is more labour-intensive - thus it is less energy-intensive and, thereby, less polluting. Labour-intensive industry, as we have noted, is what the Third World needs.

One more point is that small-scale industries will cater to the needs of the local and regional population; their products are far more likely to be 'appropriate' to their consumers.

**SAVING WHILE GROWING**

So what about the availability of the resources we will need in order to grow? Some examples from our

contemporary experience demonstrate some encouraging facts.

a) Between 1973 and 1984, Japan reduced the amount of raw material used in each unit of production by about 40 per cent - whether that unit was an auto, a television set, or a railway car.

b) In the U.S.S.R., production of industrial chemicals rose 76 per cent, from 1975 to 1980. In the same period, however, the total consumption of fresh water stayed constant within that industry.

c) Older, 'traditional' pulp-and-paper mills use about 180 cubic metres of fresh water to produce one ton of pulp. Mills built since the early '70s use only 70 cubic metres, a reduction of about 60 per cent. Still newer methods, where water is cleansed and recirculated, could bring water-consumption down to 20 or 30 cubic metres per ton of pulp made - which is one-ninth of the volume formerly needed.

d) In steel mills, anywhere from 80 to 200 tons of water are needed to produce a ton of crude steel. But 'closed', re-circulation systems could reduce this to only about three tons - which is the amount lost through evaporation.

Resource-efficiency is possible. It is being practised in many sectors where its pragmatic potential has been tested and accepted. New materials - ceramics, rare metals, metal alloys, high-performance



UN photo

*A car junkyard in New York City*

plastics, and new composites - are now playing a significant role in both energy and resource conservation.

**BIO-TECH MAJOR ROLE**

Bio-technology has a major role to play. More and more, plant-derived energy (such as from Brazil's sugar-cane) offers a fully-renewable energy-source and a reduction in burning of fossil fuel.

Research already promises more and better biologically-based, cleaner, and more efficient processes in industrial sectors which are the heavy polluters. Other research may soon give us cheap, safe ways to eliminate hazardous liquid wastes. (One firm has patented a genetically-engineered bacteria to 'eat' and digest petroleum from marine oil spills!)

**SKY-TECH AND GENES**

Satellite imagery, now vital to global agriculture through the weather observations could also help us to make the best and most efficient use of planet-wide resources, by monitoring and assessing long-term trends in climate, erosion, plant-cover, and marine pollution.

One of the most dramatic and exciting areas of genetic engineering holds the possibility of plants which could literally absorb nitrogen from the air.

Such a development would have a profound impact on the world's fertilizer industry. It would also reduce immensely the globe's burden of agricultural pollution.

Governments, industry and the public must be equally involved. Trans-boundary pollution must be regulated. Every nation must accept responsibility to avoid damaging neighbouring countries and responsibility to compensate for trans-border damage. Each nation must guarantee full access to all available remedial measures.

Governments must be aware of policies which, through direct and indirect subsidies, have the effect of encouraging resource-depletion and pollution.

Even our water comes with an environmental 'price tag'. Depletion and degradation, even when they are 'written between the lines', are an integral part of every governmental and corporate resource 'balance sheet'.

**EXPLICIT PUBLIC RECORDS**

Those costs must be part of our explicit, public records. Full and accurate environmental book-keeping is vital to the understanding we all need for our survival. Small and medium-sized businesses are still the world's major employers and producers. Lacking the resources of the multi-nationals, however, they are also our worst polluters.

**THE WORST OFFENDERS**

Major corporations and governments must share pollution - and resource-control technology with small business. Metal working, leather tanning and dying, printing, machine-tool manufacturing, and even photo-processing are among the worst offenders in our global village.

Governments, too, can and should encourage co-operative, industry-wide preventive and remedial programmes, within each small-scale industrial sector. These efforts could include joint use of pollution-control facilities and waste treatment plants.

We need infinitely more study of the chemical 'genies' we have been releasing from Nature's storehouse - and which we have been artificially creating. A lot of them are, however innocently created, 'Frankenstein's monsters'.

• There are between 70,000 and 80,000 chemicals now in the global marketplace - that means in our environment.



Dilip Mehta

*Hydroelectric dam in Pakistan*

*"In industry, we feel it must be made mandatory for any firm that 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."*

*Donald Aubrey  
Society to Overcome Pollution  
WCED Public Hearing, Ottawa, 26-27 May 1986*

• We are putting between 1,000 and 2,000 new chemicals on our sales shelves, every year.

• According to a study by the U.S. Research Council, of the 65,725 most commonly-used chemicals, we only have proper health and environmental risk-data for **one pesticide in ten, and one drug in six!** By 1986, more than 500 chemicals had been banned in the West, with respect to both production and sale. Many of them, however, are still being made in, or exported to, Developing Nations.

## OUT OF CONTROL

Third World nations, almost universally, lack the import controls, inspection facilities, technical expertise, human resources and data needed to control those practices. Apart from the research on existing products, every nation should **ban** the production and distribution of any chemical or compound until it **has been proved safe**. Every scrap of relevant information about hazardous chemicals must be made public.

## 10,000 POISONED

Chemical manufacturers, like the pharmaceutical makers, should be required to make every effort to ensure that the end-users, whether of pesticides, herbicides or other products, will fully understand the safe-handling instructions and be aware of the dangers of misuse.

Remember, last year there were 10,000 deaths from pesticide poisoning in the Third World!

The same standards which are applied within Industrial States must be applied equally to all chemical imports and exports, or to the creation of off-shore manufacturing facilities. Maybe this is a new form of extra-territoriality.

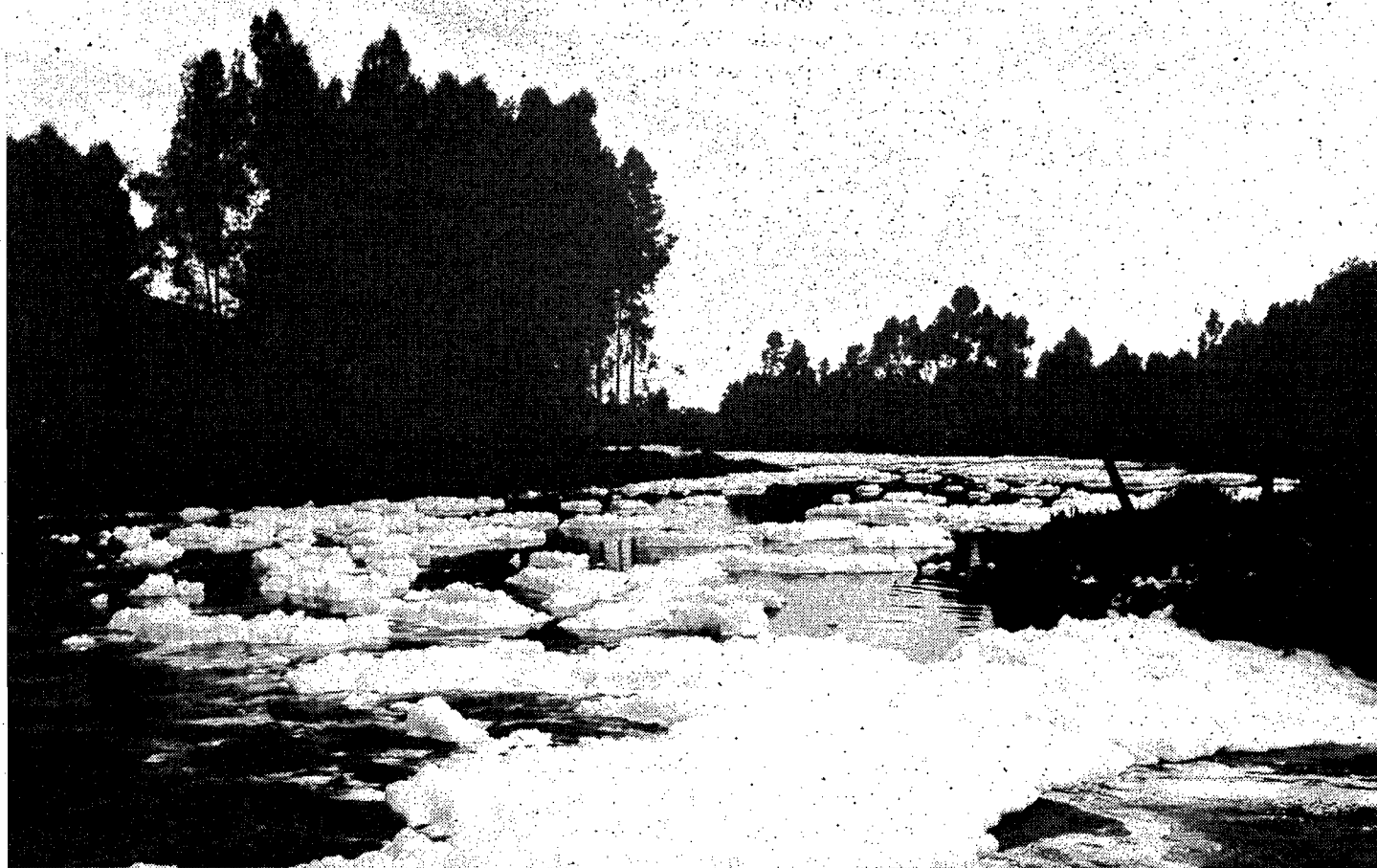
It does not, however, represent an effort to influence or dictate to other nations for commercial gain; rather, it is simple recognition that we are our brothers' keepers - as they are ours.

## HAZARDOUS HASTE

A note to put the responsibility of the Industrial Nations into perspective - in 1984 the world produced between 325 and 375 million tons of hazardous wastes. Only 5 tons were produced in all the newly industrialized and developing nations of the Third World!

## MORE BHOPALS

We know that we are going to have more industrial accidents and breakdowns of a disastrous nature. One thousand people died when liquid-gas storage tanks exploded in Mexico City. More than two thousand died at Bhopal in India. Then there was the accidental release, in



A section of the Bogota River, Colombia, which is polluted by chemical wastes

Viviane Holbrooke/UN photo

1976, of dioxin in Seveso, Italy, resulting in scores of miscarried pregnancies and infants born malformed.

The chemical plant fire at Basel in Switzerland, in November 1986, caused massive fish-kills in waterways as far down-stream as The Netherlands.

There will be more. Not one week has passed during this decade without a potentially catastrophic 'close call', somewhere in the world.

## GLOBAL FIRE BRIGADE

The global village needs a network of risk-assessment, monitoring, and environmental 'fire brigades.' Factory workers and people in the vicinity of industrial plants must be fully-informed, both of the dangers and of the appropriate, life-saving measures that they can take in an emergency.

In the Industrial Nations, drivers are fined if their cars' turn-signals and brake-lights do not work. But we permit corporate secrecy within the factories which constitute many of our most lethal health risks - be they nuclear generating-plants, explosives factories, or chemical manufacturers.

Both industry and governments must be involved in risk assessment and the identification of hazardous operations - and full public disclosure must be made of those facts.

## LABOUR'S DUTY

National and international trade unions, too, have a fundamental responsibility to provide us with risk-data - and to inform their neighbours of unsafe materials and practices. It is the workers, when all is said and done, who are at the 'cutting edge' of pollution risk. They perform the acts, manufacture the compounds, which can threaten us all - and not the least themselves and their children. Each of them, therefore, has a community responsibility which far transcends their loyalty to any employer.

## SOCIAL CONSCIENCE

Factory workers have no more right than the war criminals of World War Two to claim they are 'only following orders'. Clearly, the suppression of information vital to community safety is a social crime that concerns us all.

Knowledge is power, indeed. The power of understanding must be shared, globally, if we are to survive to grow - and grow to survive.

*"It would be quite enough to keep open for our descendants as wide a range of alternatives as our ancestors left for us, to solve enough of the problems that come along so that our children and our children's children will not find themselves boxed-in any more narrowly than we were."*

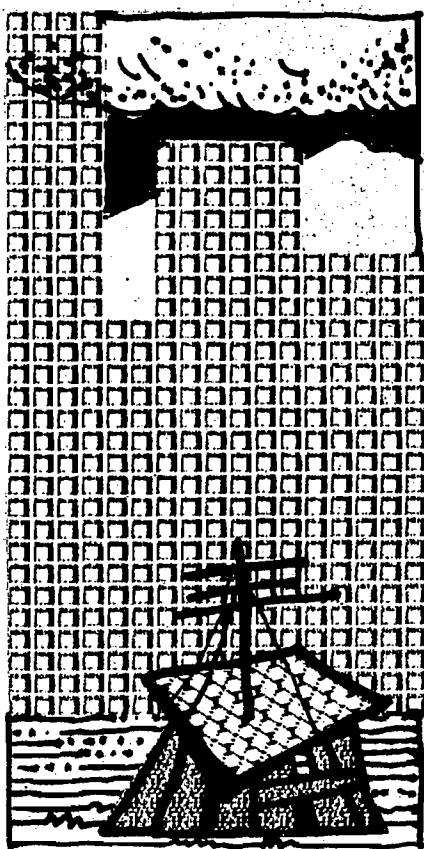
Herbert A. Simon  
quoted in the Royal Society of Canada  
Report on "Human Dimensions of Global Change".



**NAGENDRA SINGH**  
India

President of the International Court of Justice, President of IMO Assembly 1959, President of ILO Maritime Session 1971, President of the Indian Academy of Environmental Law and Research, President of the National Labour Law Association of India, Life Member of the Board of Governors of the International Council for Environmental Law, Member of the Permanent Court of Arbitration, Deputy Chairman of CEPLA (IUCN), Chancellor of the University of Goa, Fellow of the British Academy.

## OUR EXPLODING CITIES:



In 12 years, almost half of humanity will be living in urban settlements. The increase has been most dramatic in Developing Nations, where urban population increased 10 times between 1920 and 1980 - from 100 million to 1 billion. Throughout the world today, one in every three persons lives in a city or town; one in ten lives in a city with a population of 1 million or more!

This is not just a result of simple population increase. More than half the rising urban population is as a result of people migrating from the countryside to the cities to look for jobs, housing and education for their children.

**GROWTH RATES SLOWING**

Growth rates have been slowing - from an average of 5.2 per cent annual increase in the late '50s to about 3.4 per cent annually in this decade. Yet over the next 15 years, we will have to increase our global capacity to provide urban services - shelter, water, sewerage facilities, schools, urban transport and roads - by 65 per cent. Most Third World cities, today, have services adequate

to serve only a fraction of their existing populations, so we cannot merely expand existing city infrastructures.

**NO PLACE TO CALL HOME**

In Developing Nations, most housing occupied by the poor is decrepit - for tens of millions of families, 'home' is a cardboard shanty, a scrap-wood lean-to huddled against another building, a length of empty sewer pipe not yet used by local contractors, a ragged tent, a corrugated tin shack, a palm-thatch hut likely to collapse in the first monsoon rain, or maybe just a ditch or some space on the bare earth or pavement.

**CROWDED AND DECAYING**

Civic buildings in most Third World countries are in an acute stage of decay. Where water and sewerage systems exist, they are best described as 'Dickensian' - installed by colonial rulers maybe 100 years ago. They were designed for populations of perhaps one-twentieth of today's and are by now well past their maintainable life span.

Ancient, corroded and leaking water pipes mean reduced pressure, which allows contaminated ground water and sewerage to seep into municipal water systems that, in any case, may already be contaminated.

In the same way, public transport is over-crowded, over-used and undermaintained. The hallmark of Third World urban transit is the sight of youths and men clinging to the sides of buses or trams, hanging from the windows of commuter trains, and even sitting nonchalantly atop bulging railway passenger cars.

So, too, with roads, communal latrines, neighbourhood water taps or wells. The results are direct and utterly predictable.

**DEATH IN SHANTY TOWNS**

Acute respiratory diseases are common and are usually fatal. So

too is severe infestation of children by intestinal parasites. On top of these, add the diseases most directly linked to overcrowding and to unsafe water and poor sanitation - such as cholera and dysentery, typhoid and hepatitis, polio and whooping cough - all are usually to be found in the Third World. In the shanty settlements of most Third World cities, where half the people live, one child born in four is destined to die within five years. But only 40 years ago, in Berlin, Paris, London, New York and Rome, the infant mortality rates among urban poor were even higher than that.

**DON'T BREATHE THE AIR**

We are not, however, examining small-scale problems afflicting minuscule fractions of the populations of our global village.

Lung cancer rates, in China's largest cities, are from 4 to 7 times higher than the national average - and this in the country with the highest global use, per capita, of tobacco in rural, as well as urban, settings. The reason is that industrialization, in Chinese population centres, has dramatically increased the air pollution. (Remember those U.S. studies discussed earlier - it is thought that acid rain may be the second-ranking contributor to lung cancer).

In Calcutta, 60 per cent of the total population suffers from pneumonia, bronchitis or other respiratory disease which is linked directly to air pollution. There are about 10 million people in Calcutta's metropolitan area. So in the environs of this one Asian city, there are six million victims of air pollution - a number twice the total population of Albania, or more than the entire citizenry of Denmark, Haiti, Finland or the Dominican Republic, in just this one city.

**DON'T DRINK THE WATER**

Now consider the consequences of exploding, Third World urban populations. In India, precisely eight cities and towns have full sewage treatment facilities. Another 209 communities have partial treat-

ment systems. But 2,902 urban communities have no sewerage systems at all! On the Ganges river alone, there are 114 communities, each of more than 50,000 people, dumping untreated sewage into that 'holy' river. To put this into context, however, the city of Montreal - the world's largest French-speaking city outside of Paris - still dumps its raw sewage, each day, into the St. Lawrence River!

**FOR MANY REASONS**

The problems of cities in the Developing Nations are exacerbated by a lack of municipal resources, which has several causes.

Bureaucratic structures, set in place by the European colonial powers, never envisaged the stupendous growth of cities in Asia, Africa and Latin America. But those



UNICEF/Didier Bregnaud

*Clean drinking water is often difficult to obtain for many Guatemalan refugees living in camps in Mexico.*

entirely-inappropriate structures remain, largely unchanged, in the vastly-different world we have today, 40 years after those colonies gained their independence.

Many Developing Nations have copied Western urban systems and structures, assuming them to be the 'most advanced' and, therefore, the most efficient. Usually those role models have proven woefully unsuitable in a Third World setting. Like wine, some Western political traditions and institutions do not travel well, it seems.

Most fundamentally, urban governments in Developing Nations almost never have the financial or political clout of city governments in the West. Invariably, most power (and this includes the vital power to levy taxes) is the sole pre-requisite of the central, national government. In most cases, too, policing is provided by a national force, as are urban transport, commuter transport, social services and education.

*"The shanty-towns have found their own technique, their own resources without any assistance from anyone else, and they solved their housing problems. The real problem is not that. It is the poverty, the lack of planning, the lack of technical assistance, the lack of financing to buy construction materials, the lack of urban equipment.*

*To change this housing policy for human settlements, they should stimulate self-construction, instead of financing these large housing complexes. It would have been much better and would have cost less to help the people carry out the self-construction.*

*Generally speaking, it seems clear that without meeting the basic needs of human beings, concern for the environment has to be secondary. Man has to survive, answer, and attend first to his basic survival needs - food, housing, sanitation - and then to the environment."*

*Walter Pinto Costa  
President, Environmental and Sanitation Association  
WCED Public Hearing, Sao Paulo, 28-29 October 1985*

## REVERSING THE FLOW

### THE URBAN CHALLENGES

Between 1985 and the year 2000, if current trends hold, Third World cities will grow by three-quarters of a billion people. This will increase demand for present services and shelter by 65 percent, in the next 5,500 days, just to maintain a very inadequate status quo, Chapter Nine of the Brundtland Report warns.

In many countries, this must be accomplished under conditions of great economic hardship and uncertainty, with resources diminishing relative to needs and rising expectations. By comparison, cities in the Industrial World will grow by only 111 million, over the same period.

These projections put the urban challenge firmly in the Developing Countries. This is not meant to imply, however, that problems within the cities of the Industrialized Countries are not serious.

Many are confronted by problem of deteriorating infrastructure, (roads, bridges, sewerage systems, police protection, health, hospital and social services), environmental degradation, inner-city decay and neighbourhood collapse.

"The unemployed, the elderly, the racial and the ethnic minorities can remain trapped in a downward spiral of degradation and poverty, as job opportunities and the younger and better-educated individuals leave declining neighbourhoods", the Report states.

#### CHINA - SRI LANKA

When Sri Lanka instituted direct-elected 'local councils' in 1980, urban council members soon found they could not purchase so much as a single light bulb for their offices, without reference to the national Member of Parliament responsible for their area!

There are exceptions. In China, urban councils have very considerable power - power reflected in an almost combative spirit of interurban competition, which has contributed greatly to regional development and, ironically, to urban pollution as well.

#### CITIES NEED MORE POWER

Third World cities need infinitely more power - to levy taxes, to organize and plan social services and infrastructure - if they are even to begin to meet the challenges now in place, let alone those of the next 30 years. The Industrial Nations must help, by providing both funds and expertise.

It points out that most Industrialized Countries have options not open to Third World cities - such as the means and resources to tackle inner-city decay - and they are using them successfully. The Report points out that different government strategies could reduce the comparative attractiveness of cities - especially the largest centres - and thus slow urbanization rates.

Governments must develop explicit settlement strategies to guide the process of urbanization. This will take the pressure off the largest urban centres, build-up smaller towns and cities, and more closely integrate them with their rural hinterlands.

"This will also mean examining and changing other policies - taxation, food pricing, transportation, health, industrialization - which work against such settlement strategy goals. Good city management requires decentralization - of funds, political power and personnel - to local authorities which are best-placed to appreciate and manage local needs", the Report states.

But the sustainable development of cities will also depend on closer work with the majority of urban poor, who are the true city builders, tapping the skills, energies and resources of neighbourhood groups and those in the 'informal sector'.

Much can be achieved by 'site and service' schemes, which provide households with basic services and then help them to build, for

themselves, solid houses around those services. Such co-operation between governments and the people is already producing many success stories.

There are some important lessons to be drawn from studies of urban and rural programs around the world, to provide a policy basis for sustainable development programmes.

The best way to encourage the growth of secondary centres is to build onto the natural economic advantages of the regions, especially in the resource processing and marketing, and by the decentralized provision of government services.

Rural and urban development strategies and approaches must be complementary not contradictory: the development of secondary centres is of direct economic benefit to the resource areas they serve.

These considerations can provide the basis for developing an explicit national settlements strategy and policies, within which innovative and effective local solutions can evolve and flourish. To become key agents of development, city governments need enhanced political, institutional and financial capacity - notably more access to the wealth that is generated by the city.

Only in this way can cities adapt and deploy some of the vast array of tools which are available to address urban problems - tools

such as land title registration, land-use control and tax-sharing.

Left to their own devices, the poor in many Third World cities have organized themselves to fill the gaps in services left by the local government. Among other things, community groups mobilize and organize fund-raising or mutual self-help to deal with security, environmental and health problems within the immediate area. Most building, maintenance or upgrading of houses, in the cities of the Developing World, is done outside official plans and usually in illegal settlements.

This process mobilizes untapped resources, contributes to capital formation and stimulates employment. Governments should give more support to the informal sector. Multilateral and bilateral assistance agencies should follow suit.

"Non-governmental and private voluntary agencies provide cost-effective channels for assistance, ensuring that it gets to those who can use it. A much larger proportion of assistance could be channelled directly through these community groups", the Report suggests.

"Governments should move from a position of neutrality, or even antagonism, to active support for such efforts. In this way, governments can become partners and sponsors of the people who are the main builders of their cities", Chapter Nine concludes.

#### LOCAL ACTION WORKS!

In many cases, as proved by experience, the best and most pragmatic help will come through small, community-based co-operative movements and through the efforts of neighbourhood-level, indigenous non-governmental organizations.

These latter are especially effective in planning and organizing health and social services, in developing nutritional and sanitary schemes in shanty-towns, in encouraging immunization and breast-feeding, and in the use of life-saving oral rehydration therapy for children suffering from diarrhoea. But to begin, they need a measure of external support and encouragement - a 'leg up'.

Historically, cities dominate the economies of their nations. They attract innovative technology and industry, which later may trickle down to smaller centres. It is this urban position of economic leadership which draws job-seekers from smaller communities and rural

areas. In the West, this has led to large increments in urban resources to serve these growing populations. But this is not so in the Developing World.

#### GOVERNMENTS MUST ACT!

Urban growth is slowing somewhat - and both decentralized industrial development and the growth of small enterprises can help relieve

the pressures on our cities. But they are already in trouble - and the troubles are going to get worse. They cannot be addressed, however, until the central governments of Developing Nations act to strengthen local administrations. Industrial Nations and international agencies need to encourage this essential change.



**WILLIAM DOYLE RUCKELSHOUSE**  
United States

*Attorney, Perkins, Coie; Administrator, United States Environmental Protection Agency 1970-73, 1983-84; Senior Vice President for Law and Corporate Affairs, Weyerhaeuser Company 1976-83; Acting Director of the Federal Department of Justice 1973.*

(CONTINUED)



Yukon Government Photo

*Many rural communities are faced with a slow death as populations migrate to the big cities.*

**PEOPLE WITH POTENTIAL!**

Paradoxically, one of the greatest strengths of the economies of Developing Nations is its crowded cities.

From one-third to one-half the employable populations of most Third World cities are, officially, 'unemployed'. Yet a host of these people work in the 'informal sector' - a kind of 'grey market' which provides their cities with very large fractions of the necessary goods and services.

From fruit-vending and roadside umbrella and bicycle repairs to house-building and tailoring, this underground work force both maintains itself and contributes, vitally, to the life of the city. But lacking licences, approvals and any formal 'existence', these small entrepreneurs are constantly vulnerable to greedy and corrupt officials, to bureaucratic harassment, and to the lotteries of economic swings.

**APATHY AND NEGLECT**

Third World governments would serve their citizens well by supporting this informal economic sector.

At present, most governments view and treat such efforts, whether in community self-help or private enterprise, with attitudes ranging from active antagonism at worst, to benign neglect at best.

Until changes are made in the institutional attitudes toward this army of servants, security guards, unregistered factory workers and pedlars, they will go on in their endeavours working from 12 to 16 hours daily, seven days a week.

Their problem is not lack of work - it is scarcity of pay. So long as they remain outside mainstream wage - and working-regulations, nothing will improve for them, or for their cities, where they could and should be economy-building consumers and nation-building taxpayers.

**SEVEN STEPS TO HEALTH**

Drastic, or more accurately, revolutionary change is needed in the provision of homes to the Third World's urban poor. The millions living in illegal urban settlements must be guaranteed tenure, given secure titles and provided with

basic municipal services, including safe water and latrines.

The land and other resources people need to build homes, or make their present hovels habitable, must be found and be made available to them. New and properly-serviced housing areas must be prepared for the future influx of yet more families. If they, like those who preceded them, are left to 'fend for themselves', the consequences will be disastrous - no less for their national economies than for their immediate families.

'Store-front', neighbourhood counselling is needed in every Third World city, to advise people on health, sanitation, housing, and to explain how they can deal, with dignity, with the political and bureaucratic structures and strictures in their community.

**LOCAL ENTERPRISE BEST**

Intensive efforts should be devoted to encouraging work-shops for small-scale 'cottage industries' in shanty-towns and marginal housing areas. New disposable income will encourage people to improve their homes and surroundings. Micro-cosmic, 'local' enterprise is often the most efficient. The market is outside the door, labour is readily available, transport and distribution costs are nil and the ubiquitous, profit-stealing, Third World 'middleman' is eliminated.

Governments in Developing Nations must exercise firmer control over land speculators, who often 'freeze' property which is urgently-needed for housing, in the hopes of a future 'bonanza'.

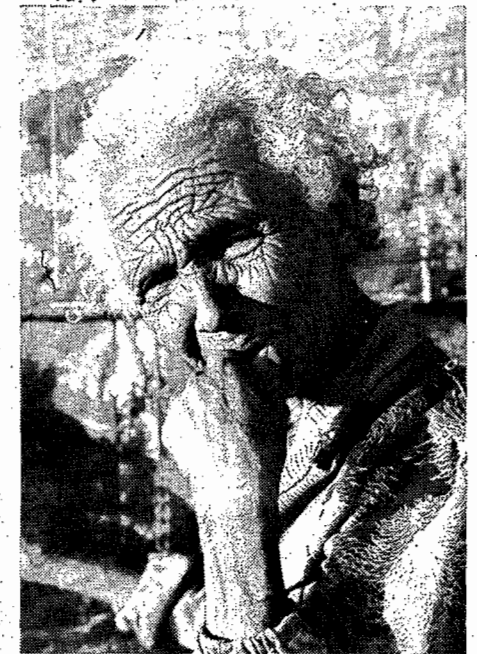
**GREEN BELT CITIES**

'Urban agriculture' should be encouraged and assisted, whether by way of commercial market-gardening to serve city populations, or individual, family-sized vegetable gardens. Every Third World city has considerable plots of unused land which could be turned to this purpose; this, not least, could be in

a 'green belt' around cities which could encompass new housing estates, fuel-timber plantations, and food crops for both families and the markets.

**PROFIT FROM WASTE**

Solid-waste disposal is an almost-ungovernable problem worldwide, not least in Third World



UNICEF/John Isaac

*Shelter for the homeless is a concern of every country in the world but not the least for the refugees living in tin shacks outside Asmara, Eritrea. UNICEF's "Food for Work" project encourages people to participate in building their own homes.*

cities; this, ironically, in cultures where virtually everything is recycled at the street-stall-level of economic activity: vegetables and tea are wrapped in paper sacks made from yesterday's court transcripts, mail, or school examination papers; throw-away cigarette lighters are refilled by hypodermic; broken plastic utensils from yesterday mend umbrellas or sandals tomorrow.

Most Third World municipal governments lack the resources to collect and recycle all city waste. But such governments should observe the communities of squatter-scavengers living on the rim of every major garbage dump - earning their living from hand-sorting waste for useful artifacts.

Community co-operatives could multiply this chain of recycling and, at the same time, vastly reduce the waste pollution of cityscapes. In the meantime, advice and assistance in matters of health and sanitation is more urgent than words can express for the people who, literally, live with their families in the midst of garbage and its noxious by-products.

**VILLAGE CLUSTERS**

The Industrial World needed an urban sociologist, Jane Jacobs, to remind us that cities are merely 'clusters of villages' - adjacent

*"I'm an expert in slum dwelling. We're establishing a small, tiny organization trying to organize slum dwellers, because we see so many slums. Slums in the city, slums in the villages, slums in the forests.*

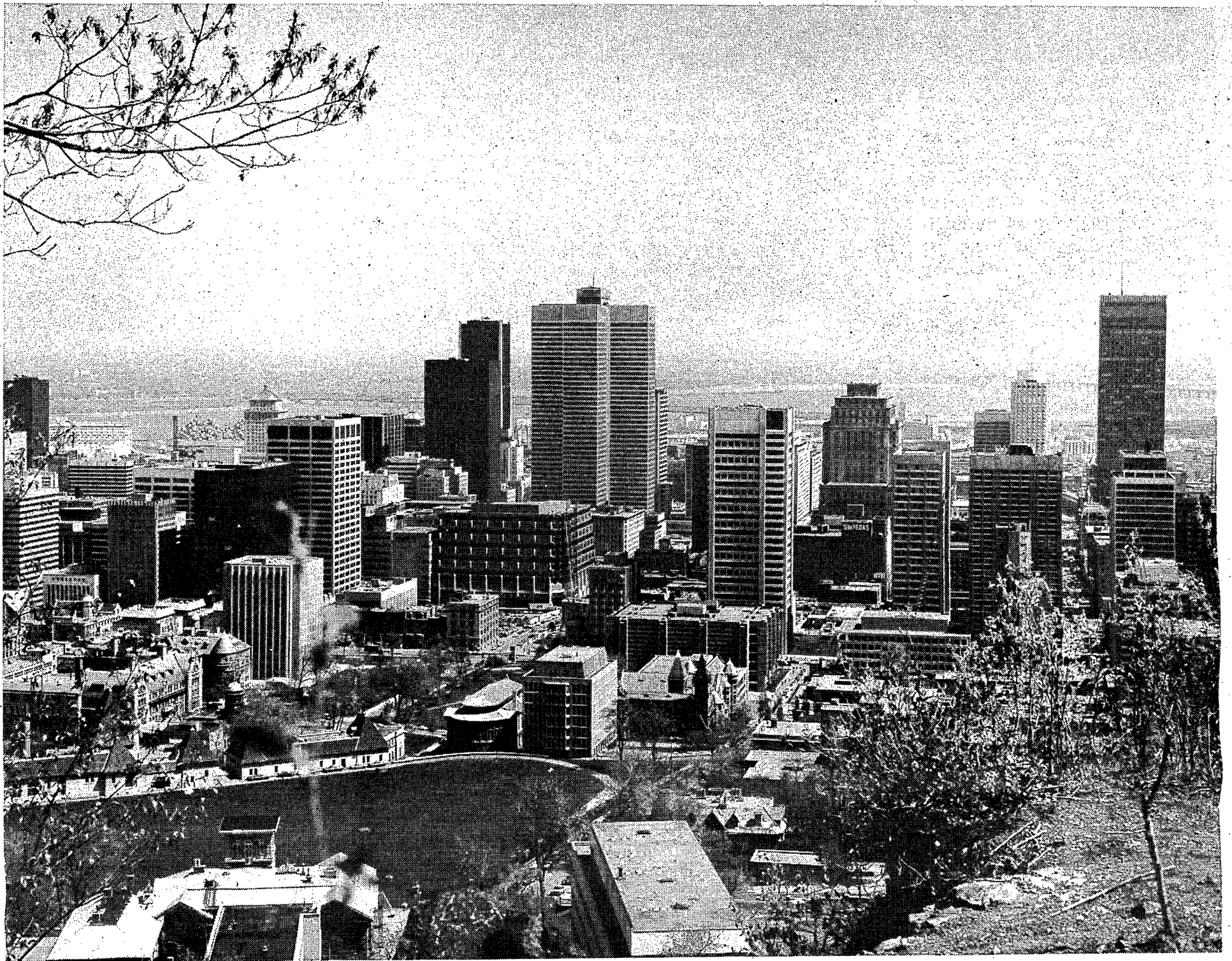
*I have worked for four years to motivate my fellow slum dwellers to become transmigrants, and they finally migrated to ten places all over Indonesia. They are still in very good communication with me. They're still sending me letters, and they say that life is not better in the transmigrant areas. Living in the shadows in the urban slums or living in the shadows in the transmigration site is just the same.*

*When I go back to my people, the slum dwellers, tonight they will ask me what I have got from this meeting in the big hotel. They won't ask for information, just 'have you brought some money for us to build new houses?' "*

Syamsuddin Nainggolan

Founder, Yayasan Panca Bakti

WCED Public Hearing, Jakarta, 26 March 1985



Ville de Montréal photo

neighbourhoods - which can survive and serve their residents only to the degree that they can develop and foster dignity and a pride in a community identity.

We may leave each morning the urban villages where we live, and commute to some other village cluster, downtown, to earn our bread. But the atavistic, gregarious, 'stories-around-the-evening-fires' tribal needs endure - whether it is in Manhattan, Rio, Tokyo, or in Lagos or Calcutta. It should come as little surprise, in the Industrial World, that our highest suicide rates are in the sterile, anonymous boxes of city high-rise apartments.

## NEIGHBOURHOODS NEEDED

Too often we let short-term economic goals, fusty laws and regulations deprive us of the opportunity to build real 'neighbourhoods' or communities. When Edmund Burke said, "Bad laws are the worst form of tyranny", he might have added, "outmoded political structures, fossilized traditions or inflexible people and policies will discourage personal and community initiative and grassroots action".

## GRASSROOTS WORK BEST

The most exciting of all self-help urban ventures in the Developing Nations have sprung from within small communities and been fuelled by a shared sense of need, a communal agreement on goals.

It is in our own 'communities', be they family, tribal, or neighbourhood, that we develop our notions of identity and of purpose and pride. All of those, with the encouragement of our neighbours, can lead to hope. As Burke also remarked, "where there is no hope, there can be no endeavour".

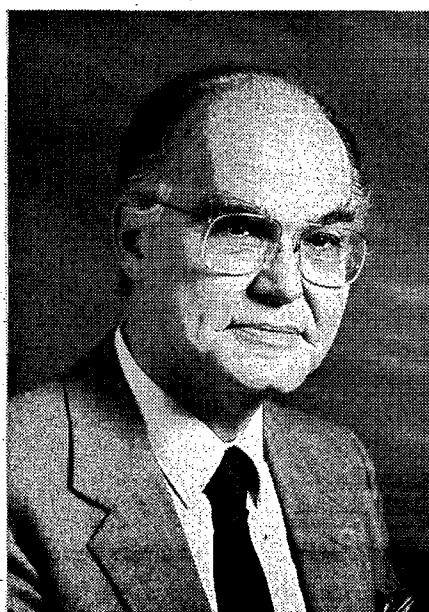
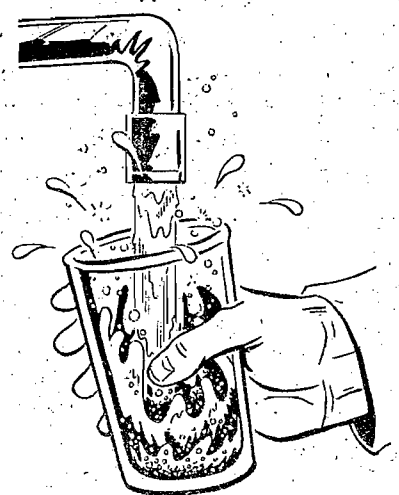
Curiously, there may be more sense of community, of unity and of shared experience, in the shanty towns of Third World cities, than in their 'embassy rows'. We should not ignore or uproot those fragile tendrils of future growth. Rather, we should nourish, cultivate and treasure the richest resources in our global village.

## OUR FATES ARE TIED

Initiative, ingenuity, improvisation, ambition, determination, and finally the hope of improvement

and of success, can, alone, sustain endeavour. The world's urban poor demonstrate those qualities. They deserve some encouragement - even some help. Best it come from those of us, their neighbours, whose fates are tied so closely to theirs. Will that be tough? Certainly it will, but not when one considers the clear alternative. Will it require change? Absolutely. As Edmund Burke has said, "A state without the means of change, is without the means of its own conservation".

## A Chemical Cocktail or a glass of water?



**JIM MacNEILL**  
Canada

*Secretary General of the Commission and ex officio Member; Director of Environment, OECD 1978-84; Secretary (Deputy Minister), Canadian Ministry of State for Urban Affairs 1974-76, Canadian Commissioner General, UN Conference on Human Settlements 1975-76; Assistant Secretary, Canadian Ministry of State for Urban Affairs 1972-74*

# SPACE FOR ALL - SEA OF TROUBLES

The realities of the globally-shared facets of our planet such as our interdependent world economy, as well as our mutual resources - space, the seas and the polar regions - have made national sovereignty about as defensible as the Maginot Line, or the 'house of straw' built by the Three Little Pigs.

No fortress-mentality can save any nation from the consequences of illness afflicting any of the shared and essential 'organs' of our planet's life-force. Neither can any nation-state, acting alone, protect our atmosphere, our oceans, and our polar lands. We must only monitor, assess, develop and manage them together, or succumb, individually, and as a community of nations, to their degradation.

## WEATHER BORN AT SEA

Even our weather is, literally and directly, 'born-of-the-seas'. From the trillions of phytoplankton producing fresh oxygen, to the tides and the heat exchange from the atmosphere in day and night cycles, our climate is truly a 'son of the sea'. Small wonder, indeed, that we speak of our 'sea-sons'!

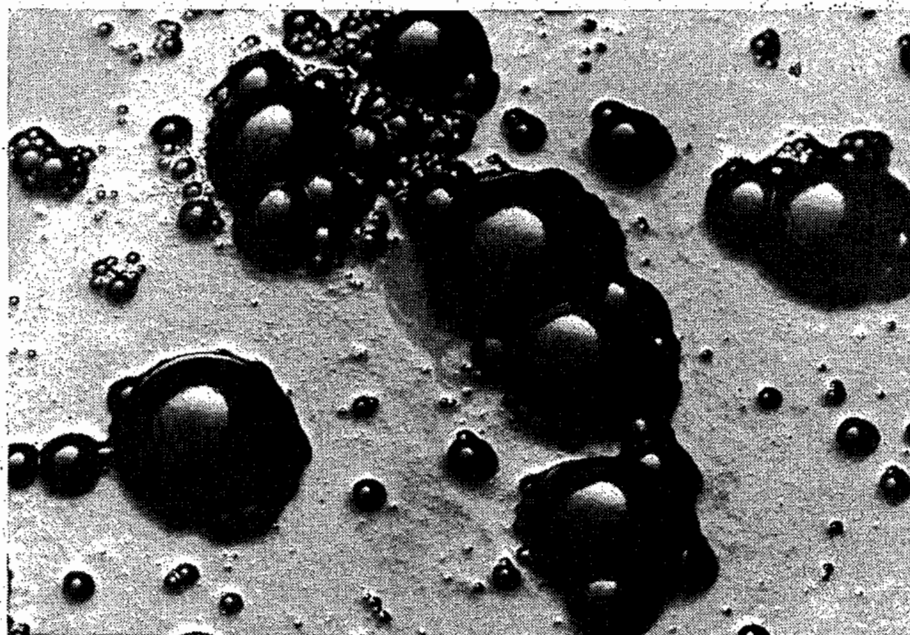
Yet we continue to degrade the seas, which protect our climatic stability and, therefore, our crops and lives; and we go on polluting the atmosphere, which alone shields us - and our seas - from the ultra-violet assaults of the sun.

For centuries we have regarded our seas as boundless, able to absorb any punishment; any volume of pollution we inflicted on them. Now we know they cannot. We have relied on the seas to cleanse our rivers and coasts; they cannot. We thought the oceans' harvest of fish was a bottomless well of food; it is not. We thought ourselves puny creatures, impotent to effect or even disturb the grand design of the vast oceans covering 45 per cent of the globe; but we are not puny!

## SEA-SICK AND ILL

Our technology, and its waste, could make the land, the seas and the atmosphere sicken and die. Already, they are weak, and soon could be too ill to respond to treatment.

For centuries, we have used our rivers to carry, first human and then industrial, wastes away to the oceans, leaving the rivers to flush themselves clean, at least for a time. But the oceans have nowhere to unload their waste. They have become a series of vast inter-connected, sewage tanks.



UN photo  
*The Rhine River, in Europe, during the '70s was afflicted by serious pollution - as is shown in this photograph of a sample of the water along its banks.*

## SEPTIC TANK SEA

The 25 per cent of the globe's surface covered by fresh water contributes, minute-by-minute, to the growing pollution of our oceans. Sediment from our great rivers, such as the Amazon, can be found 2,000 kilometres from coastal waters. Deposits of heavy metals, petroleum and chemical organochlorines - much of them from river estuaries - have been found in all the oceans.

## SPILLS AND FALLOUT

During the period between the '50s and the '70s, our seas were bombarded by fallout from nuclear tests. This form of pollution, with consequences no one can yet forecast, is being further magnified daily, by the continual disposal, into our oceans, of 'low-level' radioactive wastes.

Our seas are under assault, too, from both airborne pollutants and, more directly, from our ocean transport systems. It is now estimated that the total volume of oil spilled each year, from tankers alone, totals 1.5 million tons. Despite international treaties and national maritime regulations, most offenders escape both detection and penalty. We could change that if we knew enough and cared enough.

With satellite surveillance and modern communications, pollution could be traced to its source, and the owners/operators of that source could be held to account. Not the least, these polluters should be publicly identified. A period of time in the 'stocks' of the mass media would have a salutary effect on persistent polluters.

## STUDY TRENDS

Satellites can be used to assist in developing a realistic inventory of our marine resources and to track changes in the maritime environment. As with public opinion polls

in politics, the emphasis, in the case of observing our aquatic environment, should be on the observation and study of 'trends'.

Individual problems and 'hot spots' must be identified, pursued and remedied. But it is only through a fuller understanding of developing changes that we can organize and co-operate on long-term preventive and remedial measures.

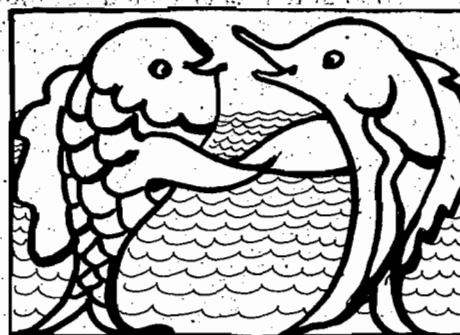
## HALT OVER-FISHING

As serious an ecological threat as pollution, is over-fishing. Of the world's total fish harvest, 95 per cent is taken on the continental shelves off our major coasts: all of it is now threatened by over-fishing. This is not just some nebulous, vague concern for the future. In the recent past, several of the world's major fisheries have collapsed from the consequences of over-fishing.

These include:

- the anchovy fisheries off Peru,
- many of the North Atlantic herring stocks, and
- the California sardine harvest.

Elsewhere, in rich fisheries off the coast of West Africa and in the Gulf of Thailand, heavy fishing has caused dramatic changes in the proportions of various fish species. No one knows what the consequences of that will be.



## RATIFY 'LAW OF THE SEA'

In some instances, the existing Law of the Sea Convention has

helped. With the present 320 kms national limits off coastlines, an extra 35 per cent of our seascape has come under the control of individual nations. But many countries lack even the basic resources to monitor activity within their 'coastal waters'. Even some wealthy Industrial Nations, such as Canada, lack the means of patrolling their entire coastal waters.

Enforcement of national regulations without close scrutiny of all activity in 'national waters' is, in Shelley's chauvinistic and cynical words, as much to be relied-upon as 'summer's snow, or woman's constancy'!

Most Developing Nations also lack either the capital or the expertise to use their expanded zones of interest for their own benefit. This situation will not change until the international development banks and other development agencies are prepared to help build programmes to enable help Developing Nations to create the institutions, the facilities and the expertise they lack.

## THE RICH CATCH FISH

The wealthier nations are benefiting from the change: for example, in the Northwest Atlantic, the catch of the 'long-range' fishing vessels from Europe dropped from over two million tons in 1974 to about a quarter-million tons in 1983. In the same period, the United States and Canada increased their 'take' from those fisheries from a level of less than 50 per cent to over 90 per cent of the total catch.

At the same time, however, the 'industrial strength' - the long-range Japanese and European fishing fleets - continue to take some five million tons of fish off the shores of Developing Nations, which are less able either to harvest their own resources, or to enforce their protection.

Off West Africa, for example, over half the annual catch is still captured by those sophisticated, long-range convoys of modern trawlers.

## THE POOR GET CAUGHT

Third World Countries are thus losing their national treasure, through a lack of maritime resources, poor processing and marketing facilities and skills, as well as an absolute inability to control the activities of marauding, foreign fishing fleets.

Small, Third World, island nations are the greatest potential victims of this modern version of exploitation. An early future scenario involving political instability is far from improbable within small, poor nations deprived of the

## POLES APART

### MANAGING THE COMMONS

The 'global commons' is that part of the planet and its environment which does not belong to any one nation - such as the oceans, the sea floor, the continent of Antarctica and both inner and outer space. All belong to humanity, or more properly, humanity belongs to and is dependent upon the global commons. In Chapter Ten - "Managing the Commons" - the WCED recommends specific and urgent action.

In the Earth's wheel of life, the oceans provide the balance. Covering 45 per cent of the planet's surface, they play a critical role in maintaining its life-support systems, in moderating its climate, and in sustaining animals and plants - including the minute, oxygen-producing phytoplankton.

"They also provide the ultimate 'sink' for the by-products of human activities. Only the high seas outside of national jurisdiction are truly the 'commons'; "but fish species, pollution, and other effects of economic development do not respect those legal boundaries", the Report reminds us.

How can one put a price on starlight? Who owns the rich mineral and chemical muds on the ocean floor? Do powerful nations have the right to orbit nuclear reactors in the sky, right over a neigh-

bour's territory, and who is liable when it crashes to earth? Is the sky a floating garbage dump? Are the oceans to be used as cesspools? These are some of the questions addressed and answered in the Brundtland Report.

With communication technology playing an ever-increasing role in the economic, political and military affairs of nations, what rights do small and poor countries have to the limited 'parking space' for satellites in geosynchronous orbit?

That orbit is some 35,680 kms out into space, where satellites rotate at the same speed as the earth. Three linked-satellites in this orbit can deliver signals to any point on earth, and are able to 'read' the planet, as a computer reads a floppy disc. In Chapter Ten of the WCED Report, the Commissioners come to grips with these and associated problems.

"Traditional forms of national sovereignty raise particular problems in managing the 'global commons' and their shared ecosystems - the oceans, outer space and Antarctica. Some progress has been made in all three areas, but much remains to be done", the WCED Report states.

In addition 'somewhat less noxious substances' may be dumped 'only by prior special permit', and all other substances may be dumped only with permission from the appropriate national authorities.

However, until 1983, Belgium, Switzerland, the Netherlands and the United Kingdom **continued dumping** 'low-level radioactive wastes' in international waters off the coast of Spain. Since 1983, there has been a de facto, but unofficial, moratorium on this dumping - and a general agreement, (though still informal), that disposal should await evidence proving that it is environmentally safe.

Although not legally binding, the London Convention voted, in 1985, to extend a moratorium on radioactive dumping, and placed the 'burden of proof' of its safety on nations wanting to empty their dangerous wastes into international seas.

Water is no respecter of national boundaries, anymore than are fish. What we put into 'our' water or air - or 'neutral international' water and air - may well end-up, tomorrow, on our dinner tables or in our drink-

It recommends co-operation among nations in managing the oceans - in finding a global agreement on managing the mineral and biological wealth of the ocean floors - and in agreeing on the use of outer space to help people attain sustainable development on earth. Finally it states that the nations should unite to maintain the 'silent' continent, Antarctica, as a symbol of peaceful international co-operation and environmental protection.

"The UN Conference on the Law of the Sea was the most ambitious attempt to provide an internationally-agreed regime for the management of the oceans. All nations should ratify the Law of the Sea treaty as soon as possible", the Report recommends.

Fisheries agreements should be strengthened to prevent current over-exploitation, as should conventions to control and regulate the dumping of hazardous wastes at sea.

"There are growing concerns about the management of orbital space, centering on using satellite technology for monitoring planetary systems; on making the most effective use of the limited capacities of geosynchronous orbit for communications satellites; and on limiting space debris", the Report warns.

ing water, or that of our neighbours in the global village.

Nuclear wastes also reach our oceans from land-based run-off. High levels of radioactivity have been found, for example, in North Sea fish. This pollution comes from land-based sources in the United Kingdom and northwestern Europe.

#### HOW SAFE IS SAFE?

No one has yet determined a 'safe' level of radioactive contamination, anymore than we have found a 'safe' level of cigarette consumption. All ocean dumping of

The orbiting and testing of weapons in space would greatly increase this debris. The international community should seek to design and implement a space regime to ensure that space remains a peaceful environment for the benefit of all.

Antarctica has been managed under the 1959 Antarctica Treaty. However, many nations outside of that pact view the treaty system as being too limited, both in participation and the scope of its conservation measures.

Hammering out an internationally-supported consensus on Antarctica is a huge task, which will require time and patience. Yet, such a consensus is the only way to prevent a tragic plundering of the silent continent.

"The Commission's recommendations deal with the safeguarding of present achievements; the incorporation of any minerals-development into a management regime, and various options relating to the future of the system", the Commissioners conclude.

radioactive wastes should be stopped, until we have methods which are, beyond all reasonable doubt, utterly safe for our children.

The Paris Convention (the Convention for the Prevention of Marine Pollution from Land-Based Sources) was signed, in 1978, by the European Economic Community and eight other nations. But the Paris Convention says nothing about nuclear plants. Moreover, the Convention's acceptance of 'the best available technology' in determining 'how much radioactive discharge should be per-

#### BUKAR SHAIB Nigeria

*Minister of Agriculture, Water Resources and Rural Development 1983-86; Special Advisor to the President of Nigeria 1980-83; Nigerian Ambassador to Rome 1979; Permanent Secretary, Federal Ministry of Agriculture and Water Resources 1968-78.*



(CONTINUED)

*Ice, endless ice!*

mitted, may be lethally naïve. It clearly offers few grounds for complacency.

The UN Conference on The Law of the Sea now has 159 national signatories. It makes each nation clearly responsible for policing its own waters; and it declares 45 per cent of the globe (the part that is covered by the oceans), to be 'the common heritage of mankind'. But most nations are entirely unable to police their own waters. As for our 'common heritage', we must accept the fact that no one, at the moment, is 'minding the store'.

#### RESPECT THE CONVENTION

Several powerful nations have yet to accept the Convention. If it is not ratified by every significant maritime power it will, functionally, become a 'dead letter'. More prominent public discussion of the nations which are 'dragging their feet' on this vital issue should be used to marshal world opinion behind a drive to urge every concerned nation to ratify the Convention. This is the minimum step needed to 'save our seas' - and ourselves!

#### SHARE THE POOL

Space, like the seas, is also a common and vital shared resource.

It is integral to the 'market square', or 'common', around which our global village is clustered. We have, today, the technology and information to protect our life-saving atmosphere which is the 'skin' of our global body-politic. We still, however, lack the institutional resources and agreements to use that knowledge.

Our knowledge, like our efforts to protect ourselves and our children, is dispersed, fragmented and unco-ordinated. The United Nations Environment Programme (UNEP) has made modest efforts to pool the available space data. It lacks, however, the resources to do enough. Most satellite-gathered information is held, selfishly (and in global survival terms, foolishly), by the wealthy national governments collecting that data. Governments must now act to share and pool their banks of information.

#### LIMITED PARKING

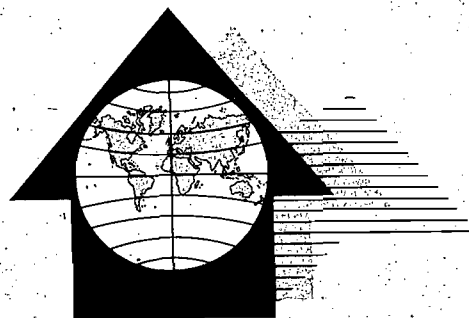
We have not even, to date, agreed how to share, fairly, the limited number of geosynchronous orbits for satellites, which are available over the equator. It is only in a narrow band over the equator, 36,000 kilometres above the earth, that 'stationary' satellites can be 'parked'. As each uses radio com-

munications, they must be widely separated to avoid interference with each other. This pragmatic consideration limits the maximum number of satellites functioning at any one time to 180.

Predictably, what has happened is an allocating of the 'slots' available to those nations with the funds needed to launch and maintain satellites. So, the Third World nation-states directly under the satellite band have been refused even the right to 'reserve' sites for themselves. Their efforts to assert sovereignty in the space directly over their national territory have been treated, at best, with amused contempt.

#### UNLIMITED JUNK

Meanwhile, the Industrial Nations continue to clutter that crucial, narrow communications highway around the earth's belt-line with an astonishing and dangerous array of 'space garbage.' It ranges from discarded, empty fuel tanks to rocket shells, 'dead' satellites and the shrapnel produced by explosions in space. Most of it could have been avoided, with better design and greater care in the dis-



posal of satellites. Today, both the Soviets and the Americans spend tens of millions of precious dollars, each year, simply having to 'track' the garbage in space. Each military test in space, by definition, adds to this 'littering'.

#### UNACCEPTABLE THREAT

As early as 1981, the American Institute of Aeronautics and Astronautics was advised that space debris would pose 'an unacceptable threat to life in space' within a decade. For the term 'life in space' read 'the space stations and labora-

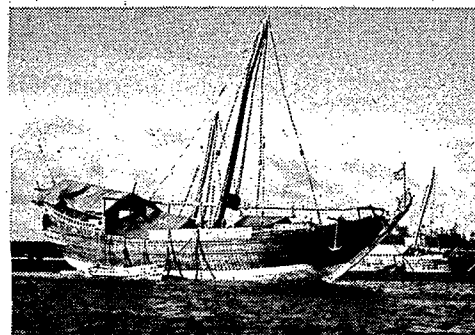
tories' we all need and desire, not the least for plant and genetic experiments in zero-gravity conditions - experiments which hold the promise of crucial advances for us all, in medicine, in plant genetics and in resource- and energy- efficient industrial processing.

Nuclear-powered spacecraft are a particularly serious problem. Regulating them is complex and difficult. Banning them by international convention is the simplest and most direct solution. (Because of the heat given off by nuclear power reactors, it would be relatively simple to monitor a moratorium.) Such a ban would, as a side effect benefiting us all, (both economically and in terms of our safety and security), make the development of military space-technology impossible. Exceptions to such a ban would likely be appropriate, to permit scientific, deep-space probes.

The regulation of space debris and of nuclear-powered craft in space is long overdue.

#### ESSENTIAL ANTARCTICA

The Antarctic Continent, which is

*A traditional fishing dhow*

larger than the combined areas of Mexico and the United States, is even more fragile than space. Its land and adjacent seas are the generators of much of the globe's weather, and the source of nourishment for much of the globe's marine life. Though not yet fully understood, the tiny, shrimp-like 'krill' of Antarctica are believed essential to the world's maritime food chain, up to and including our whales.

The 'Antarctic Treaty', signed in December 1959, aims to prohibit all military activity on our southern polar continent, and to promote freedom of scientific study. As well, it bars disposal of any radioactive materials or wastes on the sub-polar cap. At present, only 18 of the world's nations have full voting status under the terms of the treaty. Again, money is the 'gate-keeper'.

#### THE SILENT CONTINENT

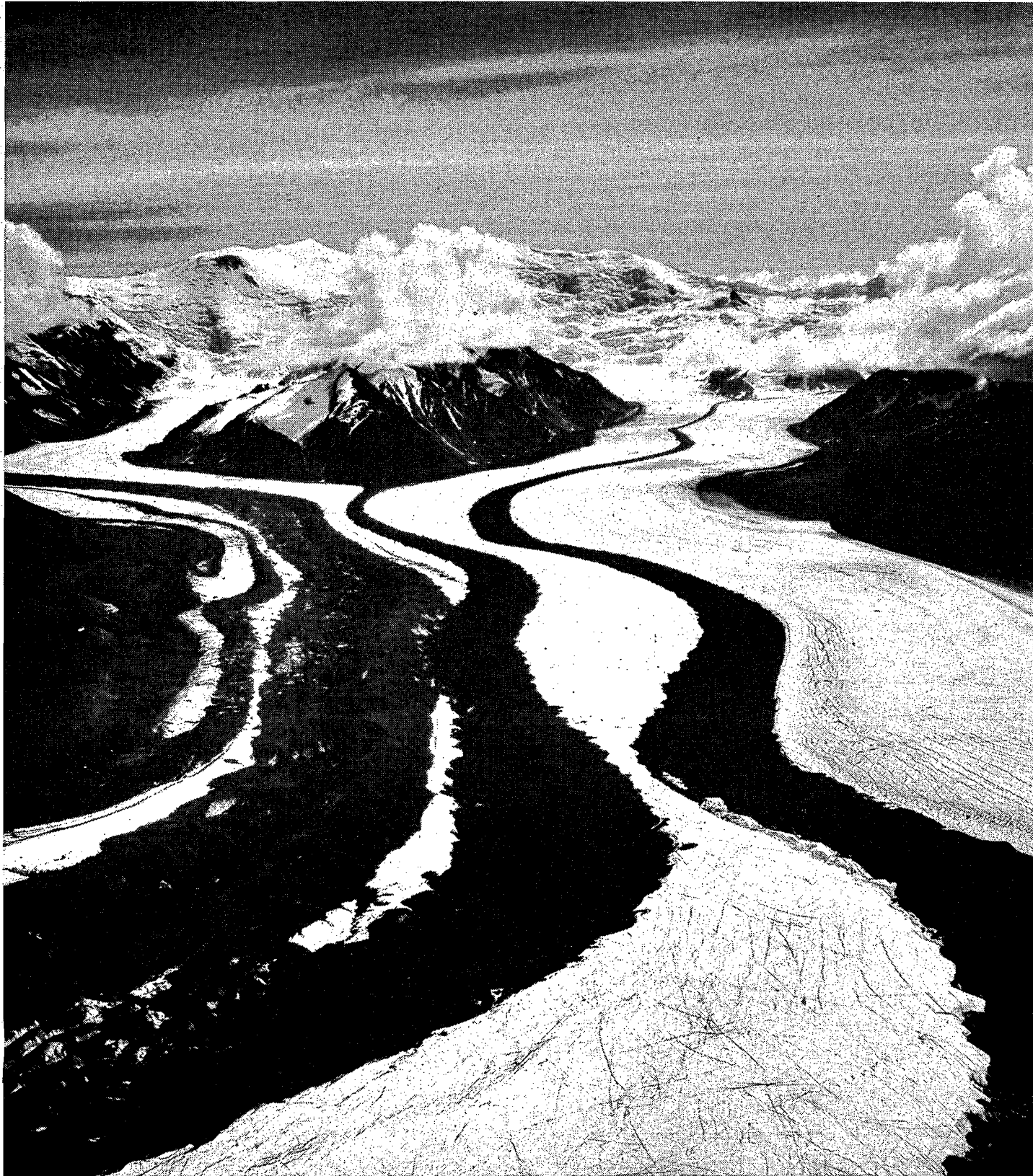
Antarctica is clearly a global resource, and needs global protection. Yet, only those nations with substantial investment in scientific studies and bases on the subcontinent are granted membership in this exclusive 'club'. Not surprisingly,

*"The opinion of the public is what you see here in this room. You see important leaders from all over Brazil, from all over the country that have come here; from the rubberman who was under a palm tree yesterday and is now here speaking to the U.N. Commission and leaders that are independent."*

*The Brazilian population yearned to have someone to speak to. Someone who will listen, who will not sort of mystify things, and someone who will not trick them. So there is an enormous expectation with regards to the seriousness of this Commission."*

*Randau Marques  
Journalist*

*WCED Public Hearing, Sao Paulo, 28-29 October, 1985*



*Russell Glacier, Wrangell-St. Elias National Park, Alaska*

US Park photo

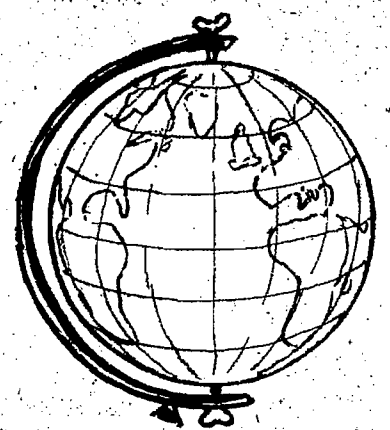
this remote part of our global village, at least, (and by mutual agreement) there have been no military exercises, no nuclear reactors, and no disposal of radioactive waste. Not a bad example for us all.

There was concern about a 'gold rush' to exploit mineral and petroleum resources in the south polar region, with disastrous consequences for that terribly fragile environment. In a rational world, such fears would prove groundless: The only minerals found in large enough volume to justify mining - iron in the Prince Charles Mountains, and coal in the Transantarctic Mountains - would cost many kings' ransoms to extract and transport to smelters and markets. We have, in any case, more of both minerals (in more accessible locales) than we need in the next century, or even the one after that.

## A GLOBAL RESOURCE

However, the enthusiasm of mineral exploiters has frequently overstepped the bounds of 'rationality'. The world's nations should take steps to prevent and preclude any mineral exploitation of Antarctica, until we have all the data needed to avoid disruption of this vulnerable and essential section of our global village. Such research will almost certainly take at least a generation, even if it is developed on a 'crash basis'.

As with the Antarctic, so with the seas and with the atmosphere. Shakespeare had a salutary phrase. As Banquo observed in Macbeth "the air is delicate". So are we! It is all the more reason, therefore, to be robust in our efforts to save our 'global commons', and with them, our children.



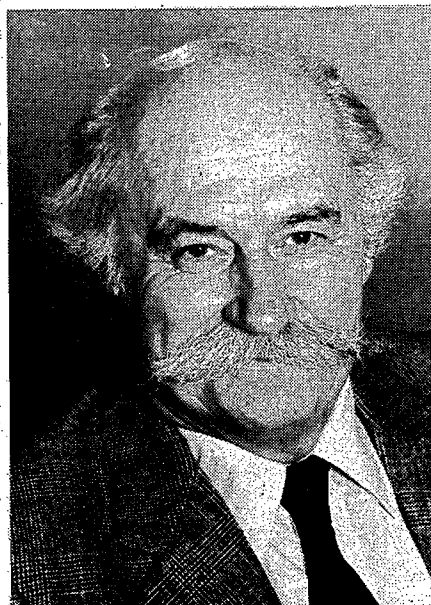
therefore, many Developing Nations have joined some Industrial States in rejecting the philosophy that any of our 'common global heritage' should be managed by exclusive groups of nations or corporations for their own benefit.

## A GOOD EXAMPLE

However, the entire world could take a lesson from the experience of Antarctica over the past 30 years. In

*"The most cruel environmental threat 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. The challenge is to find strategies for development that meet the needs of the people and the environment."*

*Rhoda Inuksu  
Inuit Indian  
WCED Public Hearings,  
Ottawa 26 May 1986*



**JANEZ STANOVNIK**  
Yugoslavia

*Member, Presidium of the Socialist Republic of Slovenia; Professor, University of Ljubljana; Executive Secretary, UN Economic Commission for Europe 1967-83; Member of the Federal Cabinet and Federal Executive Council 1966-67*

## HELP : MORE PLOUGHSHARES

Political and military activity have as great a bearing on environmental degradation or survivability as the aggregate impacts of industry, agriculture and all other human enterprise.

At the most basic level, the threat of a nuclear war is the greatest single environmental threat we face. Indeed, to describe it as a 'threat' is the understatement of all human history. Even the concepts of environment and development would be swept aside by the probably irreversible consequences of nuclear conflict.

To ignore this caveat to human hope and endeavour would be as witless as it is suicidal.

While acknowledging the obvious - that nuclear war would devastate our environment - other factors need to be fed into the environmental/developmental equation.

## STRESS CAUSES WAR

Often, environmental stress has led to military action - rather than the reverse. Nation-states, through history, have tended to do 'whatever they felt necessary' to seize or retain the resources they wanted.

The desire for gold, oil, sugar, spices, grain, and even opium, have all triggered conflict, from Alexander and Tamerlane to Mussolini and Hitler. Even a cursory reading of the daily newspaper will demonstrate the same imperatives at work today, both within and between nations.

## 40 DAYS OF PEACE

No one could describe mere absence of conflict as a respectable definition of peace. It is noteworthy, however, that we are not even much used to 'absence-of-conflict'. Since the end of World War Two, there have been only 40 days during which there was no war raging in some neighbourhood of our global village.



Maria Antonietta Peru

Refugees and displaced people wait with their registration forms outside a feeding camp during the 1984-1986 famine in the Sudan

More fundamentally, the notion of 'peace' implies we will all be able to concentrate our energies on fruitful development. Well, at least we have had no global wars - no direct military confrontation between the superpowers since 1946 - although we have experienced, at incalculable cost, plenty of 'surrogate' wars, in Korea, Viet Nam, Angola, Afghanistan, the Middle East and Latin America.

## YOUR PRIORITIES?

Have we reaped the benefits of 'peace' in the global sense? You decide, as you consider this sampler of our peace-time experience.

- The Industrial Nations are, today, spending 18 times more, annually, on military budgets than on foreign aid.
- Reflect on the inflated costs of modern military hardware: if automobile costs had risen as rapidly as those of tanks, planes and missiles, since 1950, a family car would today cost 300,000 dollars, U.S.
- By 1984, the world was spending six times more, annually, on its military than the combined total incomes earned by the 3.6 billion people living in all the Third World.

## STUDENTS OR SOLDIERS?

In 1983, the last year for which we have complete figures, the following discrepancies existed.

- The entire world spent an average of 25,600 dollars to support each soldier - and 450 dollars to educate each child. That is, each soldier cost us 56.8 times more than one schoolchild! Where were our priorities?
- We spent, as a global community, 45 dollars each on military research - and 11 dollars each on health research. That is, the machinery of death had a priority of more than four-to-one over the study of life! Where were our priorities?
- Every global citizen, on average, contributed 152 dollars toward military forces, and six cents for keeping the peace. In the period since World War Two, about 20 million people have died in wars - at least two-thirds of those civilians. Yet we still spend only six cents each, per year, on peace keeping. Where are our priorities?

## THE POOR FIGHT

Not everyone, however, suffers from those 'brushfire' wars.

Almost all of them, since 1945, have been fought in the Developing World, which thereby bore most of the casualties and the costs. But the bulk of the armaments were made in the Industrial Nations, to the enormous profit of arms-makers and dealers.

## THE RICH PROFIT

From 1964 to 1983, eight industrial nations were the beneficiaries of 85 per cent of all international arms trade. They were, in descending order, the U.S.S.R., the United States, France, the United Kingdom, West Germany, Czechoslovakia, Italy and China. Altogether, 308 billion dollars were spent on arms exports in that period - and two-thirds of all the export trade came from the two superpowers.

## GIVING GUNS

In this same 20-year period, three-quarters of all arms exports were to Developing Nations - and those arms exports made up half all 'economic development aid' provided to the Third World by the Industrial Nations.

The U.S. alone has 'given' over 50 billion dollars in arms and military training to the Third World since 1946. Where are our priorities?

## STEALING WATER

Every dollar spent on military development in the Third World is a dollar stolen from health services, from education, from the provision of clean drinking water and from rational development. The bishops of France said, in 1983, "every citizen pays the price of armaments - first with taxes, then as a potential victim".

## DEBASING ETHICS

In 1984, United Nations Secretary-General Javier Perez de Cuellar put the case succinctly. "The arms trade impoverishes the receiver and debases the supplier. There is a striking resemblance to the drug trade."

Ethics aside (if that is conceivable), military spending clearly distorts both international and national economies, to the profound detriment of development. This theorem is as direct and unanswerable in the Industrial World as in Developing Countries:

In the time between 1960 and 1983, as a case in point, there was a direct and inverse relation, in Industrial Nations, between their spending on arms and their manufacturing productivity.

*"I have here listened to people speaking about financial crises, famine, pollution, and social injustice at various levels. As an ecologist, I cannot see any of these questions without linking them to the armaments question and to the nuclear issue."*

*Poverty generates tensions and conflicts, urban and rural violence. The indigenous people are still awaiting solutions for their problems. All this depends on money and nevertheless we are spending money on our nuclear programmes. They say that this has peaceful objectives. This is not true because precious money is being spent on this."*

*The greatest crime: the death of hope, the death of all the rights we all have, especially that of the young of believing in a future, the hope for a normal life, a difficult life but something that appears as a challenge to live it the best we can. We have a right to this chance."*

Cacilda Lanuza

Brazilian Ecological Movement

WCED Public Hearing, Sao Paulo, 28-29 October 1985

## FEWER SWORDS

## PEACE, SECURITY, DEVELOPMENT AND THE ENVIRONMENT

The prospect of thermo-nuclear destruction leading to agricultural and environmental death becomes almost inevitable, if present policies are not changed. The WCED Report thus warns before going on to cite evidence of growing international co-operation which could help us safely over the next three decades, well into the 21st Century.

'Environmental refugees' are not a new phenomenon, but their numbers and the threat they pose to global political and economic stability is new. The 'boat people' of Southeast Asia, the one million Haitians, one-sixth of that country's population, the 10 million people who fled their homes in Africa are cited by the WCED Commissioners as evidence of the new 'phenomenon of environmental refugees'.

As the world's population continues to grow, competition for food and resources will also increase, bringing greater likelihood of wars which are the worst enemies of environment and development. "Among the dangers facing the environment, the possibility of nuclear war is undoubtedly the gravest", the WCED Report warns while emphasizing that the concept of sustainable development cannot be separated from peace and security.

We cannot have the one without the other - and indeed, in most cases studied by the WCED Commissioners, the biggest threats to national survival came, not from

enemies outside the borders of the nation-state, but from environmental and economic mismanagement. Peace means a healthy environment and sustainable development. War is the opposite. The choice is ours, they state.

"The whole notion of 'security' as traditionally understood - in terms of political and military threats to national sovereignty - must be expanded to include the growing impacts of environmental stress, local, national, regional and global. There are no military solutions to environmental insecurity", the Report states.

"Environmental stress is both a cause and an effect of political tension and military conflict. Nations have often fought to assert or resist control over raw materials, energy supplies, land, river basins, sea passages, and other key environmental resources. Such conflicts are likely to increase as these resources become scarcer and the competition for them increases", the Commissioners warn.

Poverty, injustice, environmental degradation, and conflict interact in complex and potent ways. One manifestation of growing concern to the international community is the phenomenon of 'environmental refugees'. The immediate cause of any mass movement of refugees may appear to be political upheaval and military violence.

But the underlying causes often include the deterioration of the natural resource base and its capacity

to support the population. Events in the Horn of Africa are a case in point. In the early '70s, drought and famine struck the nation of Ethiopia. Yet, it has been found that the hunger and human misery were exacerbated by years of overuse of the soil in the Ethiopian highlands and the resulting severe erosion.

The WCED Report quotes the Ethiopian Relief and Rehabilitation Commission's Report that found 'the primary cause of the famine was drought of unprecedented severity, but also a combination of long-continued bad land-use and steadily increased human- and stock-population over decades'.

"Since it is often uncertainty and insecurity that prompt international conflict, it is of the utmost importance that governments become aware of imminent environmental stress, before the damage actually threatens core national interests. Governments are usually not well-equipped with this kind of foresight", the WCED Commissioners state.

And what do they recommend we do about it? Co-operation instead of confrontation, mutual assistance rather than mutually-assured destruction, and the use of the most sophisticated surveillance technology available - to establish an early-warning system for environmental risks and conflict. But first we have to change the way we look at the world, the 22 Commissioners suggest.

The first step in creating a more satisfactory basis for managing the inter-relationships between security and sustainable development is to broaden our vision. Conflicts may arise not only because of political and military threats to national sovereignty; they may also derive from environmental degradation and the pre-emption of development options.

"The global commons cannot be managed from any national centre. The nation-state is unable to deal with threats to shared ecosystems. Threats to environmental security can only be dealt with by joint management and multilateral procedures and mechanisms", the Report states, while citing some examples which do provide grounds for optimism.

Governments and international agencies should assess the cost-effectiveness, in terms of achieving security, of money spent on armaments compared to money spent on reducing poverty or on restoring a ravaged environment.

"But the greatest need is to achieve improved relations among those major powers capable of deploying weapons of mass destruction. This improvement is needed to achieve agreement on tighter control over the proliferation and testing of various types of weapons of mass destruction - nuclear and non-nuclear - including those which have environmental implications", the Report concludes.

## ARMS / INDUSTRY GROWTH

Japan:	1 % - 9.0 %
Canada:	3 % - 3.5 %
U.S.:	7 % - 2.5 %
USSR:	11 % - 3.0 %

## REDUCING AID

While industrial nations were increasing their military spending by 80 per cent, from 1960 to 1983, after allowing for inflation, their spending on foreign aid actually dropped in real terms, from eight dollars and 50 cents per Third World resident to eight dollars and 40 cents. The largest share of aid, moreover, went to 'middle-income' Developing Nations - those with a stake in military alliances tied to the superpowers.

## IGNORING CHILDREN

Here is one final example of the distortions in development planning caused by arms spending. In 1982,

the average military spending, per soldier, was 9,810 dollars in the Developing Nations. The average yearly educational spending, in these same countries, was 91 dollars per schoolchild! The investment in each soldier was, in other words, 107.8 times more than the amount spent to educate each child. Where were our priorities?

## LET SOIL ERODE

Some of the world's most impoverished areas, environmentally, have also seen severe political/military disruption. Among these are Ethiopia, where the drought and famine of the early '70s was caused as much by unsound land-use as by changing weather patterns; in Haiti, one-sixth of the entire population has fled an island plagued by some of the world's most severe soil erosion; El Salvador has the worst and most extensive soil erosion in its region.

## ENVIRONMENTAL REFUGEES

In many locales, the roots of political conflict are found in the destruction of the environmental base. Impoverished populations, desperate for arable land and food, do not make for stable nations.

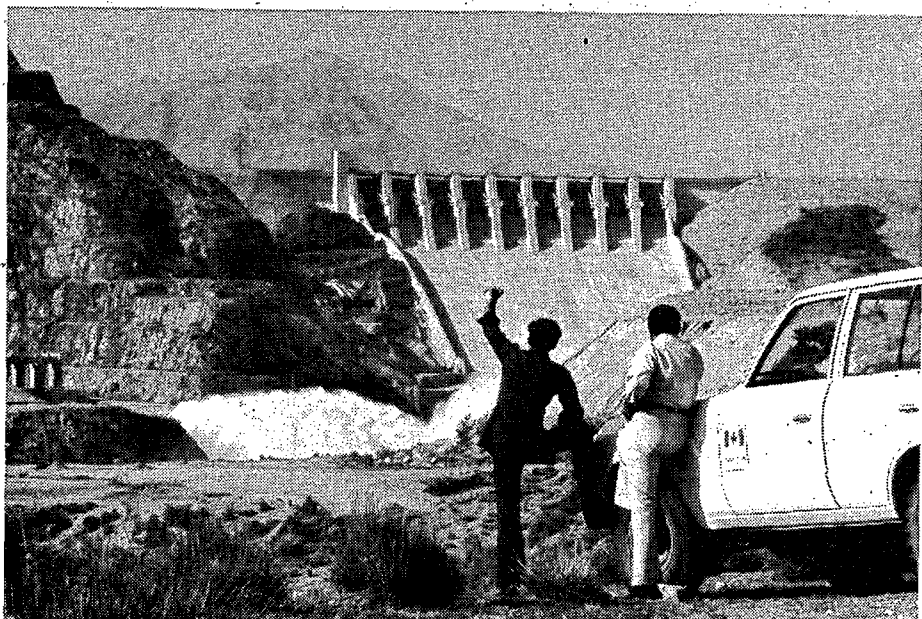


In 1984/85 alone, the world had 15 million refugees - the majority of whom were 'environmental refugees', driven from their land and homes by drought or flood, causing hunger and loss of income. Of those, 10 million were in Africa. Their migrations have created enormous political strains, not the least

VLADIMIR SOKOLOV  
USSR

*Director, Institute of Evolutionary Animal Morphology and Ecology, USSR Academy of Sciences; Professor and Head of Department of Vertebrate Zoology, Faculty of Biology, Moscow State University; Deputy Chairman, Section of Chemical and Technological and Biological Sciences, Presidium, USSR Academy of Sciences.*

(continued)



Dilip Mehta

CIDA-assisted hydro-electric dam in Pakistan

when they cross national boundaries and find themselves in competition for social services, food, shelter and jobs with the almost equally poor residents of neighbouring states.

### SOUTH AFRICAN 'JUSTICE'

In a classic example of how the vicious circle of both environmental degradation and political strain - even armed conflict - can be started, witness the apartheid policies of South Africa. The equation for civil-strife is clear and seemingly irreversible under the present government policies.

- The government's home-lands' policy has provided just 14 per cent of South Africa's land to the black 72 per cent of her population.

- Working-age blacks flee those over-cultivated and over-grazed areas to find work and food in the cities.

These environmental migrants add to the crowding and squalor of black, urban 'townships', where mostly they find racial inequality and scant economic opportunity.

- Tensions rise, repression escalates, and the black victims seek sanctuary across the nearest national borders and justice - or revenge - from those sanctuaries.

- The South African regime retaliates with cross-border raids.

- The armed conflict widens into the so-called 'Front Line States'

surrounding South Africa. Now the entire region is being caught-up in the ever-widening cockpit of violence and bitterness.

### WATER-FIGHTS

Environment-based disputes are more common than we generally suppose. Already, acute water shortages are suffered by 80 of our global neighbours. Major disputes over river water are common. They have been experienced:

- in North America, over the Rio Grande;

- in South America, over the Rio de la Plata and the Parana Rivers;

- in South and Southeast Asia, over the waters of the Ganges and the Mekong;

- in Africa, where the waters of the Nile are in dispute; and,

- in the Middle East, where the Jordan, the Litani, the Orontes and the Euphrates Rivers have all been fought-over.

### COD WARS

The Iceland/United Kingdom 'cod war' of 1974 was no aberration. Similar tensions exist today in both the Japanese and Korean Seas and on both sides of the South Atlantic. Future relations between Britain and Argentina have been strained, even further, by the declaration of 'an exclusive fishing zone' around the Maldive/Falkland Islands.

### WARMING TRENDS

In addition, tomorrow's anxieties for adequate resources will almost certainly be exacerbated by the 'greenhouse' effect of global warming trends, caused by atmospheric build-up of carbon dioxide et al. Climatic changes, of the order envisaged, would certainly disrupt a large part of the world's cereal harvests, and would likely trigger mass migration in areas already hard-hit by hunger.

### GUN 'THEFT'

Looming over all these threats, however, is the global arms-race. In Dwight D. Eisenhower's words, as he retired from the U.S. presidency, "every gun that is made, every warship launched, every rocket fired, represents, in the final analysis, a theft from those who are cold and are not clothed."

Today, half a million scientists are employed, globally, on military research. Half of all research and development effort in the world goes to inventing new weapons systems! Call that 80 billion dollars, in 1984 alone. Where are our priorities?

### ECONOMY SHIFTS

A few nations - Peru, Argentina and China among them - have demonstrated how nations can shift their spending from military to development priorities, without disrupting their economies. The rest of us have still to learn this vital lesson.

In the Developing World, besides using-up huge fractions of national budgets which are desperately needed for social and economic development, military spending (which has increased five-fold in 20 years) uses precious 'hard currency' for equipment, parts, replacements and training.

### BONFIRE BRIGADES

In this regard, the Industrial States - former colonial powers - resemble a fire-brigade' busy starting fires to keep themselves employed! Here are some examples.

There are, today, 40 border disputes in the Third World. They were caused, often, by ill-defined and arbitrarily-imposed national boundaries drawn by the colonial nations; those borders were often

organized to divide-and-pacify' - to give political balances-of-power to 'friendly' tribal groups or cultures - or to ensure easy access to raw resources.

And all these disputes, naturally, allow the Industrial Nations to fatten their purses with arms sales for the 'security' of their client-states in the Third World - a case of global 'mercenary fire-fighting'.



UN photo

Water is a precious and often scarce commodity, and drought is serious wherever it occurs, as in this dried-up lake in Laredo, Texas, USA

### TEST-BEDS

The Industrial States and super-powers have frequently, and blatantly, used Third World disputes as areas of surrogate conflict, as observed earlier, and at little cost to themselves.

These 'test-beds' for new weaponry and tactics (one is reminded of Hitler's 'Condor Legion' in the Spanish Civil War, 50 years ago) frequently have seemed to be 'fanned', if not actually created, for the selfish, if equally short-sighted, political and military purposes of the superpowers.

### MEGABUCKS PER DIEM

As neighbours in this small, global village, we are past the time

"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."

David Brooks  
Friends of the Earth Canada  
WCED Public Hearing, Ottawa, 26-27 May 1986



Iv Demonte

Several of these Mexican children may die from lack of immunization against six childhood diseases. Most of them will suffer from between six and 16 bouts of diarrhoea and vomiting **each year** due to ignorance and poor environmental sanitation.

when we must recognize that there are no military solutions to environmental hardship. World co-operation is our only hope, and dedication to developmental research and environmentally-sound growth is our only salvation.

Consider the alternatives, based on 1985's world arms-costs of well over 900 billion dollars - more than two and a half billion dollars **each day!**

- 12 hours of military spending, over five years, would repair the globe's tropical rainforests, insofar as that is possible:

- 43 hours of arms-costs, each year for the next 20 years, would roll-back the appalling waste caused by the global advance of the deserts destroying our croplands.

- The United Nations' plan to provide safe water for everyone on earth would reduce Third World disease by 80 per cent. That incredible change would use-up ten days' military costs per year, for ten years!

- It would cost us an extra nine hours worth of defence costs, every year, to make family-planning information and birth-control devices freely-available to every mother in the Developing Nations.

- Throw in another 14 or so hours' spending to immunize all the children of the Third World, where just today one child died every six seconds (which is five million dead, this year alone) for want of vaccination.

### TO SAVE 20 MILLION LIVES

That makes a grand total of 13 days and six hours 'human investment' from military hardware, training and research spending, which if 'borrowed' could save maybe 20 million lives each year, and to protect and restore more farmlands than the combined areas of Europe and India, over the next 20 years.

Let us put it another way. To achieve those spending levels on life, instead of the machinery of death, we would have to reduce global arms-costs by 3.6 per cent.

Is the price too high? Where are our priorities?

### OR MAKE 12 'KILLS' EACH

Military economists (if the terms are not mutually exclusive) are fond of computing and announcing 'body counts' and, in terms of 'efficient military technology', the ratios of 'bang-for-the-buck'. So how have we done on this battered

globe, as we have quadrupled military spending, and stockpiled enough nuclear weapons to destroy each of us 12 times over? Here are the answers!

- In the period between World War One and World War Two, there were 83 armed conflicts around the world. In the time since World War Two, we have had 120 wars.

- Since World War Two, four times as many have died in wars, as in the comparative period before 1939. Two-thirds of these, at least, have been civilians - largely women and children.

### YOUR PRIORITIES?

When we gather in our international assemblies, when we speak to our political leaders, directly or through the ballot box, when we answer pollsters' questions and when we tell our children and grandchildren 'what the future holds for them', where will our priorities be?



Maggie Murray-Lee

A mother waits with her child for the arrival of the mobile vaccination team in Senegal.

## World Problems Require Long Term Answers

How will Canadians respond to the challenges posed by the recommendations of the WCED Report? "As usual, with generosity and enthusiasm, but we should beware of facile solutions and unwarranted assumptions," says Dr. William Winegard, who chaired a special House of Commons Committee to study all aspects of Canada's foreign aid policies.

"What worries me about this whole picture is that we must not think of 'television' solutions, but this is a long-term, difficult problem. One of the things we said in the House of Commons Report, is that we are in this for the long-term, and not just five years. It is 25 years or 50 years - that is the time-scale that we have to think of."



"But I thought we had cleaned up our air and water!"



ISTAVAN LANG  
Hungary

Secretary General of the Hungarian Academy of Sciences; Deputy Secretary General 1970-85, and Executive Secretary 1963-70, Section of Biology, Hungarian Academy of Sciences; Research Institute of Soil Science and Agriculture Chemistry, Hungarian Academy of Sciences 1955-63.

## HANGING TOGETHER: RINGING

The greatest paradox of our time lies in the surging tide of Western protectionism and isolation; and this at a time when we most need to increase, vastly, the mechanisms of global co-operation and to build bridges of mutual trust.

All the world, including the industrial West, will suffer from the soil erosion, desertification, deforestation, of the Third World; nor are the Developed Nations armoured against the loss of tropical rain-forests and of plant and animal species.

## NO ONE IS IMMUNE

All the world, including the Developing Nations, will share the risks created by acid rain, by the greenhouse effect, by the wanton distribution and dumping of toxic chemicals and wastes; none of us is immune to the consequences of resource depletion, energy waste, industrial pollution - or of nuclear conflict. There is an appropriate biblical proscription in St. Paul's Letter to the Galatians, chapter six, verse seven: "Be not deceived; God is not mocked; for whatsoever a man soweth, that shall he also reap."

This warning is easily transposed to any culture, and any religion: "Be not deceived; nature is not mocked".

Whether we see in the fragile unity of planetary life, as individuals in the global village, the hand of God (or gods) or the balance of nature, our conclusions must agree - ignorant or careless tampering with the world's natural checks and balances can no more be countenanced.

## TECH FIX NOT ENOUGH

We know, too, from past demonstrations-of-failure that the 'quick fix' approach to the riddles and ravages of threats to environmentally-sound development, is both naïve and futile. With the world under siege, we must settle ourselves to acceptance of long and difficult remedies.

We have seen how the old approaches to developmental and environmental security have only increased instability. We can only find safety through change. We are embarked, if you will, on an existential trip into the future. We will learn as we go, from our journey, or we will have nowhere left to go!

It is the journey itself which holds the promise of human survival and hope.

## PRO-ACTIVE NEEDED

Today, most agencies concerned with environment and development

are paying exclusive attention to 'effects'. They are still 'reactive', not 'pro-active'. It is time to concern ourselves with the diseases rather than just the symptoms. It is the sources of those effects which we must identify and eliminate.

## MEND THE NETS

The global village will find most of its task, and its challenge, written 'between the lines' of our experience and institutions.

We know national boundaries, confronted by the global migrations of pollution, and threats to resources, are as porous as fish nets. There are real and dangerous gaps in our international law, our trade treaties, our economic development schemes and aid policies. We have got to fill those gaps and strengthen the laws - the tools and institutions of our mutual survival.

We are going to have more and bigger crises. Their origins are in our recent history of ignorance and carelessness, their gestation long past, their arrival unavoidable. So we must co-operate, first, in risk-assessment and crisis-management.

## INFORMED CHOICES NOW

To ensure development that we can live with, we must invest in our future by making informed choices, and back-up them with the legal and fiscal muscle needed to assess the risks, identify the diseases, and put an end to them - while still treating their symptoms. Some essential steps to those ends are the following:

- Governments must report annually - and publicly to their constituents - on their environmental resources, and their 'audit' of changes in them.

- Every department, agency, and activity of government must be held

publicly-accountable for building the needs of sound environmental protection into every programme.

- Every government should adopt a universally-accepted 'environmental foreign policy'. We have to stop exporting degradation, disease and death - even 'by default'!

## STOP POLLUTION EXPORT!

- Many new bilateral and multilateral agreements will be needed to resolve regional and sub-regional problems of cross-border pollution - not the least in the world's great river basins. Fewer than 30 of the globe's 200 major, international river basins are now safeguarded by formal, co-operative protection.

## MAKE U.N. ACTION FOCUS

- The United Nations must be made the centre and focus of international co-operation. Efforts to ensure healthy, continuing development - and just distribution of the world's resources and opportunities, must be multiplied.

- Every UN agency should re-deploy appropriate staff and funds to make environmental priorities central to their every activity.

- National governments must make a major effort to supply the resources and the support which the UN will need during the next critical 20 years.

## CO-ORDINATING GROUP

- The United Nations Secretary General should appoint a special UN board or commission (under his/her chairmanship) to monitor and encourage 'sustainable development'. This board would oversee and encourage the actions of United Nations agencies and organizations. It would also provide a 'hinge' or liaison with national governments

and other world bodies. It would stay in direct and regular communication with a further new group - a 'risk-assessment' centre, headed by a steering committee composed of internationally-eminent individuals.

## RISK-ASSESSMENT CENTRE

This risk-assessment centre would co-ordinate and encourage especially the efforts of non-governmental organizations, both national and international.

It would also establish centres of excellence, drawing on world authorities in such areas as law, economics and science - with those recruited for these tasks 'on call' to advise any agency seeking their help.

## FUND AND EQUIP UNEP

The United Nations Environment Programme (UNEP) will need an infusion of larger and more reliable funding, along with the overt support of UN member nations. UNEP should be equipped to:

- Monitor, assess and report on global environment (through its 'Earthwatch' programme).

- Encourage international agreements, and promote the extension of current pacts and treaties: this while developing patterns for future accord in such areas as international river basins, and the disposal of hazardous wastes.

- Encourage and support the development of expertise and of regulatory and monitoring capacities in Developing Nations.

- Provide the major global centre of data and reporting on all environmental matters.

- Advise and assist UN organizations and agencies (not excluding the World Bank) and offer training schemes and technical assistance to personnel of these agencies.

## LOGICAL GLOBAL LOCUS

The globe's risk-assessment programme should be centred in UNEP. As the major repository of environmental data, it will be the only logical locus for the study of, and extrapolation from, that data.

## ACCESS EVERYWHERE

Urgent steps must be taken to provide global access to the monitoring and analysis of our eco-sphere now undertaken, in a fragmented way, by many individual nations and agencies. This information is vital to our global village; shared, it will multiply in value.

## ASSIST GRASSROOTS ACTION

Non-governmental organizations will need far more support, in three forms:



## THE CHANGES FOR SURVIVAL

## TOWARDS COMMON ACTION: PROPOSALS FOR INSTITUTIONAL AND LEGAL CHANGE

Chapter Twelve of the WCED Report commences with a warning and concludes with a six-point plan to save humanity and the biological systems of the planet which sustain it. "The next few decades are crucial for the future of humanity", it warns, "but opportunities for more sustainable forms of growth and development are also growing".

The plan calls for a Universal Declaration of Environmental Rights to strengthen the rule of international law, greater involvement of community-level and grassroots organizations and an 'Earthwatch' agency to maintain a planetary Early Warning System to alert governments when danger threatens.

"In the middle of the 20th Century, we saw our planet from space for the first time", Chapter Twelve begins. Historians may eventually find that this vision had a greater impact on thought than did the Copernican revolution of the 16th Century, which upset humans' self-image by revealing that the Earth is not the centre of the universe.

By proving that Earth was not the centre of the universe, Copernicus, Galileo and Kepler brought the thought-world of Europe crashing down and opened the way for the Renaissance. If Earth was not the centre of the universe, then man was not as important as he thought he was. That was a rude awakening, but nothing compared to what is about to happen, the WCED Report believes.

Now, even ruder shocks to our sense of cosmic self-importance are coming thick and fast, as science and technology reveal new patterns indicating that we may not be as unique a life-form as we think we are. In fact, according to all the scientific evidence accumulated since we started to study the globe from outer space, humanity appears to be merely a small part of a much larger living body called the 'biomass'.

The view of Earth sent back by the Apollo 13 astronauts, on their voyage to and from the Moon, showed us the globe as a single, living system with all the identifying characteristics of the self-regulating cells or neurons which are the basic building-blocks of every living plant, sea creature or animal body.

Placed side by side on a viewing screen, biologists following the rules of science had to conclude that both a living cell and the living planet display the same characteristics. In other words, we human beings appear to be cell-colonies, part of a much larger body, which is the biosphere or environment of Earth.

Earth, it seems, as evidenced by geodetic and biological satellite-scans, can be considered as a giant, living animal, operating according to heartbeats or time-pulses almost too vast for us to comprehend. Now, the Commissioners warn, this planetary body is displaying all the classic symptoms of cancer.

The carcinogen has been identified.

It is human beings - composed of the same hydrocarbon cells as every other living thing on earth. Driven by powerful new industrial and technological forces they do not yet understand or cannot control, some of these human societies or cell-colonies have become malignant and are threatening the survival of all life on earth.

At best, we have three decades to turn it around, to stop killing our life support systems, the WCED warns. It outlines a plan of action and focuses its main proposals in six priority areas.

The onus for action lies with no one group of nations, the WCED Report states. Developing Countries face the challenges of desertification, deforestation and pollution, and endure most of the poverty associated with environmental degradation.

Industrial Nations face the challenges of toxic chemicals, toxic wastes and acidification, and all nations may suffer from the releases by Industrialized Countries of carbon dioxide and of gases that react with the ozone layer, and from any future war fought with the nuclear arsenals controlled by those nations.

"The time has come to break out of past patterns. Attempts to maintain social and ecological stability through old approaches to development and environmental protection will increase instability. Security must be sought through change", the WCED Report warns.

Each area of change represents a formidable challenge in its own right, but the fundamental challenge stems from their systemic character. They lock together environment and development, once thought to be separate; they lock together 'sectors' such as industry and agriculture; and they lock together countries as the effects of national policies and actions spill over national borders.

"Separate policies and institutions can no longer cope effectively with these interlocked issues. Nor can nations, acting unilaterally. The real world of interlocked economic and ecological systems will not change; the policies and institutions concerned must", the WCED Report states.

Nations must now confront a growing number, frequency and scale of crises. A major reorientation is needed in many policies and institutional arrangements at the national as well as international levels. The time has come to break away.

"Dismal scenarios of mounting destruction of national and global potential for development - indeed the Earth's very capacity to support life - are not inescapable destiny. One of the most hopeful characteristics of the changes the world is racing through, is that invariably they reflect great opportunities", the Report concludes.

1. More money.

2. More information; NGOs must be kept aware of new policies, proposals, projects.

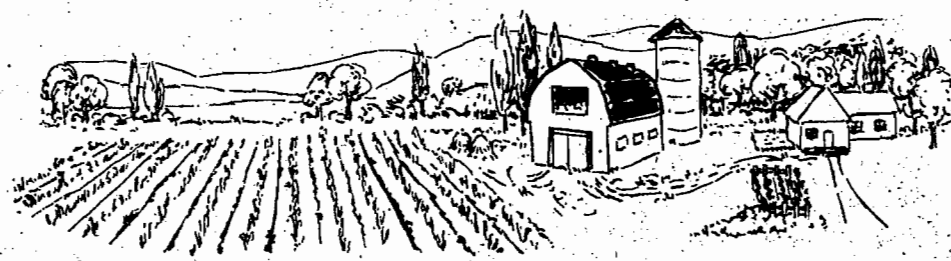
3. More consultation; they have enormous on-the-ground expertise; they should be consulted at the planning stages of any project likely to have environmental impact. They also have a very broad constituency of support which can be marshalled - and only by them - in support of protection of our global commons.

Beyond the foregoing, these NGOs must begin to exchange more information between themselves. Too often, in the past, they have seen themselves as competitors for very small portions of funds available for global development. We must find and encourage systems to help them become much more mutually-supportive and, thereby, more effective.

### 'RIGHT TO COMMUNICATE'

The public's 'right to know' must be reinforced and actively pursued, in international agencies, as well as within national governmental or private organizations. This means, not the least, the right to informed consultation, and a recognized role in decision-making, and the right to legal redress and remedy for anyone whose health or environment is affected by the acts of others - be they governments or corporations.

Our resources of minerals, water, air - our flora and fauna - have no access to 'class action' legislation in their own defence. So we must, as individuals, assume those rights, and undertake the consequent responsibilities.



**EMIL SALIM**  
Indonesia

*Minister of State for Population and the Environment; Minister of State for Development Supervision and the Environment 1978-83; Member People's Consultative Assembly 1977-87; Minister of Communications 1973-78; Minister of State for Administrative Reform; Deputy Chairman, National Planning Committee 1971-81.*

(CONTINUED)



UNICEF/Horst Cerni

**HARAMBEE!** "Let's all pull together for our common future"  
UNICEF co-operates with the Tanzanian government and the people to supply safe water and improved sanitation in Otaruni, Tanzania.

### FOLLOW-THROUGH ACTION

An active and urgent follow-up to the findings of this Report is imperative.

To that end:

A: The UN General Assembly, after full consideration of this Report, should implement development of a United Nations' action programme' on sustainable development.

B: The United Nations General Assembly should develop and adopt a 'universal declaration' on environment and development, similar to its declaration on human rights. This statement of principle should, as quickly as possible, be then converted into an international convention, and every UN member-state ought to be urged to sign and abide by that convention.

### APPLY THE PRINCIPLES

C: National governments must be persuaded to ratify and promote existing international and regional conventions and treaties dealing with environment and development.

As important, each government must apply the principles of those treaties with dedication, discipline and rigour. The best-intended agreements are merely pious declarations until they are translated into active, living codes of behaviour.

D: Effective conciliation of international and bilateral environmental disputes is integral to progress in our global village. Where nations cannot reach agreement within a reasonable time - 18 months should be the maximum, given the globe's quickening pace of ecosystem degradation - disputes should be submitted to conciliation procedures (at the request of any party to the disagreement). If still unresolved, the matter should proceed to compulsory arbitration or judicial disposition.

### RESOLVE THE PROBLEMS

'Binding settlements' are not the ideal means of achieving interna-

tional agreement. But the clock is running out on our environment. We need the means to speed agreements - not least by encouraging concerned parties to resolve their problems by mutual consent, rather than at the hands of an arbitrator.

The World Court is a considerably under-used resource in this area. Moreover, the Court has declared its willingness and capacity to deal with cases in this area, fully and promptly. The Court's readiness will be of little use, however, if nations continue to perceive its findings as 'binding' only when in their favour, and 'irrelevant' when on the opposite side.

### SET AGENCY PRIORITIES

E: National governments should instruct their representatives on all regional and international bodies (such as the World Bank) to make environment priorities an integral part of every policy and programme decision. Sound economic policy,

by definition, must be sound environmental policy.

This applies, in the broadest sense, as much to trade and GATT (General Agreement on Tariffs and Trade) or at disarmament talks between the superpowers, as elsewhere.

### STRENGTHEN NATIONAL PLANS

F: The aid agencies of the industrial nations - the so called 'bilateral aid agencies' offering help from one nation-state to another - now provide four times more aid to the developing world than all of the international and U.N. agencies combined.

Without the enthusiastic support and participation of these national agencies, no plan to tie development to sensible environmental-protection is possible. In 1980, a survey of six major, national, aid agencies showed that only one, US A.I.D., had such a systematic plan and adequate staff to monitor and enforce those concerns. In the years since, several other nations, including Canada, have made 'policy' progress. They have developed 'guidelines', even increased funding for some specific environmental projects. But, by 1983, a check of those new guidelines found almost no evidence they were being systematically applied.

More paper tigers. The world and the environment needs substance, not appearances. This is the harsh truth, despite new environmental programmes initiated by some agencies triggered by the activities of the WCED.

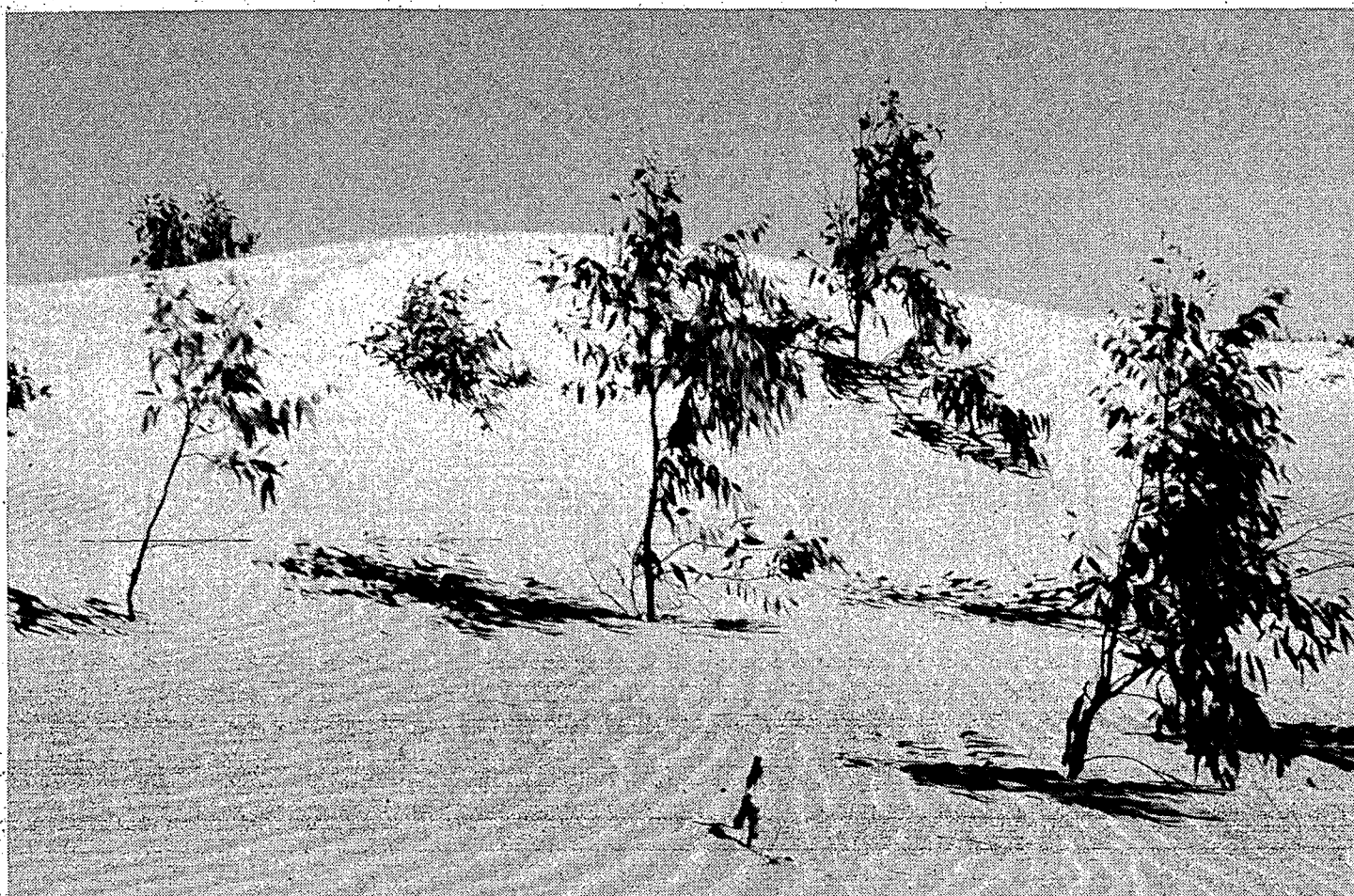
Most funding for international environmental action in our lifetimes has come through individual, voluntary contributions, with the bulk of those channelled through the NGOs. National governments and aid agencies must be persuaded, not least by marshalling public opinion, to join this effort.

G: New and secure funding sources must be found to sustain the effort needed. The United Nations General Assembly should seriously consider some of the alternate financing ideas suggested by a number of studies. So should all national governments.

These funding sources could be some form of 'royalty', 'license fee', or leasing agreement with corporations and nations using the space and resources we all share - the elements of our 'global common', such as:

- ocean fishing,
- ocean transport,
- sea-bed mining,
- 'parking fees' for geostationary satellites, and
- 'leases' for scientific bases in Antarctica.

Taxes could be levied on international trade, not excluding the 'invisible exports' of services, technical expertise and investment. Such taxes could be considered, alternatively or additionally, on trade surpluses, or on 'luxury goods'. Trade in finite and diminishing resources - especially in endangered species - would presumably be taxed very highly, where trade is permitted at all.



*We can make the desert flower again, and solve other complex problems, if we have the political will to work together for our common future.*

UN PHOTO

## WHO WILL SAVE US?

Our global village is not going to be saved by some philanthropic space-creature, arriving from a distant galaxy in a flying saucer crammed with panaceas for all our ills.

Our help is within us.

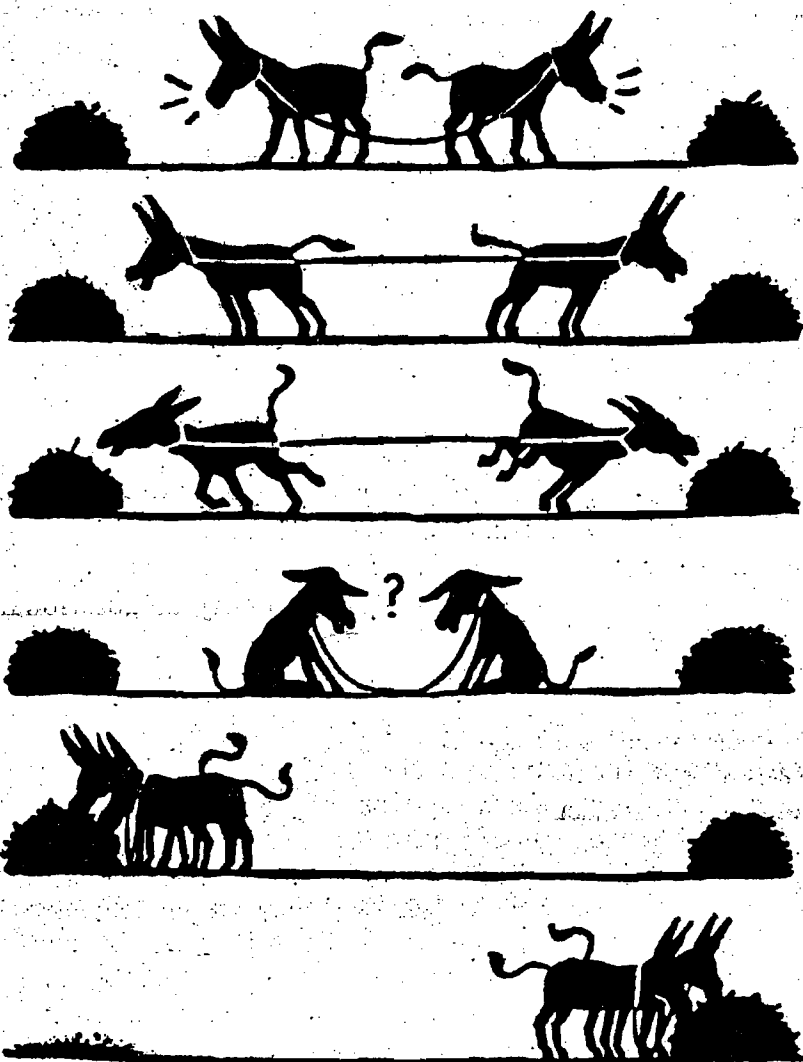
Our strength is between us.

Our need is as fundamental as our life-support systems of air to breathe, water to drink, food to eat.

It is our air, food, and water, which here concern us. Our respon-

sibility is in our human seed. They will neither grow nor prosper unless we prepare, today, for their needs. If we fail, we need fear no recriminations from history. There may well be no one left to write the histories of our impotence

If we begin to succeed, historians may remember this generation as the one which started to turn back Earth towards Eden.



*"The World's environmental problems are greater than the sum of those in each country. Certainly, they can no longer be dealt with purely on a nation-state basis. The World Commission on Environment and Development must strike at this fundamental problem by recommending specific ways for countries to co-operate to surmount sovereignty, to embrace international instruments in order to deal with global threats. The growing trend towards isolation demonstrates that the current rhythm of history is out of harmony with human aspirations, even with its chances for survival.*

*The challenge ahead is for us to transcend the self-interests of our respective nation-states so as to embrace a broader self-interest - the survival of the human species in a threatened world."*

Hon. Tom McMillan  
Minister of Environment, Government of Canada  
WCED Public Hearing, Ottawa 26-27 May 1986

## RECOMMENDATIONS FOR ACTION

### 1. BECOME RESPONSIBLE

Governments must begin to make the national, economic and sectoral agencies and their international counterparts, including UN organizations and agencies, directly responsible and accountable for ensuring that their policies, programmes and budgets will support development that is economically and ecologically sustainable.

### 2. STRENGTHEN INSTITUTIONS

Governments should also reinforce the roles and capacities of environmental-protection and resource-management agencies. This is needed, most urgently, in the Developing Countries, which will need help to strengthen their institutions. The United Nations Environment Programme, UNEP, should be strengthened as the principal source of environmental data, assessment and reporting, and as the principal advocate and agent for change and international co-operation.

### 3. ENHANCE EARTHWATCH

The capacity to identify, evaluate and report on risks of irreversible damage to natural systems, and threats to the survival, security and well-being of the world community must be rapidly reinforced and extended. Governments, individually and collectively, have the principal responsibility to do this, while UNEP's Earthwatch should be the centre of leadership and risk-assessment in the UN system.

Because of the sensitive political nature of many of these risks to the global community, there is also a need for an independent, but complementary, capacity to assess and report on threats to the planet's ecosystem. A new international mechanism for co-operation among largely non-governmental organizations (NGOs), scientific

bodies and industrial groups should be established for this purpose.

### 4. INFORM AND INVOLVE ALL

Making the difficult choices involved in achieving sustainable development will depend on widespread support and involvement of an informed public and of NGOs, the scientific community and industry. Their rights, roles and participation in development planning, decision-making and project-implementation should be expanded.

### 5. ENACT PROTECTIVE LAWS

Governments now need to fill major gaps in existing national and international law related to environment; to find ways to recognize and protect the rights of present and future generations to an environment adequate for their health and well-being; to prepare, under UN auspices, a universal declaration on environmental protection and sustainable development and a subsequent Convention; and to strengthen procedures for avoiding or resolving disputes on environment and resource-management issues.

### 6. INVEST IN OUR FUTURE

Over the past decade, the overall cost-effectiveness of investments in halting pollution has been demonstrated. The escalating economic and ecological damage costs of not investing in environmental protection and improvement have also been repeatedly demonstrated - often in the grim tolls of flood and famine. But there are large financial implications, for renewable-energy development, for pollution control and for achieving less resource-intensive forms of agriculture.

NOEL MOORE



Maria Antonietta Peru

*The fundamental Right to Communicate, made possible through universal literacy, is essential if we and future generations are to be able to solve our global problems.*

# CANADA'S RESPONSE



FR. Leclair

Hon. Monique Landry, Minister for  
External Relations

Hon. Monique Landry, at the request of *Tribute's* editors, herein explains something of Canada's primary initiatives towards 'globally integrated development' as represented by its support for the World Commission on Environment and Development and its implementation of the Commission recommendations.

Madam Landry was elected in 1984 to represent the people of her Quebec Federal constituency of Blainville-Deux-Montagnes in the House of Commons of Canada's Parliament. She became Minister for External Relations in 1986 and as such, has responsibility for the policy direction of the Canadian International Development Agency.

**Q: To what extent did Canada support the World Commission on Environment and Development (WCED), headed by Norwegian Prime Minister Gro Brundtland?**

A: The idea to create the WCED originated with one of the Vice-Presidents of CIDA, Geoffrey F. Bruce, who has just been appointed Ambassador to Portugal. He introduced his proposal when he was High Commissioner to Kenya and Canada's Representative to the UN Environment Programme in Nairobi.

I think it is also well to recall that Maurice Strong was one of the members of the Commission which was led by Prime Minister Brundtland of Norway. The Government of Canada, through the Canadian International Development Agency (CIDA), provided about \$1 million to fund the operations of the Brundtland Commission from its establishment in 1984 through the publication of the report and recommendations earlier this year.

Even more important, however, is CIDA's commitment to carry out the recommendations of the commission - a commitment that began well before the report was released. On World Environment Day, June 5, 1987, I made public CIDA's policy on the environment. It is a comprehensive document, but the highlights include: environmental impact assessments of all projects financed by the agency; more emphasis on projects that enhance the environment; and greater efforts in institution-building, data-gathering and public awareness.

**Q: Is this a new area for CIDA? Have we ignored the environmental aspect of development in the past?**

A: Very definitely not! As the policy statement points out, CIDA, since its creation in 1986, has devoted considerable attention to environmental issues in all channels of delivery of development assistance - bilateral, multilateral, non-governmental organizations and business.

CIDA spends 20 to 25 per cent of its bilateral aid funds on projects and programmes designed to improve the management of renewable resources, and conservation, damage control and rehabilitation of resources.

Canada's involvement in international environmental concerns dates back to the early 1970's when Maurice Strong, the first president of CIDA, was Secretary General of the Stockholm Conference on the Human Environment. We have participated in a number of international gatherings dealing with the environment since that time, culminating in the three major environmental conferences that Canada hosted last year - including a meeting of the Brundtland Commission. CIDA has had a full-time environmental adviser since 1983.

**Q: Why have development efforts caused so many environmental problems? Will inter-governmental programmes and infrastructures be able to meet the demands for "integrated development" recommended by the Brundtland report?**

A: The issue here is that too many development assistance programmes have focused on symptoms rather than underlying causes. Rather than relying on international environmental organizations, such as the United Nations Environment Programme (UNEP) to solve the problems, each international development agency must integrate sustainable development concepts into its decision making processes and into its programme designs.

**Q: In view of the many concerns about the impact of development on the environment, what additional work do you see CIDA undertaking as a result of the Brundtland recommendations?**

A: Since July 1986, all new bilateral projects, which represent about 40 per cent of CIDA's spending, are being screened to ensure that the potential impacts on the environment are considered and addressed. Our goal is to work more closely with the Third World governments to ensure that their concerns for the environment are addressed, and to support them in their efforts to rehabilitate the environment.

**Q: CIDA supports projects carried out by non-governmental organizations (NGO's) and the private sector. Will you now ensure that these sectors also adhere to the Brundtland Commission's recommendation for integrated development?**

A: All CIDA funded projects, whoever they are implemented by, will undergo an Environmental Impact Assessment. CIDA's environmental policy emphasized public awareness, data-collection and institution-building. We are particularly sensitive to the need for private-public sector co-operation in decision making. The Agency relies heavily on people in the field, including NGO and business representatives to carry out our programmes. Our goal is to make sure that our development assistance contributes to sustainable development.

**Q: Do you see a role for the private sector (business, universities, NGO's) in the evolution of environmentally-sustainable development programmes and policies.**

*"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 considerations for the environmental future. It is poverty that is responsible for the destruction of natural resources, not the poor."*

Geoffrey Bruce  
Canadian International Development Agency  
WCED Public Hearings, Ottawa, 26 May 1986

## WORLD MEDIA RESPONSE

### The Economist (London)

"The pressure for change is increasing... Commercial banks and leading agencies realize they cannot afford not to listen."

### Nurnberge Nachrichten

(Federal Republic of Germany)

"...environmental destruction and misery are not 'inevitable fate' but are caused by deliberate human decisions. They are rooted in misguided development policies."

### Sunday Mail (Harare)

"...global advances cannot be made while we continue to degrade or destroy the resources that advances are built on."

### Financial Times (London)

"...another milestone on the environmentalists road towards being practical, sensible and convincing."

# TO THE GLOBAL CHALLENGE

**A:** Yes, I definitely see them playing a key role in our environmental policy implementation. Indeed, the NGO's, working at the grassroots, have been pioneers in the concern for environmental protection and sustainability. Both the private and the voluntary sectors encourage partnerships between Canadian and Third World participants as equals.

**Q: When the WCED Report is debated at the Special Session of the United Nations, will Canada's response to the Report be an important aspect of our government's opening statement?**

**A:** It is premature to comment right now on the contents of Canada's opening address at the UN. However, I know that Canada will continue to play a prominent role in the search for solutions to international environmental concerns. The General Assembly of the UN is one of many forums we will use.

**Q: What action do you hope the UN will take to implement the Brundtland recommendations?**

**A:** Canada has long been an active supporter of the UN and its agencies. The network of UN agencies will be important vehicles for encouraging developed and developing countries alike to be more sensitive to the environment. I would hope that the United Nations General Assembly will approve resolution calling on all governments to introduce immediate and constructive measures based on the general conclusions and guidelines contained in the WCED Report.

I would equally hope the decision will appeal to the private sector - business, industry, unions, universities and NGO's - to join in responding to the Report and in developing programmes leading to sustainable economic development.

**Q: Canada has a Special Ambassador for disarmament. Would it not be appropriate now for Canada to be represented by a Special Ambassador on matters of "Integrated Global Development"?**

**A:** Apart from my own efforts and those of the Secretary of State for External Affairs, the Right Honourable Joe Clark, Canada is strongly represented on this issue by Maurice Strong, who remains active in pursuit of environmental goals. Moreover, Stephen Lewis, our Permanent Ambassador to the UN, is highly regarded and deeply involved in the African Recovery Programmes where environmental protection and rehabilitation are key factors. Canada is indeed fortunate to have such high calibre representatives.

**Q: Position papers on the environment are being prepared by federal and provincial environment and resource ministers, by NGO's, the business community, the economic Council and other organizations. Will Canada's position at the UN reflect the concerns of those constituent bodies?**

**A:** CIDA has been directly involved in the many consultations leading up to the publication of the WCED Report. Our position at the UN will reflect the concerns of those who were consulted. A major component of CIDA's environmental policy is promotion of greater public awareness, not only in Canada, but elsewhere. CIDA supports national and international organizations that promote environmental awareness and education. There is an urgent requirement for much more public understanding about critical global issues and Canada intends to use every opportunity, including debates, to communicate this message.

**Q: How will CIDA promote acceptance of the WCED recommendations among the more than 30 multilateral UN agencies and the 60 other inter-governmental agencies that receive Canadian funding?**

**A:** Opportunities are being examined for co-operation with organizations such as the UNEP in identifying environment-enhancing projects. Canada's representatives at the World Bank and other agencies will continue to raise environmental issues and promote the inclusion of ecological considerations in multilaterally financed programmes.

**Q: What bilateral support is CIDA giving to newly-industrialized countries to promote environmentally sound policies.**

**A:** All new bilateral assistance projects undertaken or supported by Canada are now screened for environmental impact. This includes projects where CIDA performs the initial pre-feasibility studies or design work, but which may involve other donors at the construction phase. For example, the study we are doing of the Three Gorges in China has environmental impact as a high priority. We are committed to this screening policy and will seek to expand it through training programmes in newly industrialized countries.

We will strengthen local environmental institutions and assist these countries in drafting environmental policy legislation. Dalhousie University in Halifax has been undertaking such a project for CIDA in Indonesia for the past several years. In addition, CIDA's Business Co-operation Branch will continue to encourage the transfer of ecologically-sound technology in joint ventures that it promotes between Canadian and Third World business.

**Q: It has been said that what is morally wrong can never be economically or politically right. Would you say that this is also true for policies and practices that are ecologically wrong?**

**A:** Rather than get involved in abstract ethical discussions of right and wrong, I think we need to look on this area as a question of human survival. Ecological disasters do not need national or even continental boundaries. Acid rain, desertification, deforestation and climatic change are phenomena that have global consequences. We must come to grips with the fact that our globe has limitations. Each country has to make and implement its own policies, but to ensure well-being for all, we need global action.

As I stated on World Environment Day, too often we think of ourselves as fundamentally different from the people of the Third World. We are linked, however, by a common concern for the future of our planet. It is in the interest of all of us to find a way to ensure sustainable development.



## TO "OUR COMMON FUTURE"

### Arab News (Riyadh)

"The Report is expected to have a seminal influence on the policies of governments"

globe. It is high time that we began co-ordinating economic development and environment."

### Asahi Shimbun (Tokyo)

"...the advanced nations pass on environmental pollution and destruction to the developing nations; they are then only aggravating the environment of the entire

### International Herald Tribune (New York)

"It is the first major international report on the global environment to deal with economic development as an essential ingredient for the salvation of the earth's biological support systems."

HERMAN

I'M COLLECTING MONEY FOR ENDANGERED SPECIES



by Jim Unger

LISTEN...EVERY DAY I HAVE TO FACE CRIME, TERRORISM, NUCLEAR WARHEADS AND LUNATICS ON THE FREEWAY



I EAT PESTICIDES ON FOOD, I DRINK POLLUTED WATER... AND I'M ALWAYS BROKE



DON'T YOU CARE ABOUT ENDANGERED SPECIES?



I AM ONE



cartoon courtesy The Ottawa Citizen

## 5 BILLIONTH BABY:

# A New Economic Ethic

by Geoffrey Lean

Sometime this summer, somewhere in the world, a most unusual baby was born - the five billionth soul alive on Earth. In fact, the United Nations declared July 11 as the 'Day of Five Billion'.

It is, of course, most likely that he or she arrived, like nine out of ten babies born today, in the Third World. He or she, therefore, will be 20 times more likely than a child from the Western world to die in its first year of life.

During its first five years, it is likely to suffer from malnutrition, with possibly permanent effects on its mental and physical development.

He or she would have only a 50 per cent chance of finishing primary school; less than a 25 per cent chance of even starting secondary school if a boy, less than a ten per

cent chance if a girl; and would almost certainly grow-up without access to safe drinking water or any form of sanitation.

Yet the children born this summer all over the world will inherit the same Earth from their parents, but it will be radically different from the one we have known.

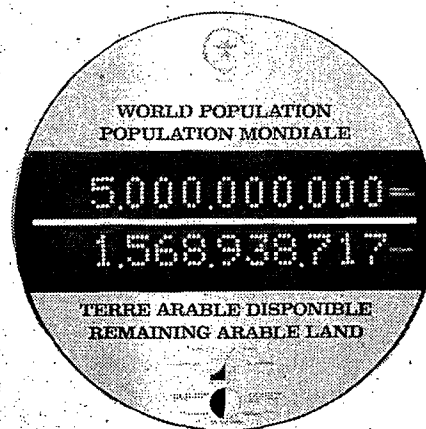
For a start, it will be much more populous. The pace of the increase will itself put enormous pressure upon the world; but the strains will be much the greatest in countries least able to bear them. For 95 per cent of the growth will be in Third World countries, and the fastest increase of all in the poorest of them.

These countries are already unable to meet the needs of their peoples. They face a future in which these needs will double, along with population, every 25 years.

It is poverty that fuels population growth; poor people choose to have many children because they need them. It is poverty that forces people to over-cultivate marginal lands and to destroy the forests, when good land is denied them elsewhere.

The fight against poverty demands a new economic ethic; the economics of unselfishness. It has become an unfashionable concept. Over the past decade or so, the economics of selfishness, dressed-up in fancy names, has increasingly taken hold.

On the other hand, there is good evidence from around the world that economic miracles take place when the needs of the poor are given priority. There are brief glimpses of overwhelming public support for economic unselfishness - as in the worldwide response to the African famine two years ago - in spite of a depressing relapse into 'voting with the pocket book.'



IDRC PHOTO

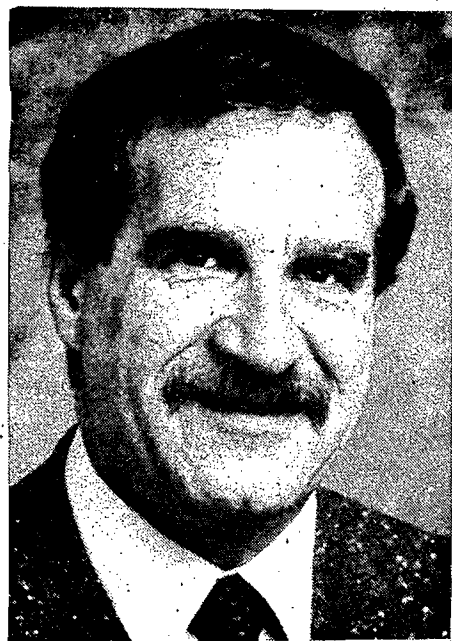
### TICK TOCK:

#### MORE PEOPLE, LESS LAND

The population clock at IDRC headquarters in Ottawa, July 1987

And yet, as the great Christian economist Barbara Ward would remind us, "In this age of ultimate scientific discovery, the facts and our morals have come together to tell us how to live." The future of all the world's children will depend on whether we listen.

Excerpt from  
"For A Change"  
September 1987



Hon. Gerard Lecuyer, Taskforce Chairman

The Task Force Report emphasized the interdependence of the environment and the economy and urges all Canadian governments to embrace the concept of sustainable economic development based upon private and public sector co-operation.

The Report is the result of eight months of discussion by 17 senior government, industry, environmental and academic representatives as a direct follow-up to the May 1986 visit to Canada of the Brundtland Commission. The group's mandate has been to foster and promote environmentally-sound economic growth and development in Canada.

Their Report makes 36 recommendations aimed at achieving changes in existing economic, social and political structures.

One of the principal recommendations involves the creation of multi-sectoral 'Round Tables' on

## CANADA'S REPONSE:

# New National Team Takes To The Field

In Canada, a "National Task Force on Environment and Economy", comprised of industry, government and non-governmental organizations, has called for a major effort to integrate environment and economic planning and decision making.

Environment and Economy in every province and territory.

The Report suggests that a national conservation strategy be prepared, integrating the provincial and territorial strategies and linking them to the international scene. It recommends that this work be presented by Canada at the United Nations global conference on environment and development, proposed by the Brundtland Report and anticipated to be held in Oslo, Norway, in 1992.

While the Report recommends that governments assume responsibility for co-ordination and development of conservation strategies, it proposes a major role for industry and non-government organizations.

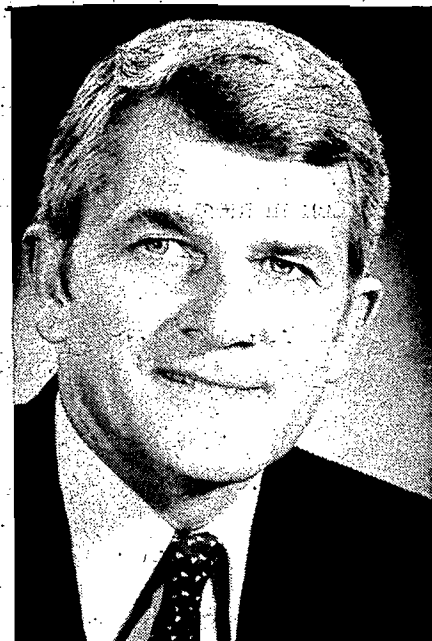
"In a new era of environmentally-sound economic development, a full partnership of governments, industry, non-government organizations and the general public must guide us through an integrated

approach to environment and economy," the Report states.

This would be a new process of consultation where senior decision-makers from government, industry and non-governmental organizations in each Canadian jurisdiction would debate environment economy issues and make recommendations to their first ministers.

These 'Round Tables' would also facilitate the building of consensus necessary to develop conservation strategies in each Canadian jurisdiction. The strategies would serve as blueprints for development, to ensure today's resource utilization does not damage the prospects of future generations for maintaining or improving their use. The Report recommends that all Canadian jurisdictions have a conservation strategy in place by 1992.

As part of a major programme to increase public awareness of environment-economy issues, the



Roy Aitken

Report recommends that a "Year of the Environment" in Canada be held by 1990, with sustainable economic development as its central theme. In addition to the year of the environment proposal, the Report recommends that the Task Force design an 'action plan' to substantially upgrade environmental education, paying particular attention to the elementary and junior high school levels.

Task Force Chairman, Gerard Lecuyer, Manitoba Environment and Health Minister, and Vice-Chairman, Roy Aitken, Executive Vice-President of Inco Limited, in presenting their Report, agreed that co-operation and participation by all sectors is essential to achieve sustainable economic development. "All Canadians have a major role to play in making sustainable development a reality," Mr. Lecuyer said. Added Mr. Aitken: "It is time for government and business to come together to deal with these issues."

## MAURICE STRONG SPEAKS OUT

# Politicians can only lead in response to informed expressions of public concern

by Noel Moore

"All the major milestone documents that have paved the way for a major transition in history, from the Magna Carta to the American Constitution, have generated puzzlement and hostility at first, because they put into words a state of being that was in the process of becoming," said Maurice F. Strong, WCED Commissioner, when he delivered the Third Annual Barbara Ward Memorial Lecture in Ottawa on World Environment Day, 5th June 1987.

Strong paid tribute to the "Lady of Global Concern", the late Barbara Ward, former editor of the *Economist*, and tireless campaigner for globally integrated development whose definitive book "Only One Earth" launched the landmark U.N. Conference on the Human Environment in Stockholm in 1972.

"Today," said Strong, "the World Commission on Environment and Development needs its prophets, needs its advocates, and it needs public discussion and dialogue, because most people agree that its diagnosis is a very sound one. But you have to accept the reality that political leaders are driven by the concerns of their own people."

"I believe," he said, "that there is a rising tide of interest and concern among the world's people, and particularly the young people, and I am convinced that this is going to reflect itself in there being far more pressure on our political leaders. The levels of interest among the populations, as evidenced by polls in Canada, polls in the U.S., polls in Europe and Japan, is very, very high and it is growing."

"When the pressure comes from their own constituents, that is when the politicians will assign top priority to it. It has happened before and it is happening now."

Maurice Strong is a Canadian-born action-oriented thought-leader currently President of the World Federation of United Nations Associations (W.F.U.N.A.) and adviser to the UN Secretary General. He has dedicated his life to the twin causes of saving the global environment and improving conditions for all the world's people.

He was Secretary General for the 1972 UN Conference on the Human Environment, founding Executive Director of UNEP, first Director-General of Canada's International Development Agency, and has been chairman or president of corporate giants such as Power Corporation, Petro-Canada and AZL Resources Inc. and American Water Development. Mr. Strong combines idealism and a firm belief in the potential of the human spirit, with the hard-nosed pragmatism of a businessman as professional and 'public citizen'.

"We cannot judge the influence of the World Commission's Report by the immediate reactions of politicians, anymore than you could judge the power of the U.S. Constitution or Lincoln's Gettysburgh Address at the time they were first delivered," said Strong.

"If the analysis is right, and I believe it is, it predicts a situation in which every leader, every politician and, indeed, every person on this planet is going to be increasingly pre-occupied with these issues."

When asked how long we have before the situation reaches the point of no return, he expressed reluctance "to put a time frame on that. Like the physician who can tell a patient he has terminal cancer but should not predict the exact date of death, many factors yet influence the fate of our planet."

"We have a spreading cancer on this planet and it can and will be fatal if we don't do something about it. The next three decades are going to be the most decisive period in human history. What we do or do not do during this 30-year period

will determine whether we can make it or not," he said.

"Technology has an important role to play. In an age of instant electronic communications, major environmental incidents no longer go unnoticed; people are so well-informed today, but they need more qualitative information, to cope with these problems, rather than just information-overload - everyone needs encouragement and incentive to realize how essential is the individual contribution to public action."

"The technologies that create sophisticated world financial markets and capacities for communication, are highly vulnerable to disruption. So, those who are most caught-up in, and advantaged by, the sophisticated world technological system, are the most vulnerable to pressures from those who find themselves outside that system. And, unfortunately, that group is growing. This is a very real dichotomy, and we cannot manage our planet without recognizing this fact and coming to grips with it."

The Report of the Commission, of which Strong was a member, concludes its findings with the opti-

mistic belief that people have the power to prevail, and build a common future that is more prosperous, more just and more secure than any we have known before - if we can summon the personal commitment and generate the political will to do so.

The Barbara Ward Memorial Lecture is organized annually by the World Media Institute as part of the World Environment Festival 'ROSE' Awards. The 1987 lecture by Maurice Strong and that delivered by David Runnalls (1985), Vice-President of the International Institute for Environment and Development (IIED) and Shridath S. Ramphal, (1986) Secretary General of the Commonwealth and a WCED Commissioner, have been published as a book under the title "A Tribute to Barbara Ward - Lady of Global Concern", available from WMI in Ottawa. The book includes 'Lady J's' great essay "A New Creation" and a foreword by London Observer correspondent, Geoffrey Lean.



UN photo/ Y. Nagata

Maurice Strong with the late Barbara Ward, in 1976, at the UN Conference on Human Settlements in Vancouver

### ARE YOU CONCERNED ABOUT THE WORLD WE LIVE IN?



#### "Tribute... to Barbara Ward: Lady of Global Concern"

Challenging insights about our common future

by

Maurice Strong, Shridath Ramphal, David Runnalls and Geoffrey Lean.

The book includes Barbara Ward's essay, "A New Creation?"

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AN INTERNATIONAL INSTITUTE FOR ENVIRONMENT AND DEVELOPMENT - EARTHSKAN STUDY



In spite of the depressing statistics, the world is full of community-level success stories, often ignited by one committed person.

It may be the young army veteran who returns to his village, rebuilds morale and, over a period of 12 years, turns a village on the point of desertion into a thriving community. Or the trade unionist who inspires young under-employed men in his area to set-up a night-school for local children to address health and sanitation problems. Or the distinguished author whose orphanage - an oasis in the countryside beyond the turmoil of Calcutta - gives abandoned children a home and trains them in rural skills. Or the Pune businessman, horrified by the effects of drought in the countryside, who sparks-off a network of co-operatives for poor farmers

## A GAMBLE FOR THE FUTURE

# People Building Today the World of Tomorrow

which means they can irrigate their crops. These examples are simply those I met on a brief visit to India three years ago - four among hundreds I might have seen.

In his recent book, the *Greening of Africa* (Paladin, 1987), Paul Harrison cites project after project as grounds for his belief that, in the face of current doom-mongering, "Africa can surprise the world". He describes the policies behind Zimbabwe's post-independence 'maize miracle', which raised black farmers' share of the national market from seven per cent before independence to 48 per cent by 1985, led to the country's biggest maize harvest ever in 1985, and even enabled it to give aid to Ethiopia.

These breakthroughs, says Harrison, 'are surrounded and vastly outnumbered by failures'. But,

he adds, the successful projects are like seed. "If they are sown widely enough, they can take over the field." Among the ingredients of success are inspired leadership and an emphasis on local participation from planning through to execution.

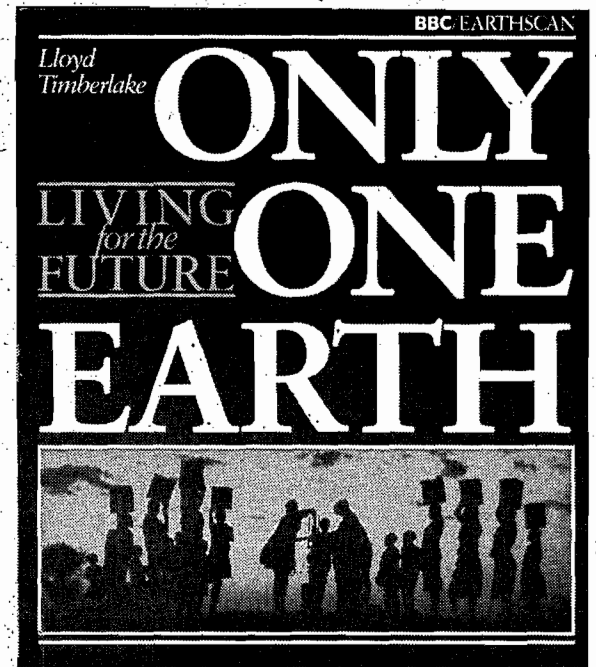
Seven out of ten Africans live off the land. Harrison believes the key to recovery lies with the small farmer and that, given Africa's soils and climate, her Green Revolution must build on organic foundations. "Africa can pull herself through," he concludes. "Her farmers have all the skill and adaptability and energy required." Whether they have the chance to use these qualities depends on both national and international reforms.

The same emphasis on individuals runs through a second book

published to coincide with the Brundtland Report, Lloyd Timberlake's *Only One Earth* (BBC/Earthscan 1987). He cites community-based efforts to address environmental problems ranging from the loss of trees in Sri Lanka to the growth of the desert in Kenya, from chemical pollution in California to housing in Peru. His examples make the point that grass-roots initiatives tuned to local needs are more effective than those imported from outside - and that when individuals act, they can make a difference.

Such initiatives often require a gamble - a sacrifice of short-term gains for the sake of the future.

Mary Leam  
Excerpt from  
"For A Change",  
October 1987



## MENDING THE MEDITERRANEAN!

Two-fifths of the world's population depends on water from a neighbouring country -- whose hydroelectric, irrigation, public water and forestry projects, or lack of them, may have drastic effects on their lives.

Ten groups of nations, clustered on the world's coastlines, suggest that such fears need not be realized. "You haven't a hope!" people told UNEP's Oceans Director, Stephen Keckes, when he set to work to get ancient enemies around the Mediterranean to clean-up their polluted sea. At the time - the early

'70s - scientists expected the sea to die of the pollution pouring into it from cities and industry around its shores.

Today the sea is well on its way to recovery. All the countries of the region - except for isolationist Albania - have agreed on clean-up measures and are starting to put them into force. They include such unlikely partners as Israel, Syria and Libya, Greece, Turkey and Cyprus!

Nine other groups of nations have followed their example over the last decade, banding together to

protect the coastal waters from which 90 per cent of our seafood comes - and where most of the land's wastes get trapped.

The crunch for these regional seas programmes comes with implementation. The Mediterranean countries took four years to agree to cutting pollution from land-based sources, responsible for four-fifths of marine pollution worldwide. Developing countries objected to devoting resources to protecting a sea which had been polluted by their more affluent neighbours to the north. Then they felt they couldn't afford to sign. Now they know they can't afford not to sign!

"A world in which poverty and inequality are endemic will always be prone to ecological and other crises said Zimbabwe's Prime Minister, Robert Mugabe, current Chairman of the Non-Aligned Movement, in his address to UNCTAD V11"

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# Brundtland inspires belief "the challenge can be met"

by Wayne Kines

"The Brundtland Report is a landmark document, providing as it does a strategy for the entire world community...", said Canada's spokesman in the U. N. General Assembly opening debate on the WCED Report. The Commission "does more than issue a challenge; it inspires belief that the challenge can be met. On behalf of the people of Canada, I urge all nations, through their action, to affirm that belief." Thus spoke Canada's Minister of the Environment, Tom McMillan, in declaring Canada's commitment to implement the recommendations of the Brundtland Report in its domestic and foreign policies. He also extended Canada's invitation to host a United Nations conference on environment and sustainable development in 1992, on the 20th anniversary of the historic Stockholm Conference.

McMillan quoted U.N. Secretary General U Thant in 1969, to the effect that "the members of the United Nations have perhaps ten years left in which to subordinate their ancient quarrels and launch a global partnership to curb the arms race, to improve the human environment, to defuse the population explosion and to supply the required momentum to development efforts. If such global partnership is not forged within the next decade... then the problems I have mentioned will have reached such staggering proportions that they will be beyond our capacity to control."

"U Thant was no alarmist," McMillan said, "this was his well-informed concern. If he was correct 18 years ago, then we today are not just running out of time, we are living on borrowed time."

On the subject of Third World debt, McMillan reflected Canada's belief that "the policies of the industrialized world are fundamentally flawed when the interest payments of many developing countries are larger than the amounts they receive from us in aid. We may not ourselves strip their rainforests of virgin timber, but we certainly bear some responsibility for the conditions that compel those who do."

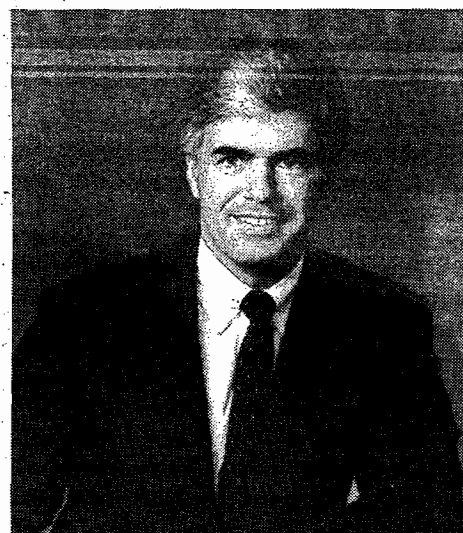
Saying that the dire warning and inspired counsels of the Brundtland Commission have come none too soon for all of us, McMillan added, "Canada is heeding that warning and accepting that counsel."

"The Government of Canada," he added, "believes that environmentally-sound policies are not a brake on the economy; they are an integral part of the engine of growth. Canada is committed to working with developing nations to alleviate their environmental and economic plight through efforts that reflect their own priorities and cultures. It is not an exercise in imposing our methods on them. Rather, our concern for the well-being of less developed countries must be directed at their basic problems - poverty and debt and the environmental devastation they breed."

In paying tribute to indigenous peoples, McMillan said, "the relationship of Canada's native peoples provide the model for sustainable development. The subsistence use of renewable resources over centuries by the Haida, the Dene, the Inuit and many other indigenous nations in Canada demonstrate the harmony with nature that is the antithesis of practises that gave rise to the Brundtland Commission."

"When will we realize," he added, "there is nothing intrinsically hospitable about planet Earth? Our planet does not support a rich and complex web of life because it is ideally suited for that purpose. It is ideally suited for that purpose because of the rich and complex web of life. Without the moderating effects of vegetation, of gas exchanges and of the re-cycling of materials conducted by billions of invertebrates, the planet Earth would be as unlikely a site for the Garden of Eden as the planet Mars. The disaster created by deforestation in areas like Ethiopia where forests once flourished, should sound the alarm about the fate of the Earth, if we persist on our course."

After saying that it was significant that the Montreal Protocol - the first-ever global protocol for the global atmosphere - was achieved under the leadership on the United Nations Environment Programme, McMillan went on to recommend, "the United Nations General Assembly should support the concepts of sustainable development called for by the Brundtland Commission, and United Nations agencies should ensure their programmes reflect that concept. Secondly, the United Nations should hold an international confer-



Hon. Tom McMillan, MP.

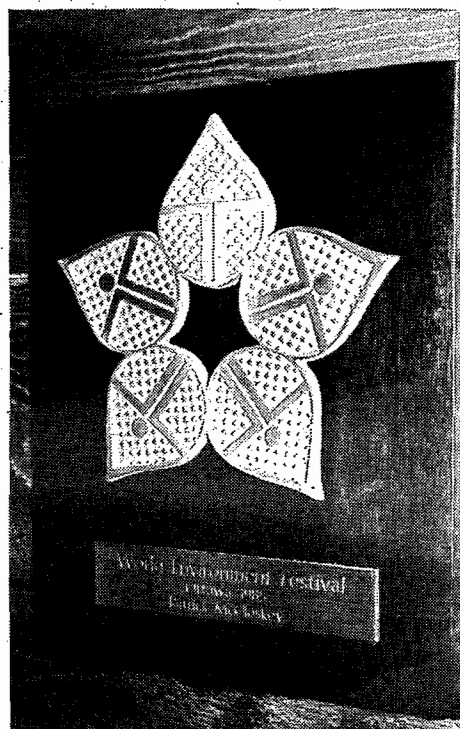
ence on environment and sustainable development in 1992, the 20th anniversary of the historic Stockholm Conference. The purpose would be to review progress by member-countries in implementing the Brundtland Report. Canada offers to host such a conference."

In closing, McMillan told the Assembly that "the environment and the economy cannot be addressed as two separate global problems. Only by viewing the two as one, can either be resolved."

He then quoted Rene Dubos' Fourth Rule of Ecology, that "Everything is connected to everything else," and added, "it is not just an environmental precept. It is also a profoundly moral statement. The statement implies that each nation has obligations to every other nation. And, if all nations are to survive, these obligations must be met."

He concluded by quoting American writer, Norman Cousins, who stated that "The starting point to a better world is the belief that it is possible." McMillan added, "The Brundtland Commission does more than issue a challenge; it inspires belief that the challenge can be met. On behalf of the people of Canada, I urge all nations, through their actions, to affirm that belief."

## RESPECT OUR SACRED ENVIRONMENT



**ROSE Awards** - As part of the World Environment Festival, organized by the World Media Institute, and starting in 1985, a 'dozen roses' are awarded annually to individuals and organizations effective in spreading ideas and information about the progress of our planet. The 'ROSE' in **ROSE Award** is an acronym for **RESPECT OUR SACRED ENVIRONMENT**. The award itself was designed by WMI member, Saskatchewan-born artist, Dennis Rose. Five raindrops form a flower with each petal containing a number of smaller acid-free raindrops and five global citizens, linked together in a circle of co-operation.

The final section of Chapter 7 of "Our Common Future" concerned with Energy, reflects the main focus of the Commission's thinking; in a sentence, "a low energy path is the best way towards a sustainable future" (p.201). It is the only path compatible with a transition to renewable sources and with a commitment to relieve the pressure on conventional fuels, which are so badly needed by developing countries. However, even though such a low-energy/high renewables path - which we call a "soft energy path" - implies no shortage of energy services, it will require "profound structural changes in socio-economic and institutional arrangements and is an important challenge to global society. it will require new dimensions of political will and institutional co-operation to achieve it" (pp.201-202). This, not technology or economics, is the problem. - Dr. David Brooks, A Review of Chapter 7 of the Brundtland Report, 1987, for Science & Energy Branch, Environment Canada..



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