

First Pan-Commonwealth Forum on Open Learning (PCF1)

In partnership with the Brunei Darussalam Ministry of Education and Universiti Brunei Darussalam

Empowerment through Knowledge and Technology: A Celebration of Ten Years of the Commonwealth of Learning
1-5 March 1999

**Keynote presentation:
The Honourable Maurice Strong
Special Adviser to the UN Secretary-General
Chairman, Earth Council**

THE KNOWLEDGE REVOLUTION: OPPORTUNITIES AND RISKS FOR DEVELOPING COUNTRIES

Abstract

The globalization of information has revealed a new spectrum of opportunities for developing countries. As a powerful and reusable resource for development, knowledge is an essential input, catalyst, and product of change. Despite this impressive potential, however, there are many economic, technical and political constraints that prevent the knowledge revolution from realizing its full potential in developing countries.

Increased access to information could exacerbate differences between North and South. The information gap between developed and developing countries could increase, exposing the vulnerability of the South and increasing their dependence on the North. For example, the growing drive to convert knowledge into intellectual property could tend to reduce the total stock of knowledge and restrict access for those who do not have the means to purchase it. The challenge we face is to determine how information technologies can be used to counter these trends and take advantage of new forms of social organization and economic activity resulting from the globalization of information.

Given the important role that developing countries play as custodians of much of the world's biological life-support system, it is in the developed world's best interest to ensure that developing countries have access to the resources they need to protect their natural endowment. This means providing the information and technologies they need to do so. But our responsibility goes beyond traditional official development assistance. The indispensable services they provide have always been taken for granted and treated as free goods. We must now begin to place economic value on them if we are to expect developing countries to maintain them largely for the benefit of the rest of the world. Doing so would not only ensure the conservation of these precious resources, but provide an additional source of revenue flow to these countries, allowing them to make the necessary investments to enhance their knowledge capacity.

While the primary responsibility for the future of developing countries, after all, rests with them, these countries deserve and require an international system that is supportive of their efforts to develop along sustainable paths. Given the degree of interdependence that exists between nations today, and the major shift in economic resources and population towards the southern hemisphere, it is clearly within the best interests of developed countries to ensure that developing countries have access to the best state-of-the-art technologies and information so that in the course of their own development they do not add unnecessarily to the pressures on the earth's environment and resources.

First Pan-Commonwealth Forum on Open Learning (PCF1)

In partnership with the Brunei Darussalam Ministry of Education and Universiti Brunei Darussalam

Empowerment through Knowledge and Technology: A Celebration of Ten Years of the Commonwealth of Learning
1-5 March 1999

Paper

I am most pleased to be here today to address this distinguished gathering, and I welcome the opportunity to help such a distinguished group focus attention on some of the issues which I believe will largely shape the human future in the 21st century. I commend His Excellency the Sultan of Brunei, and of course the organisers of this event, for bring the issue of information communication technologies to the forefront of dialogue on the management of global risks into the next millennium.

We now live in a world in which knowledge applied through technology, design, and sophisticated information and management systems has become the principal source of added value and competitive advantage. Ironically, it is a world, too, in which some of the principal risks we face have arisen through the unforeseen consequences of technological change. Who, for example, would have foreseen that the advent of the automobile and the petroleum-based energy economy could produce changes in climate that could profoundly change the nature of, and prospects for, life on our planet? Or that the dramatic advances in medical science would produce an explosion in the human population that would outpace our capacity to provide even the most basic of livelihoods for millions of the worlds poor and underprivileged?

To manage these impacts effectively cannot simply be a matter of placing our bets on the predictions of experts, however plausible they may be. Rather it involves understanding the processes through which human activities interact with each other and with natural phenomena to produce their ultimate consequences and at what points and in what ways our interventions in the system can have the effects we desire. Of course this also means we must know what we desire, what risks we want to avoid, what opportunities we seek to expand and what limits or boundary conditions we must accept to ensure a secure and sustainable future. But this does not require homogeneity in our lifestyles or our aspirations. It does require at the global level that we agree on those measures which are essential to avoiding major risks to the survival and well being of the human community and to ensure the broadest range of opportunities for individual self expression and fulfilment. It is instructive to remind ourselves that the most healthy and sustainable natural ecological systems are those which maintain the highest degree of diversity and variety. But to ensure their sustainability requires that they remain within certain basic boundary conditions on which the health and effective functioning of the system depends. The same, I would contend, is true of human systems. The essence of human freedom surely lies in the extent to which individuals have the largest range of choices as to how they want to live their lives.

There is a fundamental shift in North - South relations occurring that could have an even greater effect on the geo-political landscape and the prospects for international co-operation than the end of the Cold War. The line between the traditional have- and have-not nations is blurring as a result of the economic progress being made by some developing countries. There has also been a movement towards democratisation of the political process in some key countries of Latin America and Asia and the emergence of a multi-racial democracy in South Africa. The more rapidly developing countries of Asia and Latin America are leading the revitalisation of the global economy, challenging its domination by the traditional industrialised countries and re-shaping the geo-political landscape. The World Bank forecasts

First Pan-Commonwealth Forum on Open Learning (PCF1)

In partnership with the Brunei Darussalam Ministry of Education and Universiti Brunei Darussalam

Empowerment through Knowledge and Technology: A Celebration of Ten Years of the Commonwealth of Learning
1-5 March 1999

that by the year 2020 nine of the fifteen largest economies in the world will be developing countries. In terms of the aggregate size of their economies they will be displacing some of the more mature industrialised countries while still lagging well behind them in per capita terms. They will account for more than half of the world's GNP and of course, they already constitute a majority of the world's population - some 75% and still growing.

Although there is now evidence that population growth rates in many developing countries are beginning to decline, it is not likely that the world's population will stabilise much before the mid-point of the 21st Century on a level which is likely to be at least 50% higher than the current population. And most of it will be concentrated in the developing world where it will continue to intensify the pressures on scarce land and resources. In the past these pressures have been relieved by large scale migration. But today the borders of the world are closing and new barriers are being erected to the movement of people, particularly the poor and the dispossessed, at the same time as nations compete to provide incentives to attract the privileged minority with the capital skills that are in short supply.

The more mature industrialised countries are facing the prospect of ageing and declining populations. Thus a demographic dilemma of monumental proportions is in the making. As the pressure of growing populations and poverty with its attendant conflicts over land and resources escalate in developing countries, they will inevitably generate strong incentives for the people affected to seek every means, formal and informal, to migrate to the more industrialised countries. Indeed, in my view, it presents one of the most difficult challenges to governance in both industrialised and developing countries in the period ahead and to the prospects of co-operation amongst them. It is not too much to imagine that it will call in to question the basis on which the very sovereignty of nations over their territory and resources is recognised and respected by the international community, particularly when this accords to some nations a disproportionate share of the Earth's territory and resources. Thus the same forces which are driving the need for more co-operation between industrialised and developing countries also contain the seeds of deepening conflict and division which could threaten the prospects of co-operative governance.

As their development accelerates, developing countries are contributing more and more to the larger global risks such as those of climate change, ozone depletion, degradation of biological resources, and loss or deterioration of arable lands. China has already become the second largest source of CO² emissions and will almost certainly succeed the United States to the dubious honour of becoming number one. The prospect of a massive increase in Third World energy consumption over the next 30 years boldly underlines a point I have been making since before the Earth Summit: it is the industrialised world that must reduce its environmental impact in order to "leave space" for developing countries to meet their own needs and aspirations. There is now overwhelming evidence that the industrialised world cannot continue in its historical patterns of production and consumption.

The explosion of urban growth in developing countries is giving rise to more and more environmental degradation and the former antipathy of developing countries towards environmental issues has given way to mounting public awareness and political attention. Indeed some of the most polluted and unhealthy environments anywhere are in the mega-cities of the developing worlds - Cairo, Manila,

First Pan-Commonwealth Forum on Open Learning (PCF1)

In partnership with the Brunei Darussalam Ministry of Education and Universiti Brunei Darussalam

Empowerment through Knowledge and Technology: A Celebration of Ten Years of the Commonwealth of Learning
1-5 March 1999

Bangkok, Mexico City and Sao Paulo to name but a few. At the same time accelerating erosion of soils and the cutting down of forests is exacerbating the human and economic consequences of natural disasters as for example the floods of the Yangtse in China or the devastating destruction of Hurricane Mitch in Central America. The public opinion poll taken in Brazil recently produced the surprising result that people there gave higher priority to the environment than to employment. This new awareness does not come about because people in the developing countries have started to heed our admonitions that they should not repeat our mistakes, for they are far more influenced by our example than by our exhortations. Rather, it is due to the fact that they are now experiencing so many of the environmental problems that first gave rise to the environmental movement in industrialised countries.

Yet, developing countries cannot be denied the right to grow. Neither can they be expected to respond to exhortations to reduce their population growth and adopt stringent environmental controls from those whose patterns of production and consumption have largely given rise to global risks like climate change. This means recognising the special responsibilities of the traditional industrialised countries to ensure developing countries the access to the capital and technologies they require for their transition to sustainable development and to co-operate fully in measures to protect the planet's future.

At the Earth Summit in 1992, Agenda 21, a program of action to address the environmental and social externalities produced by our technological society, represented the most comprehensive plan of action ever adopted by the international community. Information communication technologies (ICTs) represent the most powerful tool that we have at our disposal in implementing Agenda 21. It's important to note that ICTs are universal instruments, tools that overlay all the different topical sectors of the Earth Summit and Agenda 21. Information, and the ability to access it, is seen as vitally important to all areas of Agenda 21, to ensure that decisions made by everyone from senior decision-makers at the national and international levels to grass-roots and individual levels are based on sound information. But the mere existence of ICTs does not ensure they will be used to implement Agenda 21.

But even in the seven years since the Earth Summit, the computing, information and networking world has changed dramatically. The World Wide Web, for example, was not even a feature of the ICT landscape at the time of the Earth Summit. Computing power and networking potential have increased far beyond our Earth Summit expectations while the costs of storing and transmitting digital information have dropped by similarly dramatic proportions.

While these spectacular changes challenge some of the assumptions and premises that were a part of Agenda 21s call to action, they dont alter the fundamental goals of providing the information disadvantaged with better and more equitable access to the data "pipelines" that carry many of the sustainable-development solutions that governments and local authorities urgently need. As a powerful and reusable resource for development, knowledge is an essential input, catalyst, and product of change. But despite this impressive potential, however, it has now become apparent that the globalisation of information presents both risks and opportunities for developing countries. There are many economic, technical and political constraints that prevent the knowledge revolution from realising its full potential in developing countries.

First Pan-Commonwealth Forum on Open Learning (PCF1)

In partnership with the Brunei Darussalam Ministry of Education and Universiti Brunei Darussalam

Empowerment through Knowledge and Technology: A Celebration of Ten Years of the Commonwealth of Learning
1-5 March 1999

There are some indicators that the traditional communication infrastructure gap between developed and developing countries - the one based on the absolute number of basic telephone lines - is in the verge of narrowing. In the Asia-Pacific region, for example, it is expected that the regional share of main telephone lines will progressively tilt in favour of low income countries particularly China and India. It is estimated that by the year 2000 developing countries in the Asia-Pacific will account for approximately 65 percent of the regions total number of lines. This trend is not unique to Asia; world wide developing countries are showing a rapid growth in the expansion of their telecommunications networks.

But while the traditional communication gap narrows, a new one is rapidly opening up. This new information gap is not in traditional basic communication facilities, but in more advanced computing infrastructure. By the mid-1990s, for example, the three most computerised countries in the world (USA, Australia, and Canada) had an average of 23 computers per 100 people, while three of the main developing countries (Brazil, China, and India) had an average of only 0.38 computers per 100 people. In 1995 more than 90 percent of all data networks, 95 percent of all Internet hosts, and 98 percent of all ISDN networks were in developed nations. In the same way, developed countries held 94.2 percent of all Internet hosts in the world in 1995.

This gap in the availability of information infrastructure and technology has its roots not in technological matters but in economic and social ones. Faced with considerable difficulties in achieving economic growth, governments in most developing countries still perceive telecommunications and related information services as either a luxury item catering to the high income strata of society, or as part of the state machinery that serves national defence and political control. However, this perception that informed public policy for decades is now being progressively replaced in most of the developing world by one in which information and communication infrastructure plays a crucial role in economic development.

While its fair to say that the developing world has made progress with respect to ICTs, its also fair to say that the gap between the information "haves" and "have-nots" has increased, especially in the case of the least developed countries. I am referring here to the growing drive to convert knowledge into proprietary intellectual property. If access to technology and information is restricted to those who have the means to purchase it, the knowledge revolution could exacerbate differences between North and South. The information gap between developed and developing countries could increase, exposing the vulnerability of the South and increasing their dependence on the North. The old maxim that "knowledge is power" is now being accompanied by the realisation that "knowledge is money" and therefore a primary economic resource. The trend to make knowledge proprietary could reduce the total stock of knowledge available and restrict access to the products of research and development for those who do not have the means to purchase it. This could especially disadvantage those, particularly in developing countries, whose needs are greatest. Yet it is in our common interest to ensure that developing countries have access to the best state-of-the-art technologies and techniques so that in the course of their own development they do not add unnecessarily to the pressures on the earths environment and resources.

First Pan-Commonwealth Forum on Open Learning (PCF1)

In partnership with the Brunei Darussalam Ministry of Education and Universiti Brunei Darussalam

Empowerment through Knowledge and Technology: A Celebration of Ten Years of the Commonwealth of Learning
1-5 March 1999

While longer-term issues of access to information technologies are of paramount importance, developing countries are also at risk from a much more immediate problem: the so-called Y2K or "millennium" bug. A world bank survey of 139 developing countries found that only 35% have a national plan to make their systems Y2K compliant, capable of handling the shift from 1999 to 2000. But having a national plan is only the first step in getting systems ready for 2000. Implementing such plans is costly, both in funds and deployment of highly skilled technicians.

The World Bank, the OECD, and a handful of donor countries such as Britain, the United States, Canada and Italy, together with other multilateral development banks and international private-sector organizations have undertaken an effort to raise awareness of Y2K, and to mobilise technical assistance and funds to help developing countries address it. These efforts are extremely modest, given the enormity of the task and the global impact of failure to act.

Another more insidious risk from the globalisation of ICTs stems from the issues of language and culture. Global communications systems spread mass popular culture in ways that can dominate cultures, languages and values. English has evolved into a kind of digital "lingua franca" for Internet and Web communications but that doesn't help the millions of people and local authorities throughout the world who communicate in thousands of languages other than English. Some languages have fared better than others as one certainly can find information in French, Spanish, German, Japanese and Arabic on the Internet, but the availability of information to indigenous peoples in remote locations is extremely limited, if not non-existent.

But the problem is not only one of dissemination. It is also one of appropriation. To assume that developing countries are only passive recipients of information for development is a paternalistic and even crude attitude. As many of you already know, the current trend in international development aid is to enable South-South, and South-North exchanges in addition to traditional North-to-South flows of information. ICTs need to be adapted and made culturally and cross-culturally appropriate so that in the encounter of western knowledge with indigenous knowledge, knowledge is not expropriated and turned into partial truths. We have to ensure that non-western concepts, when taken out of their indigenous context, that something crucial is not lost in the translation; indeed, we must ensure that non-western knowledge remains just that - that indigenous cultures are not stripped, or dispossessed of their knowledge.

Language is only one aspect of the cultural impact of ICTs. These encroaching communication mediums with their waves of popular culture, are producing a new and universalising culture symbolised by CNN, brand name consumer products like Coca-Cola, McDonalds and Levis, pop music, shopping malls, international airports, hotel chains and conferences. To the privileged minority who participate fully in this culture it provides an exciting and expanding range of new opportunities and experiences. But for the majority, particularly in the non-western world who live on its margins and feed on its crumbs, it is often seen as alien and intimidating. Caught up in the dynamics of modernisation of which they are more victims than beneficiaries, it is no wonder that many react with anxiety and rejection, seeking refuge and identity in their own traditional values and cultures. This clash between modernism and fundamentalism

First Pan-Commonwealth Forum on Open Learning (PCF1)

In partnership with the Brunei Darussalam Ministry of Education and Universiti Brunei Darussalam

Empowerment through Knowledge and Technology: A Celebration of Ten Years of the Commonwealth of Learning
1-5 March 1999

has deeply rooted secular as well as religious dimensions and is producing a new generation of conflict and turbulence that ultimately have a negative impact on the acceptance and use of global information systems.

Developing countries must be proactive participants in the global information exchange. They must not remain passive consumers of imported information and Web content; instead becoming active contributors to the global resources and thus strive to garner a larger share in content production and creation.

Therefore, we need to determine how information technologies can be best applied in developing countries to take advantage of the new forms of social organization and economic activity, thereby contributing positively to sustainable development. This, of course, includes development of two types of applications: those aimed at sustainable development itself, e.g., environmental monitoring, and those applications that can have a major impact on sustainable development, e.g., distance learning, teleconferencing, etc. This includes the innovative use of ICTs to enable populations previously excluded from economic development to access learning and employment opportunities as well as to offer substitutes for the energy-intensive travel and transport of goods, reducing the environmental impact of industrial and commercial activities and thus make a considerable contribution to sustainable development.

Indeed, the ability of communications networks to overcome the barrier of distance may well increase the ability of people to live in comfort and safety in remote locations. Proximity to good schools, hospitals, libraries and shops may not be as important in the future as they are today. While this may reduce pressure on urban environments, it may create new pressures on virgin territory that is currently not settled because it is far from the conveniences of urban centres. The movement to the suburbs that we have witnessed since the end of World War II may be replaced by a movement to more remote locales, including aesthetically pleasing, yet environmentally sensitive ecosystems. The social and environmental impacts of this possibility needs to be better understood.

Likewise, the creation of a world-wide "network of networks" could create a global information marketplace which could encourage broad-based social discourse within and among countries. This access to information and the equality it implies could open the way to real world-wide democracy. By increasing opportunities for citizens of all countries to make informed political choices, and by giving them the power to express their views, ICTs could allow wider and greater citizen participation in decision-making. Through ICTs, the worlds citizens could have the opportunity to share information and cultural values, fostering a greater sense of global community. By encouraging exchanges of ideas, goods, and services among all countries, ICTs could contribute to a framework for lasting peace.

While the technological pundits speak of the benefits of an interconnected global village in which the weakening of ties based on geographical proximity spells the end of geopolitics, there is a new generation of doomsayers who predict a process of global "re-enclosure" in which rivalries and traditional sources of

First Pan-Commonwealth Forum on Open Learning (PCF1)

In partnership with the Brunei Darussalam Ministry of Education and Universiti Brunei Darussalam

Empowerment through Knowledge and Technology: A Celebration of Ten Years of the Commonwealth of Learning
1-5 March 1999

conflict between nations are exacerbated, not overcome, by ICTs. My previous points on language and cultural illustrate this.

In addition, a country-man of mine, Professor Thomas Homer-Dixon, cites the growing potential for eco-conflicts as a result of competition for land and other resources that become locally scarce and competition for shared resources like river systems and common areas like the oceans. Certainly, the alienation that could result from cultural and linguistic domination through ICTs would only exacerbate these eco-conflicts. Dealing with the potential for both environmental and cultural conflict is one of the key challenges that we will face early in the next millennium.

As you all know, governments respond cautiously and slowly to change, and for long periods can remain totally inert. When this is considered in conjunction with the speed at which technological advancements are occurring, it seriously calls into question the ability of governments to provide appropriate regulatory regimes and structures - both nationally and internationally - which provide fair and equal access to ICTs. However, since the Earth Summit in 1992, the most exciting and promising post-Rio developments are occurring outside of governments, through civil-society organizations. Just as the real leadership at Rio came from people, from non-governmental organizations and citizen groups, it is these people today who are taking the lead in the follow-up of Rio. The social philosopher Leslie Salmon has compared the surging importance of the non-governmental sector in the later part of this century with the emergence of strong nation-states in the 19th century.

One of my disappointments in the results of the Earth Summit was our inability to obtain an agreement on an Earth Charter to define a set of moral and ethical principles for the conduct of people and nations toward each other and the earth as the basis for achieving a sustainable way of life on our planet. Governments were simply not ready for it. But now the Earth Council has joined with many other organizations to undertake this piece of unfinished business from Rio through a global campaign designed to stimulate dialogue and enlist the contributions of people everywhere to formulation of a Peoples Earth Charter. The Earth Charter, on the subject of ICTs, emphasises the human right of free access to information. Indeed, eliminating the distinction between information rich and information poor countries is critical to eliminating economic and other inequalities between North and South, and to improving the quality of life of all humanity.

Non-governmental organizations offer the greatest potential to act as both facilitator and watchdog of the international information highway, acting as intermediaries between local communities, global corporations, and governments. There are several examples I know of in which NGOs are taking a leading role:

- The International Development Research Centres *Acacia Initiative*: aims to empower sub-Saharan African communities with the ability to apply information and communication technologies to their own social and economic development, with a particular focus on women and rural groups. What makes Acacia different from similar initiatives is its intention to tackle these issues with a community focus and to do so within an integrated framework that builds into the program a

First Pan-Commonwealth Forum on Open Learning (PCF1)

In partnership with the Brunei Darussalam Ministry of Education and Universiti Brunei Darussalam

Empowerment through Knowledge and Technology: A Celebration of Ten Years of the Commonwealth of Learning
1-5 March 1999

strong element of continuous learning. The involvement of community groups in defining Acacias activities will ensure an appropriate emphasis on developing locally defined applications, services and networks, promoting innovative technical solutions to development challenges; investing in technologies related to telecommunication and ICT infrastructure and supporting the development of an appropriate policy environment.

- The International Institute for Sustainable Developments *Spinning the Web* Project: The Spinning the Web Network seeks to foster the creation of a highly sophisticated, yet extremely accessible and understandable distributed Internet system able to draw a broader range of people into the web of information required for sustainable development action. It focuses on balancing the available knowledge base about sustainable development by incorporating input from regions throughout the world. Due to the low quality of Internet access currently available in many parts of the world, the Network strives to build capacity within member organizations to act as knowledge brokers, providing a seamless link between the Internet and traditional communications channels. Currently, eight (8) organisations are participating in the network and integrating their information through the SD Gateway: Development Alternatives in India, IISD in Canada, the Earth Council in Costa Rica, Environmental Development Action in the Third World (ENDA) in Senegal, Fundaci?n Ambiente y Recursos Naturales (FARN) (The Environment and Natural Resources Foundation) in Argentina, the International Development Research Centre (IDRC) in Canada, the Regional Environmental Center for Central and Eastern Europe (REC) in Hungary, and the Stockholm Environment Institute (SEI) in Sweden.
- Bellanet is an international initiative of several donor agencies with a mission to increase the impact of development programming. It fosters inter-agency collaboration through more effective use of information and communication technologies. The Bellanet Approach is based on two basic assumptions: that more effective collaboration among development agencies will increase the impact of their programs; and that the use of information and communications technologies (ICTs) can create an enabling environment for such collaboration.
- The Earth Councils *Earth Centre* initiative: the Earth Council has developed the concept of Earth Centres as key sustainable development information nodes on the international information superhighway. Originally envisioned for Costa Rica, the locations of other Earth Centres would be chosen against criteria including social and economic relevance, cultural distinctiveness, and media potential. These centres would serve as points of dissemination and collation of culturally-relevant information on sustainable development. Interest in the concept has already been expressed by Brazil, Korea, Singapore, and Germany.

The realisation of the opportunities presented by ICTs for developing countries will be dependent on the emergence of a strong international community. The UN and its agencies need to make new links with the private sector to fight for equity in the electronic commons, and to help global corporations realise the advantages of providing wider access and co-operate with developing countries to develop infrastructure for an effective and inclusive global network.

Unfortunately, the multilateral organizations, which provide the basic international framework for development co-operation, are clearly not yet sufficiently prepared for the new generation of tasks that

First Pan-Commonwealth Forum on Open Learning (PCF1)

In partnership with the Brunei Darussalam Ministry of Education and Universiti Brunei Darussalam

Empowerment through Knowledge and Technology: A Celebration of Ten Years of the Commonwealth of Learning
1-5 March 1999

will be required of them. Collectively, these institutions represent an immense reservoir of experience and expertise, which is an invaluable and irreplaceable asset to the world community, Yet paradoxically, although the need for effective multilateral institutions has never been greater, support for them, both political and financial, is less that it has been in any time since their creation. Individually many of these organizations are weak and in need of reform. They need a fundamental re-structuring of their mandates and relationships with each other so that they can operate as a system in carrying out the particular functions allocated to them. And new arrangements must be put in place to provide for the effective participation of the private sector and civil society which are becoming more and more important actors in respect of such issues.

Likewise, the profound shift in the geopolitical landscape that we are experiencing is not yet reflected in the multi-lateral organizations. Developing countries already have a clear majority in the U.N. General Assembly and other U.N. fora. But only one "southern" country, China, is included in the five permanent members of the Security Council - the most powerful and influential organ of the U.N. Efforts to bring about changes in this increasingly anachronistic situation have thus far failed, but if it is not reformed to reflect more fully current geopolitical realities, it will risk erosion of its influence and effectiveness. Similarly, changes will need to be made in the weighted voting structures of the World Bank and IMF.

Many developing countries also need to update their thinking on ICTs. Instead of wondering how ICTs can support their existing development policies, developing countries should decide to treat ICTs, or rather, information and communications, as the starting point to development. This novel approach could open the floodgates to a whole new set of policies. It will also enable the developing countries to talk on equal terms with OECD countries.

Having established that ICTs can make a positive contribution to sustainable development in an inclusive and supportive international community, we also need to take steps to ensure that developing countries have access to these technologies. But our responsibility goes beyond traditional official development assistance. We have to develop new and innovative financial mechanisms that will place value on resources and services provided by developing countries which have always been taken for granted and treated as free goods. I am referring here to the vast preserves of biodiversity and greenhouse-gas absorbing forests found in developing countries in the southern hemisphere. We must now begin to place economic value on them if we are to expect developing countries to maintain them largely for the benefit of the rest of the world. Doing so would not only ensure the conservation of these precious resources, but provide an additional source of revenue flow to these countries, allowing them to make the necessary investments in information technologies.

Economic instruments can make an important contribution to effecting transfers of new resources to developing countries to enable them to maintain and develop on a sustainable basis the resources and ecosystems which are of value to the world community as a whole. Climate change provides us with a good example of how developing countries can benefit financially by preservation of their natural resources. The cost of reducing carbon dioxide emissions, or of offsetting them through absorption in forested areas, will often be much less in developing countries than in the more developed countries. By

First Pan-Commonwealth Forum on Open Learning (PCF1)

In partnership with the Brunei Darussalam Ministry of Education and Universiti Brunei Darussalam

Empowerment through Knowledge and Technology: A Celebration of Ten Years of the Commonwealth of Learning
1-5 March 1999

funding the preservation of forests in developing countries, the developed country can meet its obligations for reducing carbon dioxide emissions while the developing country benefits financially. While such instruments must be used with care to avoid abuse and inequities, they offer one of the most promising prospects for channelling new funds to development countries.

Funding both in and to developing countries could also be diverted from the huge amounts of money governments spend in subsidising activities which are at the same time economically and environmentally damaging. For example, in the report "Subsidising Unsustainable Development", the Earth Council estimated that at least \$700 billion is being spent by governments each year to subsidise practices which undermine sustainability in four sectors - water, energy, agriculture, and transport. It is estimated that developing countries alone subsidise their energy sector by an amount approximately double the total foreign aid they receive. This is not to say that all subsidies should be removed, but rather that they need to be reviewed and reoriented so as to provide positive incentives for sustainable behaviour by corporations and people.

With the continuing trend of reductions in Official Development Assistance we must be much more innovative in motivating private capital - now the principal source of financial flows to developing countries - to contribute more to sustainable development. The benefits of the knowledge revolution to sustainable development are almost limitless - depending mostly on creativity and an entrepreneurial spirit. Indeed, the private sector, especially in some of its transnational forms, is an essential component to the development of a global information and communications infrastructure.

But the role of the private sector must be facilitated by supportive policies on the part of governments. Potentially, severe limitations of the benefits are possible if there are economic distortions due to an inappropriate regulatory environment, and perhaps if there is a lack of government incentives to catalyse investments by the private sector especially in areas where market forces alone may not lead to investments required to meet certain societal needs.

As the principal source of expertise and capital, the private sector should, in response to marketplace demands, determine what technologies to pursue, set the pace of development, establish the appropriate standards, and develop new services and applications. For their part, governments can facilitate these activities by creating a legal and regulatory environment that supports efficient investment and innovation, and promotes full and fair competition. Governments can also provide leadership by supporting testbeds for new technologies, fostering the transfer of resulting technologies to the private sector, promoting the assimilation and use of applications and technology through government procurement, and developing applications that support government operations and dissemination of government information.

While the primary responsibility for the future of developing countries, after all, rests with them, these countries deserve and require an international system that is supportive of their efforts to develop along sustainable paths. Given the degree of interdependence that exists between nations today, and the major shift in economic resources and population towards the southern hemisphere, it is clearly within the best

First Pan-Commonwealth Forum on Open Learning (PCF1)

In partnership with the Brunei Darussalam Ministry of Education and Universiti Brunei Darussalam

Empowerment through Knowledge and Technology: A Celebration of Ten Years of the Commonwealth of Learning
1-5 March 1999

interests of developed countries to ensure that developing countries have access to the best state-of-the-art technologies and information so that in the course of their own development they do not add unnecessarily to the pressures on the earth's environment and resources.

Recent experience in which the collapse of some of the most dynamic economies of Asia rapidly developed into a crisis threatening the entire global economy, dramatically brought home to us that the benefits of globalisation are accompanied by a new generation of perils. It is made clear that no individual nation, however powerful, can manage this system alone; nor can any of the main issues that affect the quality of life and sustainability of the human community, access to food and water, managing the pressures for migration, protecting the environment, meeting social needs, ensuring employment and livelihoods, and of course, maintaining peace and security - be managed in isolation. I am convinced that many of the ingredients for a world system capable of managing a highly interconnected global network are already in place, but the process of transforming them into a viable world system will be a difficult - some may say impossible - one to achieve given the current state of political will. But history reminds us that what is not feasible today becomes inevitable tomorrow. Necessity drives change, and change is imperative if our civilisation is to be sustainable in the new millennium.

The real problem at the end of the millennium is the invention of new social and governance structures that take maximum advantage of the opportunities presented by ICTs. This question is not really new as humanity has always grappled with it when confronted by scientific progress. Even so, the question is not any less complex today. This Forum will, I am confident, make an important and timely contribution to illuminating these crises and providing both a clear sense of direction and new impetus to addressing them.

The Honourable Maurice Strong
Special Adviser to the UN Secretary-General
Chairman, Earth Council

BRUNEI, 2 March 1999

Biography

The Honourable Maurice Strong has had a distinguished international career that has embraced the private, governmental and non-governmental realms. He is currently Chairman of both the Earth Council and the World Resources Institute and is a director of several energy and technology-related companies. He has played a key role in shaping international policy and action in matters relating to the environment and development, notably as Executive Director of the United Nations Environment Programme and as Secretary-General of the 1992 UN Conference on Environment and Development (The Earth Summit). He was also the first President of the Canadian International Development Agency (CIDA). Mr. Strong has also played a significant role in involving non-governmental organisations (NGOs) in international development and co-operation.
