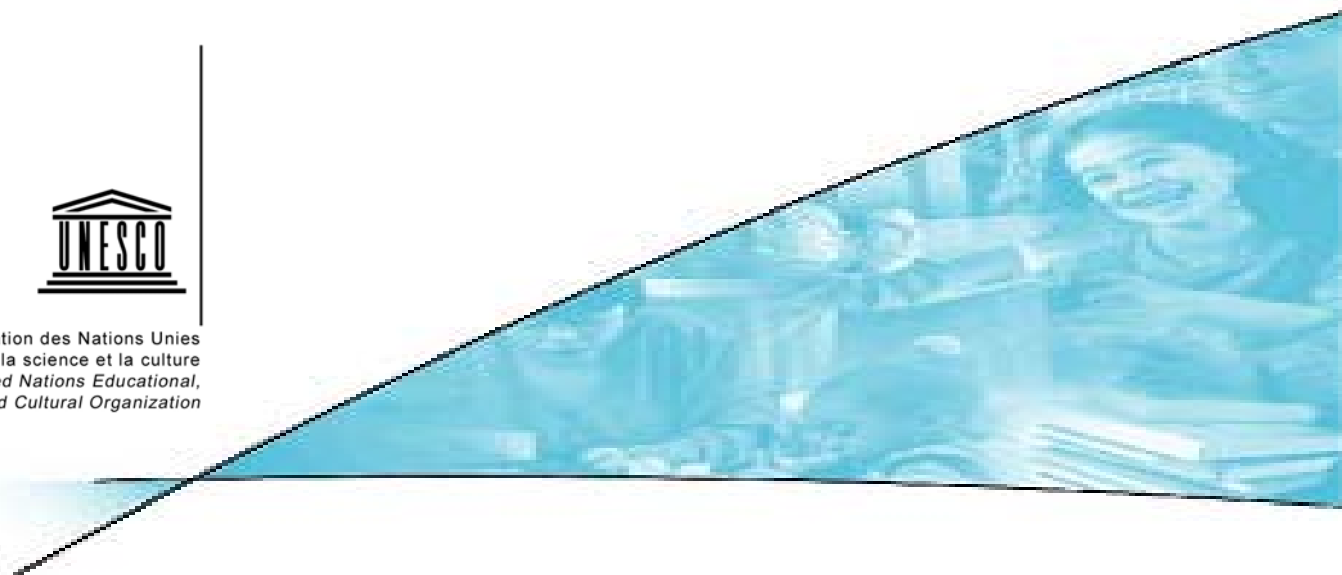




Organisation des Nations Unies
pour l'éducation, la science et la culture
*United Nations Educational,
Scientific and Cultural Organization*



Education for Sustainability

From Rio to Johannesburg: Lessons learnt from a decade of commitment

A report on the lessons learnt about the contribution of education to sustainable development over the decade between the United Nations Conference on Environment and Development in 1992 and the World Summit on Sustainable Development (WSSD).

The report has been prepared by UNESCO in its role as Task Manager for Chapter 36 of Agenda 21 and the International Work Programme on Education, Public Awareness and Sustainability of the United Nations Commission on Sustainable Development (CSD).

**World Summit on Sustainable Development
Johannesburg, 26 August – 4 September 2002**



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A report on the lessons learnt about the contribution of education to sustainable development over the past decade, since the United Nations Conference on Environment and Development (the 'Earth Summit') held in Rio de Janeiro in 1992. The report has been prepared by UNESCO in its role as Task Manager for Chapter 36 of Agenda 21 and the International Work Programme on Education, Public Awareness and Sustainability of the Commission on Sustainable Development (CSD).

UNESCO, Paris, 2002

INTRODUCTION

Most people in the world today have an immediate and intuitive sense of the urgent need to build a sustainable future. They may not be able to provide a precise definition of 'sustainable development' or 'sustainability' - indeed, even experts debate that issue - but they clearly sense the danger and the need for informed action.

They smell the problem in the air; they taste it in their water; they see it in more congested living spaces and blemished landscapes; they read about it in the newspapers and hear about it on radio and television.¹

For thousands of years human societies have proved that living sustainably — as healthy and happy individuals, within caring and stable families and communities, and in harmony with the natural world — is possible. The long-term sustainability of indigenous economic and cultural systems is the result of indigenous systems of education which established a human and natural ecology totally at one with each other. The Earth Summit in Rio de Janeiro in 1992 helped educators around the world realise that education must be reoriented to once again reflect such a vision of sustainability, one that links economic well-being with cultural traditions and respect for Earth and its resources.

Almost universally value, indigenous peoples respect and love the land as a mother, treating it as sacred, believing that people, plants, animals, water, the land and the sky are all part of the same on-going cycles of life. These beliefs and the knowledge that flows from them has been passed down through the generations through a wide range of cultural practices, including direct instruction, stories, dances, ceremonies and art as well as networks of sacred places. All are part of indigenous approaches to education that link people to the land through culture — and through culture to the land. Unfortunately, indigenous knowledge and wisdom have been undermined by the experience of colonisation, industrialisation and globalisation. By and large, indigenous priorities and systems of education have been supplanted by the somewhat narrow view that the environment and culture are valuable only in so far as they are economically productive. The consequent disregard for the land and culture has meant that knowledge, values and skills for living sustainability have been underplayed in contemporary education.

Certainly, knowledge about the Earth, its plants and animals, the functioning of ecosystems and the ways people use resources, is taught in schools and colleges in science, geography and social studies. Nature documentaries are among the more popular programmes on television while visits to museums, science centres, environmental reserves and other sites of non-formal education are expanding.

However, there is a widespread problem with the way that the environment and sustainable development are presented in such formal and non-formal programmes. Few attempts are made to link the health of people to the health and sustainability of ecosystems; and students and community members are rarely asked to reflect upon the impacts of their activities and those of their families and wider society on the functioning of ecosystems. In formal education, studies of society, the economy and the environment are usually within separate disciplines with little regard for developing practical skills for practising sustainability. For this reason, Agenda 21 called for a reorientation of education.

Agenda 21 – A Manifesto for Education

Reorienting education towards sustainable development requires a new vision for education. Chapter 36 of Agenda 21, on Education, Awareness and Training states:

36.3. Education, including formal education, public awareness and training should be recognized as a process by which human beings and societies can reach their fullest potential. Education is critical for achieving environmental and ethical awareness, values and attitudes, skills and behaviour consistent with sustainable development and for effective public participation in decision-making. Both formal and non-formal education are indispensable to changing people's attitudes so that they have the capacity to assess and address their sustainable development concerns.

To achieve this vision, Chapter 36 called on governments, international agencies, businesses and civil society groups to:

- ensure that basic education and functional literacy for all is achieved
- make environmental and development education available to people of all ages
- integrate environmental and development concepts, including those of population, into all educational programmes, with analyses of the causes of the major problems
- involve schoolchildren in local and regional studies on environmental health, including safe drinking water, sanitation, food and the environmental and economic impacts of resource use.

Following the Earth Summit, the Commission on Sustainable Development appointed UNESCO to be its Task Manager for Chapter 36. UNESCO was to accelerate reforms of education and coordinate the activities of all stakeholders in education through a wide-ranging Work Programme. The seven objectives of the Work Programme were to:

- clarify and communicate the concept and key messages of education for sustainable development
- review national education policies and reorient formal educational systems
- incorporate education into national strategic and action plans for sustainable development
- educate to promote sustainable consumption and production patterns in all countries
- promote investments in education
- identify and share innovative practices
- raise public awareness.

Several activities were listed for each objective and those who might be responsible for each, e.g. governments, relevant United Nations bodies and/or NGOs, nominated. UNESCO's role has been to provide professional and technical support for governments of member states and to help disseminate the innovative policies, programmes and practices of education for sustainable development that were being developed by all stakeholders. UNESCO has had both internal and external roles to play in its responsibility as 'task manager'.

The organization as a whole has been mobilized to address education from the perspective of sustainability and, with the endorsement of the UNESCO's General Conference, has aligned its work according to the priorities laid down in the CSD work programme. Indeed, along with poverty eradication and the promotion and fair use of Information and Communication Technologies (ICTs), sustainable development is now seen a key theme across all UNESCO activities. UNESCO has also been a catalyst for clarifying key ideas, disseminating guiding principles, and sharing experiences across countries by convening international conferences and regional workshops, in developing

demonstration projects and sample curriculum and training materials, and in creating an international network of schools² committed to the principles of peace, human rights, equity and conservation.

UNESCO is also facilitating the international Education for All (EFA) programme that aims to develop and implement national education action plans, enable capacity development in early-childhood, primary and science education, and catalyse new approaches to family education as well as citizenship, peace, multicultural and environmental education. UNESCO has also developed partnerships with many UN agencies, including UNFPA, WHO and ILO to promote population education, WHO to develop new approaches to health education, FAO to advance education in rural areas and promote food security, WHO and UNAIDS to combat the pandemic, UNICEF, UNHCR and major NGOs to assist in the reconstruction of education in crisis and post-conflict situations, and many more.

The challenge of sustainable development is a difficult and complex one, requiring new partnerships — among governments, academic and scientific communities, teachers, non-governmental organizations (NGOs), local communities and the media. All are essential to the birth of a culture of sustainability. Within governments, for example, education for sustainability is of direct concern not only to ministries of education, but also to ministries of health, environment, natural resources, planning, agriculture, commerce and others. New policies, programmes, resources and activities can be reported from almost every country, a sure and encouraging sign that education is beginning to be seen as a significant aspect of national sustainable development policies.

The role and importance of major groups in implementing Chapter 36 have also increased significantly since Rio. The UNESCO NGO Liaison Committee, representing about 350 professional NGOs in the field of education, has set up a special commission to mobilize its members in support of the World Summit on Sustainable Development in 2002. So too have major regional and international associations of higher education, including the International Association of Universities, which have joined with UNESCO to form a Global Higher Education for Sustainability Partnership. The Education and Youth Caucuses of the UN Commission on Sustainable Development (CSD) have sought to work with other CSD caucuses to build support for education for sustainable development. The contributions of all these major groups have done much to help clarify key lessons about the contribution of education to sustainable development over the decade since the Earth Summit.

UNESCO has prepared this report on these key lessons in its role as ‘task manager’ for Chapter 36 of Agenda 21, the action plan agreed to by all governments at the Earth Summit, and the International Work Programme on Education, Public Awareness and Sustainability of the intergovernmental Commission for Sustainable Development (CSD).

Key Lessons

An exhaustive coverage of all the educational initiatives that have blossomed in the decade since the Earth Summit is not possible in a report of this size. However, brief cases of innovative programmes and successful outcomes are included in the boxes throughout this report. These are used to illustrate some of the key lessons that have been learnt about education for sustainable development over this decade. The key lessons explored in the following chapters are:

- Education for sustainable development is an emerging but dynamic concept that encompasses a new vision of education that seeks to empower people of all ages to assume responsibility for creating a sustainable future
- Basic education provides the foundation for all future education and is a contribution to sustainable development in its own right.

- There is a need to refocus many existing education policies, programmes and practices so that they build the concepts, skills, motivation and commitment needed for sustainable development.
- Education is the key to rural transformation and is essential to ensuring the economic, cultural and ecological vitality of rural areas and communities.
- Lifelong learning, including adult and community education, appropriate technical and vocational education, higher education and teacher education are all vital ingredients of capacity building for a sustainable future.

LESSON 1

A new vision of education

Education for sustainable development is an emerging but dynamic concept that encompasses a new vision of education that seeks to empower people of all ages to assume responsibility for creating a sustainable future.

Education will shape the world of tomorrow — it is the most effective means that society possesses for confronting the challenges of the future. Progress increasingly depends upon educated minds: upon research, invention, innovation and adaptation. Educated minds and instincts are needed not only in laboratories and research institutes, but also in every walk of life. While education is not the whole answer to every problem, in its broadest sense, education must be a vital part of all efforts to imagine and create new relations among people and to foster greater respect for the needs of the environment.³

Social Learning for Sustainable Development

This lesson has been identified from the work of UNESCO, other international agencies, governments, education systems and many other organizations and actors in seeking to clarify and communicate the concept and key messages of education for sustainable development, one of the key objectives in the CSD's International Work Programme on Education, Public Awareness and Sustainability.

Since 1992, an international consensus has emerged that achieving sustainable development is essentially a process of learning. At major UN conferences of the 1990s, including those on human rights in Vienna (1993), population and development in Cairo (1994), small island developing states in Barbados (1994), social development in Copenhagen (1995), women in Beijing (1995), food security in Rome (1996), and human settlements in Istanbul (1996), the critical role of education was stressed. Just as we learnt to live unsustainably, we now need to learn our way out — to learn how to live sustainably.

Sustainable development requires active and knowledgeable citizens and caring and informed decision makers capable of making the right choices about the complex and interrelated economic, social and environmental issues human society is facing. To achieve this requires the broader process of social change known as *social learning*, or what the OECD calls 'enhancing societal capacity for the environment'. This involves not only specific education and training programmes but also the use of policy and legislation as opportunities for teaching and encouraging new forms of personal, community and corporate behaviour. Social learning also involves reflection – often stimulated by religious leaders and the media - on the appropriateness of the mental models and assumptions that have traditionally guided thinking and behaviour.

From such processes of social learning we have come to realise that sustainable development is a catalytic vision rather than a neatly defined, technical concept. Indeed, we have learnt that:

- Sustainable development is perhaps more a *moral precept* than a *scientific concept*, linked as much with notions of peace, human rights and fairness as with theories of ecology or global warning.
- While sustainable development involves the natural sciences, policy and economics, it is primarily a matter of culture: it is concerned with the values people cherish and with the ways in which we perceive our relationship with others and with the natural world.

- Sustainable development requires us to acknowledge the interdependent relationship between people and the natural environment. This interdependence means that no single social, economic, political or environmental objective be pursued to the detriment of others. The environment cannot be protected in a way that leaves half of humanity in poverty. Likewise there can be no long-term development on a depleted planet.

These principles remind us that sustainable development is grounded in four interdependent systems:

- Biophysical systems which provide the life support systems for all life, human and non-human;
- Economic systems which provide a continuing means of livelihood (jobs and money) for people;
- Social systems which provide ways for people to live together peacefully, equitably and with respect for human rights and dignity; and
- Political systems through which power is exercised fairly and democratically to make decisions about the way social and economic systems use the biophysical environment.

This holistic view supports four inter-related principles for sustainable living:

- *Conservation* to ensure that natural systems can continue to provide life support systems for all living things, including the resources that sustain the economic system.
- *Peace and Equity* to encourage people to live cooperatively and in harmony with each other and have their basic needs satisfied in a fair and equitable way.
- *Appropriate Development* to ensure that people can support themselves in a long-term way. Inappropriate development ignores the links between the economy and the other systems in the environment.
- *Democracy* to ensure that people have a fair and equal say over how natural, social and economic systems should be managed.⁴

Linking social, economic, political and environmental concerns is a crucial aspect of sustainable development. Creating such links demands a deeper, more ambitious way of thinking about education, one that retains a commitment to critical analysis while fostering creativity and innovation. In short, it demands that education promotes a system of ethics and values that is sensitive to cultural identity, multicultural dialogue, democratic decision-making and the appropriate use and management of natural resources.

All countries have sought to respond to the challenge of social learning, within the limits of their resources. Increased scientific understanding of the scale, severity and interlocking nature of sustainable development issues over the last two decades has led to heightened levels of environmental and social reporting in the mass media, public awareness of issues, and public support for environmental campaigns. Governments and their citizens now expect that schools and other institutions of social learning will help prepare young people to respond positively to the opportunities offered by wide public understanding of, and support, for sustainable development.

The potential of education is enormous. Seen as social learning for sustainability, education can increase concern over unsustainable practices and increase our capacity to confront and master change. Education not only informs people, it can change them. As a means for personal enlightenment and for cultural renewal, education is not only central to sustainable development, it is humanity's best hope and most effective means in the quest to achieve sustainable development.

Educating for a Sustainable Future: Clarifying the Concept

Education is the primary agent of transformation towards sustainable development, increasing people's capacities to transform their visions for society into reality. Education not only provides scientific and

technical skills, it also provides the motivation, justification, and social support for pursuing and applying them. For this reason, society must be deeply concerned that much of current education falls far short of what is required. Improving the quality and coverage of education and reorienting its goals to recognize the importance of sustainable development must be among society's highest priorities.

Clarifying the concept of education for sustainable development was a major challenge for educators during the last decade. The broad scope of Chapter 36 generated extensive debate over such issues as: the meanings of sustainable development in *educational* settings, the appropriate balance of peace, human rights, citizenship, social equity, ecological and development themes in already overcrowded curricula, and ways of integrating the humanities, the social sciences and the arts into what had up-to-now been seen and practised as a branch of science education. Some argued that educating for sustainable development ran the risk of indoctrination while others wondered whether asking schools to take a lead in the transition to sustainable development was asking too much of teachers.

These debates were compounded by the desire of many, predominantly environmental, NGOs to contribute to educational planning without the requisite understanding of how education systems work, how educational change and innovation takes place, and of relevant curriculum development, professional development and pedagogical principles. Not realising that effective educational change takes time, others were critical of governments for not acting more quickly. The Commission on Sustainable Development assisted in overcoming the inertia of these debates by establishing priorities through a special Work Programme on education in 1996 and which was revised in 1998.

Consequently, many international, regional and national initiatives have contributed to an expanded and refined understanding of the meaning of education for sustainable development. For example, Education International, the major umbrella group of teachers' unions and associations in the world, has issued a declaration and action plan to promote sustainable development through education.⁵ Similarly, statements and guidelines in support of reorienting education towards sustainable development have been issued by regional councils of Ministers of Education and/or Environment in the European Union, APEC, OAS, SADC, and the South Pacific. Many regional strategic or action plans have been developed. A common call in all of these is the need for an integrated approach through which all government ministries (eg education, health, environment, finance, agriculture, industry and consumer affairs, etc.) collaborate in developing a shared understanding of and commitment to policies, strategies and programmes of education for sustainable development.

International conservation organisations such as WWF and IUCN are also actively promoting the integration of education into sustainable development at local community, national and eco-regional scales. In addition, many individual governments have established committees, panels, advisory councils and curriculum development projects to discuss education for sustainable development, develop policy and appropriate support structures, programmes and resources, and fund local initiatives.

Indeed, the roots of education for sustainable development are firmly planted in the environmental education efforts of such groups. Along with global education, development education, peace education, citizenship education, human rights education, and multicultural and anti-racist education that have all been significant, environmental education has been particularly significant. In its brief thirty-year history, contemporary environmental education has steadily striven towards goals and outcomes similar and comparable to those inherent in the concept of sustainability.

In the early 1970s, the emerging environmental education movement was given a powerful boost by the United Nations Conference on the Human Environment held in Stockholm in 1972, which recommended that environmental education be recognized and promoted in all countries. This recommendation led to

the launching in 1975 by UNESCO and the UN Environment Programme (UNEP) of the International Environmental Education Programme (IEEP), which continued until 1995. The influence of the IEEP — and the national and international activities that it inspired — have been widely felt and is reflected in many of the educational innovations carried out in the last two decades. That work was inspired largely by the guiding principles of environmental education laid down by the Intergovernmental Conference on Environmental Education held in Tbilisi in 1977. The vision and objectives in the Tbilisi Declaration integrated a broad spectrum of environmental, social, ethical, economic and cultural outcomes of education — all of which are central to education for sustainable development. Its basic principles were successfully translated into educational policies around the world and, with greater difficulty, into schoolroom practice in many countries.

A New Vision for Education

These many initiatives illustrate that the international community now strongly believes that we need to foster — through education — the values, behaviour and lifestyles required for a sustainable future. Education for sustainable development has come to be seen as a process of learning how to make decisions that consider the long-term future of the economy, ecology and social well-being of all communities. Building the capacity for such futures-oriented thinking is a key task of education.

This represents a new vision of education, a vision that helps students better understand the world in which they live, addressing the complexity and interconnectedness of problems such as poverty, wasteful consumption, environmental degradation, urban decay, population growth, gender inequality, health, conflict and the violation of human rights that threaten our future. This vision of education emphasises a holistic, interdisciplinary approach to developing the knowledge and skills needed for a sustainable future as well as changes in values, behaviour, and lifestyles. This requires us to reorient education systems, policies and practices in order to empower everyone, young and old, to make decisions and act in culturally appropriate and locally relevant ways to redress the problems that threaten our common future. In this way, people of all ages can become empowered to develop and evaluate alternative visions of a sustainable future and to fulfil these visions through working creatively with others.

Seeking sustainable development through education requires educators to:

- place an ethic for living sustainably, based upon principles of social justice, democracy, peace and ecological integrity, at the centre of society's concerns
- encourage a meeting of disciplines, a linking of knowledge and of expertise, to create understandings that are more integrated and contextualized
- encourage lifelong learning, starting at the beginning of life and grounded in life — one based on a passion for a radical transformation of the moral character of society
- develop to the maximum the potential of all human beings throughout their lives so that they can achieve self-fulfilment and full self-expression with the collective achievement of a viable future
- value aesthetics, the creative use of the imagination, an openness to risk and flexibility, and a willingness to explore new options
- encourage new alliances between the State and civil society in promoting citizens' emancipation and the practice of democratic principles
- mobilize society in a concerted effort so as to eliminate poverty and all forms of violence and injustice
- encourage a commitment to the values for peace in such a way as to promote the creation of new lifestyles and living patterns
- identify and pursue new human projects in the context of local sustainability within a planetary consciousness and a personal and communal awareness of global responsibility

- create realistic hope in which the possibility of change and the real desire for change are accompanied by a concerted, active participation in change, at the appropriate time, in favour of a sustainable future for all.

These responsibilities emphasise the key role of educators as agents of change. There are over 60 million teachers in the world – and each one is a key agent for bringing about the changes in lifestyles and systems that we need. But, education is not confined to the classrooms of formal education. As an approach to social learning, education for sustainable development also encompasses the wide range of learning activities in basic and post-basic education, technical and vocational training and tertiary education, and both non-formal and informal learning by both young people and adults within their families and workplaces and in the wider community. This means that all of us have important roles to play as both 'learners' and 'teachers' in advancing sustainable development.

Key Lessons

Deciding how education should contribute to sustainable development is a major task. In coming to decisions about what approaches to education will be locally relevant and culturally appropriate, countries, educational institutions and their communities may take heed of the following key lessons learnt from discussion and debate about education and sustainable development over the past decade.

- Education for sustainable development must explore the economic, political and social implications of sustainability by encouraging learners to reflect critically on their own areas of the world, to identify non-viable elements in their own lives and to explore the tensions among conflicting aims. Development strategies suited to the particular circumstances of various cultures in the pursuit of shared development goals will be crucial. Educational approaches must take into account the experiences of indigenous cultures and minorities, acknowledging and facilitating their original and important contributions to the process of sustainable development.
- The movement towards sustainable development depends more on the development of our moral sensitivities than on the growth of our scientific understanding — important as that is. Education for sustainable development cannot be concerned only with disciplines that improve our understanding of nature, despite their undoubted value. Success in the struggle for sustainable development requires an approach to education that strengthens our engagement in support of other values – especially justice and fairness – and the awareness that we share a common destiny with others.
- Ethical values are the principal factor in social cohesion and, at the same time, the most effective agent of change and transformation. Ultimately, sustainability will depend on changes in behaviour and lifestyles, changes which will need to be motivated by a shift in values and rooted in the cultural and moral precepts upon which behaviour is based. Without change of this kind, even the most enlightened legislation, the cleanest technology, the most sophisticated research will not succeed in steering society towards the long-term goal of sustainability.
- Changes in lifestyle will need to be accompanied by the development of an ethical awareness, whereby the inhabitants of rich countries discover within their cultures the source of a new and active solidarity, which will make possible to eradicate the widespread poverty that now besets 80% of the world's population as well as the environmental degradation and other problems linked to it.
- Ethical values are shaped through education, in the broadest sense of the term. Education is also essential in enabling people to use their ethical values to make informed and ethical choices. Fundamental social changes, such as those required to move towards sustainability, come about either because people sense an ethical imperative to change or because leaders have the political will to lead in that direction and sense that the people will follow them.
- The effectiveness of education for sustainable development must ultimately be measured by the degree to which it changes the attitudes and behaviours of people, both in their individual roles,

including those of producers and consumers, and in carrying out their collective responsibilities and duties as citizens.

LESSON 2

Basic education

Basic education provides the foundation for all future education and is a contribution to sustainable development in its own right.

If through education we can lift not just one child but 125 million children out of poverty and hopelessness, we will have achieved a momentous victory for the values ... and the cause of our common humanity.⁶

This lesson has been identified from the work of UNESCO, governments, other international agencies, education systems and many other organizations and actors in seeking to relate education to national strategies and action plans for sustainable development, to review national education policies, and to promote investment in education, three of the key objectives in the CSD's International Work Programme on Education, Public Awareness and Sustainability.

Basic education provides the foundation for all future education and learning. Its goal, as concerns those in the pre-school and primary school-age population, whether enrolled in school or not, is to produce children who are happy with themselves and with others, who find learning exciting and develop inquiring minds, who begin to build up a storehouse of knowledge about the world and, more importantly, an approach to seeking knowledge that they can use and develop throughout their lives. Basic education is also integral to lifelong learning, especially in increasing the level adult literacy.

Basic education is aimed at all the essential goals of education: learning to know, to do, to be (ie., to assume one's duties and responsibilities) and to live together with others, as outlined in *Education: the Treasure Within*, the report of the Independent Commission on Education for the 21st Century Report published in 1996 by UNESCO. It is, thus, not only the foundation for lifelong learning, but also the foundation for sustainable development.

Access to basic education is a major requirement for poverty eradication. Indeed, poverty cannot be eradicated without education. However, 110 million 6–11 year olds still do not attend primary school. Millions more attend only briefly — often for a year or less — then leave without the most essential elements of a basic education or the skills to make their way in an increasingly complex and knowledge-based world. These will join the nearly 900 million adults, the majority of whom are women, who cannot read. Those denied an education suffer enormous social and economic disadvantage. They are amongst those with the poorest health, lowest housing standards, and poorest employment prospects in the world. In fact, they have less of nearly everything in life, except children. In Peru, for example, women with ten or more years of education bear an average of 2.5 children whereas women with no education have an average of 7.4 children. In other countries, the difference is less extreme, but still sizeable. Nearly everywhere, higher levels of education — especially for girls and women — reduces the average size of families while contributing to the health, well-being and education of children. However, this is not the only way education impacts upon sustainability. Education is essential for mobilizing minds and communities in the struggle for sustainable development.

Education for All (EFA)

The World Conference on Education for All (Jomtien, Thailand, 1990) marked a new start in the global quest to universalize basic education and eradicate illiteracy. The Jomtien Conference also marked the beginning of a broader vision of basic education to include, as well as literacy and numeracy, the general knowledge, skills, values and attitudes that they require to survive, develop their capacities, live and work in dignity, improve the quality of their lives, make informed decisions and continue learning.

BOX 1

Educating Girls and Women⁷

Though everyone has an equal right to education, girls and women lag far behind boys and men. Two out of every three of the 110 million children in the world who do not attend school are girls – and there are 42 million fewer girls than boys in primary school. Even if girls start school, they are far less likely to complete their education. Girls who miss out on primary education grow up to become the women who make up two-thirds of the world's 875 million illiterate adults.

Yet education is not only their fundamental right, but also an effective way of achieving higher economic growth as well as social well-being. Educated girls marry later, have fewer children, and feed and look after themselves and their families better. Their survival rate is higher, and their daughters are themselves more likely to go to school. Studies have shown that women with some education are more productive, for example in agriculture, than those with none.

The Dakar Framework for Action set the goals of eliminating gender disparities in primary and secondary education by 2005, achieving gender equality in education by 2015, and ensuring that girls are not denied their right to education. To this end, the United Nations launched a thirteen-agency partnership in 2001 called the UN Girls' Education Initiative (UNGEI) that also includes bilateral agencies, civil societies, NGOs, the private sector and governments. Working in over seventy countries, UNGEI already has notable successes. For example:

- Egypt has made a commitment to close gender gaps in basic education, beginning with two pilot projects which include reaching out-of-school girls.
- In Nepal, where the girls' enrolment rate lags nearly 20 per cent behind that of boys, a new initiative is promoting girls' education by focusing on community owned schools, capacity building for female teachers, health education reform and special activities for the daughters of bonded labourers.
- Action to stem girls' drop-out rates, promote life skills, address HIV/AIDS and increase vocational education for girls are features of a new programme for girls education in Malawi.

The *Education for All (EFA) Year 2000 Assessment* was the end-of-decade review of the objectives agreed in Jomtien. This was the most in-depth evaluation of basic education ever undertaken. National assessments, sample surveys, case studies, a series of fourteen thematic studies, and data on eighteen statistical indicators quantified progress in more than 180 countries.

The Assessment revealed that none of the EFA targets set at Jomtien were met in their entirety — most notably, the fundamental goal of achieving 'universal access to, and completion of' basic education by 2000'. However, many successes were noted:

- The number of children enrolled in school rose from an estimated 599 million in 1990 to 681 million in 1998, nearly twice the average increase during the preceding decade. Eastern Asia and the Pacific, as well as Latin America and the Caribbean are now close to, and China and India have made substantial progress towards, achieving universal primary education. Developing

countries as a whole have achieved a net-enrolment ratio in primary education in excess of 80 per cent.

- The importance of early childhood education is now recognised, and the idea that education begins at birth has taken root in many societies. As a result, the number of children in pre-school education rose by 5 per cent in the past decade.
- More people are now entering secondary education and the rate of completion for upper secondary education is rising steeply with each successive age group. Worldwide, secondary education enrolment has expanded ten-fold over the past fifty years, from 40 million in 1950 to more than 400 million today. Over the same period, tertiary education enrolments increased nearly fourteen fold from 6.5 million in 1950 to 88.2 million in 1997.
- The number of literate adults grew significantly over the past decade, from an estimated 2.7 billion in 1990 to 3.3 billion in 1998. The overall global adult literacy rate now stands at 85 per cent for men, 74 per cent for women. More than 50% of the world's adult population has now attended primary school. *However, an estimated 880 million adults cannot read or write, and in the least developed countries one out of every two individuals falls into this category. Two-thirds of illiterate adults are women — exactly the same proportion as ten years ago.*
- A few countries have made progress in reducing inequalities of educational opportunity as reflected by gender, disability, ethnicity, urban versus rural location and working children. *Nevertheless, positive trends in primary education mask disparity of access both between and within many countries, and disparities in educational quality can remain even when access rates are high. People in poor, rural and remote communities, ethnic minorities and indigenous populations have shown little or no progress over the past decade. And the gender gap persists.*

Despite the concerns noted, these improvements represent a substantial contribution to building capacity for sustainable development.

World Education Forum

In 2000, ten years after Jomtien, the World Education Forum (Dakar, Senegal) confirmed the World Declaration on Education for All, and agreed to six new goals in the Dakar Framework for Action

- To expand and improve comprehensive early childhood care and education, especially for the most vulnerable and disadvantaged children;
- To ensure that by 2015 all children, particularly girls, children in difficult circumstances and those belonging to ethnic minorities, have access to and complete free and compulsory primary education of good quality;
- To ensure that the learning needs of all young people are met through equitable access to appropriate learning and life skills programmes;
- To achieve a 50 per cent improvement in levels of adult literacy by 2015, especially for women as well as equitable access to basic and continuing education for adults;
- To eliminate gender disparities in primary and secondary education by 2005 and achieve gender equality by 2015 with a focus on ensuring full and equal access to and achievement in basic education of good quality;
- To improve all aspects of the quality of education and ensure excellence of all, so that recognized and measurable learning outcomes are achieved by all, especially in literacy, numeracy and essential life skills.

These goals make the links between basic education and sustainable development very clear. Indeed, the Dakar Framework for Action states, 'Education is ... the key to sustainable development and peace and stability with and among countries, and thus an indispensable means for effective participation in the societies and economies of the twenty-first century'.

UNESCO was nominated to orchestrate global efforts to achieve EFA by 2015, and is building partnerships with governments, civil society groups, regional organisations and international agencies (e.g. the World Bank, IMF, UNICEF). A key component of this is the International Decade For Literacy which strongly links education to the crucial task of poverty alleviation.

Key Lessons

The following principles learned from successful EFA activities over the past decade are being integrated into regional and national EFA action plans:

- EFA goals are attainable provided that the problems of educational access are addressed first and adequately.
- Redressing inequalities and disparities in access, quality and learning outcomes should be the cornerstone of national educational policy-making, planning and implementation
- Increased attention should be given to curriculum planning and the provision of adequate and relevant learning materials for improved teaching and learning processes.
- The content of education, as well as processes of teaching and learning, need to be more learner-centred and less controlled by syllabuses, textbooks and examination requirements. This makes the school curriculum relevant, and also helps students become self-motivators, self-learners and critical thinkers.
- School effectiveness and learning outcomes can be improved through developing a culture of maintenance, discipline, stewardship, care and self-esteem, democratic management, school-community partnerships, and a commitment to responsibility, professionalism and excellence.
- The home environment has a major impact on learning outcomes. Parental education and home learning support are vital to learners, providing health and nutrition, moral values and codes of conduct, positive attitudes to education, and support for the school's requirements of learners.
- Systematic and continuous assessment, monitoring and evaluation schemes are needed to understand the dynamics of educational change and to help stakeholders develop appropriate responses.⁸

Education in Emergency Situations

A special audience of basic education are the millions of young people and adults living in emergency and post-conflict situations where the education system has been destabilised, disorganised or destroyed due to human-made crises such as civil strife and war or natural disasters such as flood and drought.

The number of such people is not inconsiderable. At the end of 1999, the UNHCR recognised that there were over 15 million refugees in the world;⁹ other estimates placed the number of internally displaced persons at between 20 million and 50 million.¹⁰ These data mean that up to one per cent of the world's population has been displaced by conflict or other disasters, have returned home under difficult circumstances, or are otherwise attempting to rebuild their lives and communities without access to services such as education. However, education is a vital way for students, their families and their communities to begin the trauma healing process, and to learn the skills and values needed for a more peaceful future and better governance at local and national levels. At its most basic level, this is education for sustainable development.

Key lessons for education in emergency situations have been identified by UNHCR and its partners in the Interagency Network Group for Education in Emergencies¹¹, including:

- A rapid response to educational reconstruction is vital.

- A community-based approach, e.g. through the involvement of local groups in conducting needs and skills assessments, can ensure high levels of participation in education.
- Existing capacity should be strengthened through providing resources and training for teacher, youth leaders and school management committees
- Attention needs to be paid to the emotional and physical needs of learners as well as cognitive ones, particularly focusing on the needs of special groups, such as the physically maimed or abused, mentally traumatised, former child soldiers, etc.
- Durable educational solutions are most often related to the curriculum and language of study in the country of origin, and should provide physical and social protection skills, sustain study skills, and develop survival and peace-building messages and skills.

LESSON 3

Reorienting education

There is a need to reorient many existing education policies, programmes and practices so that they build the concepts, skills, motivation and commitment needed for sustainable development.

To be an effective change agent, the fundamental purposes of education have to change – as indicated by Agenda 21. ... The current challenge is not so much to reorient education, but to collectively learn to change our perceptions about the purpose and role of education towards a systems based and sustainability oriented paradigm. Without [such] a change in values, technical measure to promote education for sustainable development will have little effect.¹²

This lesson has been identified from the work of UNESCO, other international agencies, governments, education systems and many other organizations and actors in seeking to clarify and communicate the concept and key messages of education for sustainable development, to promote sustainable consumption and production patterns and to identify and share innovative practices, three of the key objectives in the CSD's International Work Programme on Education, Public Awareness and Sustainability.

Ten years after Rio, there is substantial (but insufficient) progress towards the reorientation of educational systems in terms of how to prepare people for life: for job security; for the demands of a rapidly changing society; for technological changes that now directly or indirectly affect every part of life; and, ultimately, for the quest for happiness, well-being and quality of life.

Globalisation is proving to be a particular challenge to education. Its economic impacts have been uneven and its cultural impacts threaten local ways of viewing the world. However, globalisation has brought an awareness of the scale of the shared burdens we face and of ways of cooperating with others to address them. Within many countries, formal education systems that were no longer considered adequate to meet the needs of society and the workplace have been rethought. For the most part, however, the limited achievements serve only to show the new direction in which curriculum reform needs to move.

Nevertheless, core themes and key lessons for reorienting education policies, programme and practices towards sustainable development can be identified. These include: a balanced and holistic range of objectives, interdisciplinarity, student-centred learning, and an emphasis on futures education, citizenship education, education for a culture of peace, gender equality and respect for human rights, population education, health education, education for protecting and managing the natural resource base of economic and social development, and education for sustainable consumption.

Objectives

While education reproduces certain aspects of current society, it also prepares students to transform society for the future. Education must help students to determine what is best conserved in their cultural, economic and natural heritage. It must also nurture values and strategies for attaining sustainability locally, nationally and globally. This requires a curriculum that enhances life skills as a foundation for basic education, as set out in the Dakar Framework for Action, and that balances knowledge, values and skills objectives. A sample set of such objectives is provided in Box 2.

BOX 2

Sample Objectives for a Curriculum Reoriented to Sustainable Development¹³

Reorienting education for sustainable development encompasses a vision for society that is not only ecologically sustainable but also one which is socially, economically and politically sustainable as well. To achieve this vision, schools should plan learning experiences that enable students to achieve the following objectives:

Skills

The ability to engage in:

- Critical and creative thinking
- Oral, written and graphic communication
- Collaboration and cooperation
- Conflict management
- Decision making, problem solving and planning
- Using appropriate technology, media and ICTs
- Civic participation and action
- Evaluation and reflection

Attitudes and values

- Respecting Earth and life in all its diversity;
- Caring for the community of life – both human and non-human - with understanding, compassion and love;
- Building democratic societies that are just, sustainable, participatory and peaceful; and
- Securing Earth's bounty and beauty for present and future generations.

Knowledge

An understanding of, and ability to apply the concepts of:

- *Sustainable development*: A process by which the needs of present generations can be satisfied without compromising the ability of future generations to satisfy their needs.
- *Interdependence*: The relationships of mutual dependence between all elements and life forms, including humans, within natural systems.
- *Basic human needs*: The needs and right of all people and societies for fair and equitable access to flows of energy and materials for survival and a satisfying quality of life within the limits of the Earth.
- *Human rights*: The fundamental freedoms of conscience and religion, expression, peaceful assembly and association, which ensure access to democratic participation and meeting basic human needs.
- *Democracy*: The right of all people to access channels for community decision making.

- *Local-global links*: The recognition that the consumption of a product or service in one part of the world is dependent on flows of energy and materials in other parts of the world and that this creates potential opportunities and losses economically, socially and environmentally at all points in the local-global chain.
- *Biodiversity*: The diverse and interdependent composition of life forms in an ecosystem that is necessary for sustaining flows of energy and materials indefinitely.
- *Interspecies equity*: A consideration of the need for humans to treat creatures decently, and protect them from cruelty and avoidable suffering.
- *Ecological footprint*: The area of land and water needed to support the total flow of energy and materials consumed by a community or population indefinitely.
- *Precautionary principle*: The need to act judiciously and with an awareness of unintended consequences when we do not possess all the facts on a situation and/or when scientific advice on an issue is divided.

Interdisciplinarity

Reorienting education to sustainability requires us to work increasingly at the interface of disciplines in order to address the complex problems of today's world. What people will need to know in five, ten, twenty or fifty years cannot be reliably predicted. It is predictable, however, that such developments will not fit neatly into the disciplinary boundaries that have been in place for more than a century. Hence, understanding and solving complex problems is likely to require intensified co-operation among scientific fields as well as between the pure and mathematical sciences and the social sciences, the arts and the humanities. Reorienting education to sustainable development will, in short, require important, even dramatic changes, in the way we think of knowledge.

Student-Centred Learning

Participation in the decisions that affect their lives is a key element in the Convention on the Rights of the Child. Learning how to participate requires that children and young people have opportunities, within the safety of a learning environment, to practice decision-making. This may be done through curriculum and assessment policies that encourage the development of self-esteem and personal responsibility and of skills for learning how to learn, for critical thinking, and for active participation. Space needs to be left in the curriculum for students to plan their own learning goals and methods, as and when appropriate, and for self- and peer-assessment.

Resource-based teaching, enquiry and discovery learning, values clarification and analysis, problem-based learning, simulation games and role play, and learning through community problem solving are student-centred approaches to learning that need to be encouraged. Such approaches encourage authentic or 'deep learning' rather than the 'shallow learning' of rote recall and memorisation for examinations. Authentic learning relates to everyday issues and future concerns. It proceeds at the pace at which individuals learn well rather than by imposed schedules and standards. Authentic education engages the 'whole person' — body, mind and spirit — in the learning process and creates enthusiasm, insight and reflection as well as compassion, energy and a commitment to working individually and with others to build a sustainable future.¹⁴

Futures Education

If it is true that all education is for the future then the future needs to become a more explicit element in all levels of education. As education for sustainable development is education for a future that we cannot yet predict, it is important that education programmes seek to develop skills for understanding and anticipating change and for facing the future with courage and hope. This would involve coming to realise

that the future is a human creation, made by our decisions, and that in a democratic society, people have the right, indeed an obligation, to contribute positively to a sustainable future. This would involve learning how to learn, how to analyse and solve complex problems, how to think creatively and critically about the future, how to anticipate and make our own histories. These contribute to the skill of foresight and are all aspects of a futures orientation in education.

Education for Gender Equality

Women have always been - and remain - the deciding influence on the quality of life and well-being of their families and communities. They are the primary care-givers and the managers of natural resources, including food, shelter and consumption of goods, in most cultures. In addition, women also have jobs and careers. However, the general failure to provide equal opportunities for women to pursue education and economic self-sufficiency has meant that a disproportionate number of women are poor and marginalised. These social barriers - exclusion, low status and poverty - are also barriers to a sustainable future.

These facts make the education of girls and women a priority for sustainable development. It also means that all people, male and female, need to learn *about* the issues of gender and sustainable development and to learn *within* environments that are sensitive to the learning needs and styles of both males and females. Curriculum materials aimed at promoting such understanding are being produced in most countries. Education systems and schools are also developing policies that promote gender equality within educational processes while teacher education programmes are drawing attention to the importance of including a gender perspective in all subject areas. UNESCO, national governments and many organizations are also seeking to advance the participation of girls in science, mathematics and information and communication technologies. These are important beginnings in the process of promoting gender equality in and through education.

Education for Citizenship and Democratic Societies

Informed and active citizenship is a primary objective of educating for a sustainable future. Around the world, efforts are being made to integrate citizenship objectives into the formal curriculum. This has involved the promotion of content themes as well as teaching, learning and assessment processes that emphasize values, ethical motivation and the ability to work with others to help build a sustainable future. The global spread of democracy has expanded electoral enfranchisement and meant that adult education for citizenship is also expanding.

A key aspect of citizenship education within the context of sustainable development is international understanding. This helps bring an understanding of the links between local and global issues. It also means that young people can be given opportunities to examine their own cultural values and beliefs, to appreciate the similarities between peoples everywhere, to understand the global contexts of their lives, and to develop skills that will enable them to combat prejudice and discrimination. In these ways, students can use their knowledge, skills and commitments to plan an active role in the global community.¹⁵

Education for a Culture of Peace and Respect for Human Rights

A key pillar of education is learning how to live together in peace and harmony. This involves, firstly, strengthening one's own identity, self-worth and self-confidence and, then, learning to appreciate the cultures of others, to respect others as individuals and groups, and to apply the same ethical principles to decisions about other people that one would apply within one's own culture. These are key learnings for life in the 21st Century.

Yet, schools are sometimes affected by deep-seated national stereotypes of others, overly nationalistic sentiments and views of history, and contemporary ethnic, religious and political tensions. Schools can even pass on partisan views inadvertently, for example through insensitively written or out-dated textbooks. The UNESCO Associated Schools Project (ASP-NET) has been instrumental in developing strategies and resources for promoting human rights and peace in the curriculum. As shown in Box 3, schools can also be used as channels for building peace at the societal level.

Health Education

A child's ability to attain her or his full potential is directly related to the synergistic effect of good health, good nutrition and appropriate education. Good health and good education are not only ends in themselves, but also means which provide individuals with the chance to lead productive and satisfying lives. School health is an investment in a country's future and in the capacity of its people to thrive economically and as a society. Thus, good health and nutrition are both essential inputs and important outcomes of basic education. Children must be healthy and well-nourished in order to fully participate in education and gain its maximum benefits. Early childhood care programmes and primary schools that improve children's health and nutrition can enhance the learning and educational outcomes of school children, especially girls, and thus for the next generation of children as well. In addition, a healthy, safe and secure school environment can help protect children from health hazards, abuse and exclusion.

BOX 3

Combating Discrimination in Chile —

An interview with Chilean Education Minister, Mariana Aylwin¹⁶

Q. What are the special problems facing Chile's education system?

A. The country is in the throws of 'massification' (general expansion) of education. Also, our education system continues to put content before the job of instilling social and emotional values. The relationship between teachers and pupils is still based on hierarchy, which leaves little room for pupil participation and initiative. Chilean society is also strongly biased against some sectors of the population and there is violence in our schools.

Q. Can schools help people live peacefully together?

A. Chilean educational reform has set this and citizenship as broad and fundamental goals in all aspects of school life. We want to include non-violent conflict resolution in our on-the-job training for teachers. Pilot projects are already under way in several parts of the country. We also have a programme where schools open their doors to pupils and parents on Saturdays and Sundays. As schools get more involved with the local community, they become cultural, sporting and social meeting places.

Q. Schools themselves may take part in discrimination instead of fighting it. How can this be avoided?

A. In Chile, we have a system of assessing teachers which takes into account their degree of tolerance, compassion and respect for diversity, and their efforts to combat discrimination. School textbooks have been very carefully written to avoid sexist or discriminatory content.

Improving the health and learning of school children through school-based health and nutrition programmes is not a new concept. Many countries have school health programmes, and many agencies have decades of experience. These common experiences suggest an opportunity for concerted action by a partnership of agencies to broaden the scope of school health programmes and make them more effective. Thus, WHO, UNICEF, UNESCO and the World Bank have developed a

core group of cost effective strategies for making schools healthy for children and so contribute to the development of child-friendly schools. These agencies have launched a new approach to health education called FRESH (Focusing Resources on Effective School Health). The FRESH framework is a starting point for developing an effective school health component in broader efforts to achieve more child-friendly schools. The FRESH framework involves four components:

- Health-related school policies, including skills-based health education and the provision of some health services, can help promote the overall health, hygiene and nutrition of children.
- Provision of safe water and sanitation can ensure that all schools have access to clean water and sanitation. By providing these facilities, schools can reinforce the health and hygiene messages, and act as an example to both students and the wider community.
- Skills-based health education focuses upon the development of knowledge, attitudes, values, and life skills needed to make and act on the most appropriate and positive health-related decisions
- School-based health and sanitation services can deliver vital health and nutritional services if they are simple, safe and familiar, and address problems that are prevalent and recognised as important within the community.¹⁷

A healthy population and safe environments are important pre-conditions for a sustainable future. However, at the beginning of the 21st century, the education of many children and young people around the world is compromised by conditions and behaviours that undermine their physical and emotional well-being. Hunger, malnutrition, malaria, polio and intestinal infections, drug and alcohol abuse, violence and injury, unplanned pregnancy, HIV/AIDS and other sexually transmitted infections are some of the health problems faced. As a result, schools must be not only centres for academic learning, but also supportive venues for the provision of essential health education and services.

HIV/AIDS is a major concern for teachers and education systems. The impacts on people's lives — and on the opportunities for economic activities — mean that the epidemic is a major threat to plans for a sustainable future. The experience of UNESCO, UNICEF, WHO and others indicate several key lessons for effective school-based preventive education programmes, including:

- HIV-related issues need to be integrated into broader education about reproductive health, life skills, substance use, and other health issues.
- Prevention and health programmes should not only teach young people the biomedical aspects of reproductive health but they should also learn how to cope with the complex demands of relationships.
- Programmes that adopt a life skills approach are most successful; these help young people take greater control of their lives by making healthy life choices, gaining greater resistance to negative pressures, and minimising harmful behaviours.
- Prevention and health programmes should begin at the earliest possible age and certainly before sexual activity.
- Prevention and health programmes should extend to the whole educational setting, including the school system, students, teachers and other school personnel, parents, and the community around the school.

UNESCO is currently investigating how education systems need to adapt to the new contexts that are resulting from the pandemic as a way of illustrating that the quality of education that students receive is vital to their personal and social futures.

Population Education

Education plays a vital role in the quest to ensure that the basic needs and well-being of all the world's people are met. This is also the ultimate goal of population policies. Sustainable development, above

all else, requires new ways of thinking and acting. Within this context, the relationship between education and population needs to be seen in the broader context of the struggle to overcome poverty, promote justice and equity and ensure respect of the environment and for the right of future generations to live healthy and fulfilling lives.

Population education is aimed at enabling learners to better understand the nature, causes and effects of population dynamics and the manner in which they affect — and, in turn, are affected by — the actions of individuals, families, communities and nations. Properly conducted, population education is liberating and empowering, not indoctrination or propaganda. It does not seek to impose particular attitudes or behaviours upon learners, but rather to enable them to make informed decisions that serve their own best interest.

The key lessons learnt about population education over the last decade include:

- Education can be consciously used to achieve population and health objectives. Increasing general levels of education is, over time, a highly effective means of dealing with population issues. Specific programmes, however, are needed to focus on urgent problems, such as HIV/AIDS, or vulnerable groups, such as poor women in developing countries.
- Population education must deal with values and views. Clarifying and classifying these is especially important in the emotionally charged issues of sex and reproduction confronted by young adults, particularly young women. The goal is to teach people to think and reason for themselves, to develop self-respect as well as respect for others, to think ahead and plan their future, and to carefully consider the implications as well as the consequences of their behaviour on themselves and others.
- A considerable number of population education programmes have been addressed specifically to girls and young women. They also, where necessary, provide referrals to health services. Many studies show that girls and women suffer from lower self-esteem and expectations than do boys or men in similar situations. Population education programmes, when well conceived and executed, can become lead a school's response to these problems.
- It is now recognised that women cannot adequately protect their sexual and reproductive health in the context of power imbalances with their male partners. Thus, many population initiatives are also beginning to provide boys with caring, informed, and responsible images of what it means to be 'male'. This has given rise to a range of programmes to collect information on and support the preparation of boys for effective fatherhood, responsible masculinity, more equal participation in decision-making about contraception and fertility, and fuller participation in caring for children.
- Probably no single factor is as important to the success of population education as the training and motivation of teachers. Teacher training colleges are a strategic entry point for introducing needed population education information and, more importantly, for providing training in the communication skills, attitudes, and approaches that a subject dealing with intimate behaviours requires.
- The prevailing attitudes and practices within schools are also important in either strengthening or undermining the messages of population education. Discussion of gender equality, for example, is pointless where the school itself limits the opportunities available to girls to participate equally in all fields of study and activities.

In summary, successful population education programmes share a number of common characteristics. They appear to be well adapted to their socio-economic conditions and institutional structures; they provide coherent, easy to understand and convincing messages; they make use of well-trained teachers; and they enjoy the unequivocal support of the education system and its leaders.

Education for the World of Work

Parents around the world are rightly keen that their children should do well at school and then get a job. However, job opportunities are increasingly difficult to find, especially in rapidly changing

economies. Most students will make their living at home, in villages, on farms, working with their families using the resources of their local environment or in the informal or ‘popular’ economies of cities. Those who continue to higher levels of schooling may find employment in the formal sector, but will still need knowledge and skills so they can help their communities make informed decisions.

Core concepts and skills in Language, Maths, Science and Social Science are important, but practical skills for earning a living are also vital. Lack of appropriate preparation for work in local villages and communities has contributed to rural-urban drift and, in the long run, to high rates of unemployment, poverty and crime in cities in many countries. Meeting the needs of sustainable livelihoods, not just of the formal economy and workplace, calls for an approach to education that would equip young people with basic skills to take control of their own lives, to improve their standard of living, and to make decisions about development that is appropriate to their own communities, both urban and rural. The new syllabus is being introduced into the core curriculum in Papua New Guinea to integrate these important life and vocational skills into basic education. The course is called “Making a Living” (Box 4).

Education for Protecting and Managing Natural Resources

Education in all its forms is making a major contribution to protecting ecosystems and integrating natural resource management and energy conservation, through promoting awareness, knowledge, skills, values and action objectives. Biodiversity education is well served by the many NGOs concerned for local and global ecosystems. Educators in botanic gardens, museums and other non-formal learning centres have made especially important contributions, as have television documentaries and the media in general. However, a minority of these remain restricted to a narrow, nature-based environmental education approach. Many energy producers have developed energy education programmes that integrate social and environmental issues into broader lessons about the physics of electricity, alternative and renewable energy sources, and the importance of energy conservation.

BOX 4

Papua New Guinea — Making a Living

Syllabus Rationale

The Making a Living course is being introduced into the core curriculum for Grades 6-8 throughout Papua New Guinea. Teachers of the course are encouraged to use an integrated approach, and select the content (knowledge and skills) from other subjects that relate to the project, and to teach that content not in isolation, but in relation to the chosen project(s). In this way, students are exposed in an integrated way to a body of knowledge that is related to real-life.

Aims

The Making a Living Course aims to provide relevant learning experiences through which all students will develop skills, knowledge and attitudes that will enable them to:

- understand a wide range of concepts and principles on food production, using and managing resources, as well as business skills
- use local resources sustainably to improve their quality of life, individually and as community members
- acquire vocational skills and competencies to create self-employment
- be able to plan, organise, implement, and evaluate a project relevant to the needs of the local community
- develop personal confidence, self-reliance and interpersonal skills
- develop positive attitudes to work, accept responsibility for their actions and respect others

- accept their rights and responsibilities within the context of their community's spiritual and social values
- investigate opportunities and apply knowledge and skills through group participation in practical applications to health, safety, agriculture, home improvement and community improvement
- develop a sense of caring for their environment
- enable students to know how and where to access information and to critically evaluate that information to assist personal and community self-reliance
- develop critical thinking and apply the best solutions to improve their lives.

Content overview

The course content is organised into four main strands:

Skills for Living: This strand contains the core skills students learn and apply in any other strands. Children will learn the skills of investigation, planning and designing, making or producing, marketing, and evaluating.

Better Living: In this strand, students learn practical ways to meet their basic needs and improve their quality of life. Students will use appropriate resources and a range of techniques and equipment to produce a product to meet a basic need or to solve a problem.

Managing Resources: In this strand, students learn about how to use their resources sustainably and productively. Students acquire skills for improved food production and ways to care for their environment.

Community Development: In this strand the students learn skills to participate in activities in their community and build collaborative working relationships.

Of all natural resources, water is the most precious, and hence water must be a significant theme in education for sustainable development. Governments, water authorities, conservation NGOs and community organisations have all played prominent roles in establishing action-oriented water quality monitoring projects that link schools with their local communities and environment. Programmes with names such as Global Rivers Environmental Education Network (GREEN), Waterwatch, Streamwatch, Ribbons of Blue, the Schools Water Action Project (SWAP), Springs Project, etc., as well as coastal and maritime programmes such as Coastwatch, Coastcare, Adopt-A-Beach, Baltic Seas Project, etc. have successfully generated concern and action for a sustainable future.

Indeed, among the most successful programmes are those that avoid the belief that awareness leads to understanding, understanding leads to concern, and concern motivates the development of skills and action. Instead, the key ingredient of success is to start from the questions, issues and problems that concern young people, themselves, and to help them develop 'action competence' through community-based learning. Action competence brings the capacity to envision alternatives, clarify the values and interests that underlie different visions, and make choices between visions. This includes developing the skills to plan, take action and evaluate needed in active and informed citizens. Action competence brings knowledge, not just of the problem and its symptoms but also about its root causes — how it impacts on people's lives, ways of addressing it, and how different interests are served by different sorts of solutions.

BOX 5

Water Kits - Giving Away the Tools of Science¹⁸

Share-Net, a collective that produces low-cost educational materials in South Africa, develops water quality monitoring materials for schools. Adapting the process to local conditions meant that the equipment had to be cheaper and simpler than the apparatus used in the USA. Jam tins and small cardboard boxes, packed with simple tools to test for coliform (sewage) contamination, turbidity (soil erosion), nitrates (fertiliser levels), pH and so on, were distributed. A booklet with instructions for using

the kit to monitor water catchment quality was included in the box. It used the acronym ACTION to guide learners through the processes of: Asking (local residents about the changing quality of their river or stream); Checking (various visible features of the catchment); Testing (using the apparatus provided); Informing (residents and authorities of the findings); Outlining (a catchment conservation plan); and Networking (involving others in catchment action).

The water testing kits proved very popular with teachers and pupils alike, with sales of between 2000 and 2500 kits each year since 1993. They were inexpensive and flexible enough to stimulate the imagination of both students working on 'gold medallist' science projects and farm school pupils wanting to test the quality of the drinking water in their rain tank. Soon a network of water quality monitoring projects around the country developed, with the contents of the water kits and associated lesson plans adapted to local conditions and need, supported by local workshops and networking around the materials.

However, Share-Net warns that water testing kits and related technologies are not ends in themselves. The kits need to be used to support better educational processes, within the larger role of schools to promote conceptual, emotional and citizenship learning which, in their turn, can bring the capacity for social and environmental change.

Education for Sustainable Consumption

Consumption lies at the heart of the debate about sustainable development as it covers people's right to live and work in a clean environment with good health and social conditions. However, what counts as sustainable consumption and a sustainable lifestyle depends on context and culture. For example, in the North major changes are needed to reduce the impacts of consumption, whereas in the South, consumption levels may need to rise in the interests of global equality — otherwise, the basic human needs for food, water, housing, education, health and transport for the 4.4 billion people who live in the South may not be met. One of the tasks of education for sustainable development, especially in Northern countries, is to explain why these differences exist and the many ways in which the social and environmental impacts of their consumption patterns may be reduced with very little, if any, decline in one's quality of life..

Education programmes need to integrate sustainable consumption issues so that young people can determine an appropriate balance between their rights as consumers and their responsibilities as citizens. Such programmes must not only change attitudes and values but also develop action competence, the ability to act in democratic and thoughtful ways to bring about change. Such programmes need to be based on at least three key principles:

- Programmes that provide information on environmental facts and the need to change, or try to tell people how to behave, are generally ineffective.
- Programmes should provide understanding on *why* particular changes are important, and helping people explore a range of alternatives in order to find ones that make sense in their own lives.
- Programmes should provide opportunities for people to develop and practise skills such as problem solving and decision making.

BOX 6

Is the Future Yours? YouthXchange: Towards Sustainable Lifestyles¹⁹

The world's young people are partners with UNESCO and UNEP in the development of a new resource for sustainable development. A project called Youth and Sustainable Consumption surveyed

10,000 18–25 years olds in 24 countries to ask what they are interested in, how they consume and how they intend to shape their future. A training kit, or toolbox, titled *YouthXchange: Towards Sustainable Lifestyles* was then produced to assist youth groups, NGOs, and teachers to raise awareness on sustainable consumption and empower young people to make more sustainable purchasing decisions. The publication provides reliable and clear information on the meaning and challenges of sustainable consumption, in particular among young people. The toolkit has two components:

- **A guide** (printed and web-based) representing a road map to the issues involved, such as: the links between production and consumption, sustainable shopping (eco-labels, consumer choice, etc.), mobility and waste (packaging, re-use, recycling, etc.), energy saving, water use and health (food safety, personal lifestyles, etc.), labour conditions (child labour, toxic processes, etc.), and media literacy (understanding advertising, films, music, etc.)

- **A web site** with the following content:

Trainer's room: A site map to facilitate the best use of the web site. Along with the brochure, it is a basic tool for teachers, young leaders, NGOs, etc. to implement and develop contents and practical demonstrations on sustainable consumption.

Facts & figures atlas: Interactive, Facts & figures visualizes key statistics on consumption patterns throughout the world, demonstrate the imbalances in consumption and demand patterns across the globe and also deal with issues related to under-consumption.

Best practices: An analysis of a limited number of case studies of companies, institutions and NGOs to help students and trainers select the most effective approaches towards sustainable consumption. The end result of this section is a set of concise and practical guidelines. This is one of the training-kit's main features.

Test & game: Interactive tests to aid the promotion of awareness on broader issues such as energy saving, recycling, nutritional basics, media literacy etc. This section is intended to deal with sustainable consumption in a more entertaining way, such as a series of quizzes, which tests the user's growing knowledge and awareness on the issues linked to sustainable consumption.

Job opportunities: This showcases successful youth-led projects, showing young people that their actions can make a difference. This section provides information to guide users on employment, travel and voluntary work worldwide.

The 10 basics: 10 basic principles that enable the trainer or any user to address issues directly through young people's interests. It also makes visible, what is meant by working towards a sustainable community.

FAQs: A list of frequently asked questions on sustainable consumption and young consumers' rights provides concise descriptions of key environmental/social issues as: LCA (Life Cycle Assessment), waste management, green design, energy saving, child labour, etc.

Links: A list of interesting websites grouped by specific issues, with a concise description.

Summary

This section has outlined some of the lessons learnt from efforts over the past decade to build upon basic education and plan curriculum around a balanced and holistic range of objectives, interdisciplinarity and student-centred learning, and emphasise those aspects of learning that enhance the transition to sustainability, including futures education, citizenship education, education for a culture of peace, gender equality and respect for human rights, health education, population education, education for protecting and managing the natural resources, and education for sustainable consumption.

This kind of orientation requires, *inter alia*, increased attention to the humanities and social sciences in the curriculum. The traditional primacy of science as a foundation for nature study, and the often apolitical contexts in which is taught, need to be balanced with the study of political economy, social sciences and humanities. Learning about the interactions of ecological processes would then be associated with local lifestyles, family and community concerns and needs, cultural values, market forces, equitable decision-

making, government action and the environmental impacts of human activities in a holistic interdependent manner. Such a curriculum places the notion of citizenship among its primary objectives. This may require a revision of many existing curricula and the development of objectives and content themes, and teaching, learning and assessment processes, that emphasize moral virtues, ethical motivation and ability to work with others to help build a sustainable future.

LESSON 4

Education for rural transformation

Education is the key to rural transformation and is essential for the economic, cultural and ecological vitality of rural areas and communities.

The problems of poverty and deprivation in rural areas and their spill-over into urban areas cannot be solved by preventing urbanisation and keeping rural people confined to rural areas — which would be impossible in any event.... The challenge of education to serve rural transformation must become one of the main themes of the Education for All effort. Not taking up this challenge is to imperil the total education for all effort.²⁰

This lesson has been identified from the work of UNESCO, other international agencies, governments, education systems and many other organizations and actors in seeking to clarify and communicate the concept and key messages of education for sustainable development, to relate education to national strategies and action plans for sustainable development, to review national education policies, and to promote investment in education, and to promote public awareness, five of the key objectives in the CSD's International Work Programme on Education, Public Awareness and Sustainability.

Many, if not all, of the goals for education and development in the 21st Century cannot be realized without giving special attention to the situation of rural populations. In spite of rapid urbanization, three billion or 60 per cent of the people in developing countries, and half of the people of the world, still live in rural areas. Three quarters of the world's poor, those earning less than a dollar a day, live in rural areas. One in five children in the South still does not attend primary school and, while rural-urban statistics on education are scarce, many countries report that non-attendance in school, early dropout of students, adult illiteracy and gender inequality in education are disproportionately high in rural areas, as is poverty. Urban-rural disparities in educational investment and in the quality of teaching and learning are also widespread.

Rural people and rural areas are not homogeneous, and so for education to be relevant, it needs to respond to the diversity of rural situations. Educational activities have to be linked to the specific needs of the rural community for skills and capacities to seize economic opportunities, improve livelihood and enhance the quality of life. A multi-sectorial educational approach involving all ages and formal, non-formal and informal education is necessary. These concerns are being taken up in the FAO/UNESCO EFA Flagship Programme on Education for Rural People.

Early Childhood Care and Education

Early childhood education complements and strengthens family-based learning. It provides the child's first formal learning opportunities and prepares children for primary schooling. In the rural context, early childhood education can compensate, at least partially, for the disadvantages of poverty in the home and family environment. While delivery mechanisms will differ from context to context, essentially, any early childhood programme designed for rural communities must encompass:

- the provision of specially trained care and education providers who are child-friendly and child-sensitive and as far as possible, belong to the community or village in which the programme is based

- a learning environment, teaching methods and classroom materials that are stimulating and invigorating to attract the child as well as hold her attention
- health and nutrition components that monitor both physical and mental growth as well as curative inputs and meal supplements to help improve nutrition levels of children
- counselling and information dissemination for parents on child rearing, nutrition, health and education.

Relevant School Programmes

To achieve social and economic development in rural areas, rural education needs to be planned as an integrated package of traditional ways of knowing, academic knowledge, and practical skills. Box 7 provides an example of one way in which schools in rural areas can do this and thus contribute to community development.

BOX 7

Schools and Rural Transformation – A Case Study from, Bhorletar, Nepal²¹

Bhorletar is a rapidly growing settlement of some 150 houses run by an elected Village Development Committee (VDC). The village centre is growing fast, with 35 new houses built in the last year — 20 of them by newcomers to the area. Without any town planning, the results are beginning to show in terms of pollution of the village canal, uncollected garbage and poor sanitation. In many respects it is a typical Nepal village. Land is scarce, yet most of the villagers depend on farming. Roughly half the village land is cultivable but there is less than half a hectare for each of the 3,000 people living there.

The task of drawing up environmental plans for Bhorletar began in 1990. A system of 'participatory rural appraisal' was used to collect information about every aspect of village farming and life. This included drawing up detailed land use maps. A local teacher was trained to carry out these activities, working with the local steering committee and the community as a whole. Secondary school geography students, under teacher guidance, carried out land use mapping and surveying.

The teacher took the lead in writing up the village profile, which went through various revisions. The profile included the number of springs, forest patches, tree species, landslides, cropping patterns and hazard-prone areas, and highlighted a number of problems: rapid depletion of the forest due to increasing population and the need farmland and firewood; a lack of latrines now made essential because of population growth; flooding and erosion in the river valley; domestic animal diseases; a lack of clean drinking water; and increasing numbers of landless immigrants.

Finally, an environmental plan based on this profile was refined by the villagers themselves, and approved in meetings with the local District Council and representative from the various line agencies of the central government.

The village selected its own activities for priority action and drew up a series of recommended solutions. These included community forest conservation; improved fuel wood stoves; new latrines; protective dams and afforestation to stop flooding; raising ducks to control snails; improved roads, vegetable gardens and marketing; and a new health post.

Top priority for immediate action was given to clean drinking water, to be provided by a system of gravity fed pipes and taps alongside a system of long-term community maintenance, watershed protection, toilet building, fruit tree planting and vegetable growing to take advantage of the convenient supplies of water. All the villagers helped in building and laying the pipeline, which feeds 22 taps. This

included one extra tap for the primary school for which the parents provided all the materials. Rules have been agreed for using the various taps (some being kept only for drinking water).

It is also important that school curricula support the development of practical skills for earning a living in the rural economy. Thus, the curriculum needs to focus upon such topics and themes as:

- farm planning and management, rational decision-making, record keeping, cost and revenue computations, and use of credit
- application of improved farm practices
- storage, processing and food preservation
- supplementary skills for farm maintenance and improvement, as well as sideline jobs for extra income
- knowledge of government services, policies, programs, etc.
- knowledge and skills for family improvement (e.g. health, nutrition, home economics, child care, family planning) and civic skills (e.g. knowledge of how co-operatives, local government, national government function)
- new and improved technical skills applicable to particular goods and services
- management skills (business planning; record keeping and cost accounting; procurement and inventory control; market analysis and sales methods; customer and employee relations; knowledge of government services, regulations, taxes; use of credit)
- leadership skill for generating community enthusiasm and collective action, staff team work and support from higher echelons.²²

Rural vocational training

While every aspect of lifelong learning is important, perhaps none is more so than the area of creating additional income generation opportunities. In community learning centres, ongoing programmes are needed to upgrade and refine existing skills and teach fresh skills that help the rural community to link with new, evolving markets in surrounding urban areas. To design a programme to meet the community's needs, surveys must first assess existing levels and categories of skills and also the demands of local and neighbouring markets. Then, school learning centres need trained instructors who impart hands-on instructions of sufficient duration and levels of sophistication. Simultaneously, sufficient quantities of raw materials and sets of machinery and tools have to be provided. Finally, the programmes should not remain static but evolve so as to cater to emerging requirements.

Vocational and skill development programmes are most effective when they are linked to locally functioning small industries or co-operatives or to nearby units that can provide much-needed expertise and then use the skills that are taught by employing those they have helped to train. Some countries have gone even further and have located at district levels centrally funded institutions that have the financial and technical resources to facilitate and assist skill development programmes run by community learning centres.

Lifelong Learning

Lifelong learning is at the heart of transformation of the rural community, and must ideally develop and enrich the minds of community members. This is possible only if people have access to attractive and user-friendly reading rooms and library facilities. Managers of continuing education projects need to ensure that reading rooms and libraries are conveniently located, accessible to all members of the

community, and well stocked with books and periodicals that balance the requirements for knowledge or information on the one hand and pure entertainment on the other. If cyber kiosks can rapidly dot the urban landscape, there is no reason why rural communities cannot have their libraries/information centres equipped with television and internet facilities.

A very important aspect of lifelong learning is adult literacy. Literacy is an essential skills for coping with the economic and social changes that are rapidly affecting traditional rural ways of living. Literacy and continuing education projects are needed to help rural people understand the 'what' and the 'how' of production and the marketing of goods and services. They can develop and upgrade the skills needed to improve land productivity and to assist members of rural society relate to new technologies and respond creatively to new income and earning opportunities. Above all, adult education must help rural people suffering poverty to develop positive attitudes and values that enhance their self-esteem and self-confidence.

BOX 8

Beyond Literacy With ANTEP²³

In the Philippines, in 1996, an NGO called ANTEP (Association for Non-Traditional Education in the Philippines), committed to exploring different ways of providing education to both the youth and adults, began a non-formal education programme in partnership with the Philippines-Canada Development Fund. Under this programme, ANTEP developed a new curriculum which was in many ways a reversal of traditional curricula. Instead of starting with concrete subjects such as health and technical skills and moving on to more abstract conceptual learning related to society and to individual development, this curriculum started with helping the student participants to come to their own understanding of the major issues of life and society, with religious values and philosophical issues - the kinds of questions many adults, both literate and non-literate, constantly ask themselves. The curriculum then looked at social concerns such as living in harmony with people who are different, and communication. It was only at a later stage that the technical skills needed to earn a living were introduced. Literacy skills were developed throughout the programme but more specifically in the later stages, the earlier stages laying more emphasis on oral teaching activities.

In December 1998, ANTEP conducted an end-of-programme assessment of the pilot implementation. Some of the lessons which ANTEP drew were:

- Functional literacy is a vital ingredient in any community development programme and allows greater participation and ownership, and can be an effective tool for raising awareness on socially relevant issues like child abuse, gender and the environment.
- Increased sensitivity and the development of skills to use appropriate materials in local situations helped the learners relate with the class discussions thus facilitating meaningful learning.
- Involving local government and other stakeholders is crucial for the sustainability of the programme;
- It is important to identify community-based facilitators at the start of the programme. The potential community-based facilitator has to grow with the programme by hands-on training;
- Built-in monitoring, evaluation and feedback systems allow for the revision/modification of the learning processes used and ensure better quality;
- Involving the families of the learners during social preparation reduces the incidence of drop-out and sustains the motivation of the learners to continue with the sessions.

Summary

In summary, sustainable development can be advanced by policies and programmes of education for rural transformation that:

- close the resource gap in education, especially in rural areas
- reflect rural concerns in EFA strategies
- provide educational statistics and educational management information systems that better reflect the rural realities
- facilitate transfer, adaptation, dissemination and use of appropriate technologies from rich to poor countries and to rural people
- bring the benefits of information and communication technology to rural people
- act to build the learning community in rural areas and create international and regional partnerships to articulate, build the constituencies of support, plan and guide follow-up activities to promote education for rural transformation.

LESSON 5

Lifelong learning

Lifelong learning, including adult and community education, appropriate technical and vocational education, higher education and teacher education are vital ingredients of capacity building for a sustainable future.

Lifelong learning will hold the key to ensuring that, with the further development of information and communication technology, we avoid the 'have' and the 'have-nots' of the past. At the same time, we must ensure that we use the talent of all, to fulfil the potential of individuals and to ensure our economic survival as a nation. Lifelong learning is also essential to sustaining a civilised and cohesive society, in which people can develop as active citizens, where creativity is fostered and communities can be given practical support to overcome generations of disadvantage.²⁴

This lesson has been identified from the work of UNESCO, other international agencies, governments, education systems and many other organizations and actors in seeking to clarify and communicate the concept and key messages of education for sustainable development, to relate education to national strategies and action plans for sustainable development, to review national education policies, and to promote public awareness, four of the key objectives in the CSD's International Work Programme on Education, Public Awareness and Sustainability.

The concept of education throughout the full span of life is the most important innovation to appear in recent educational theory. Sustainable development requires that education not only continue throughout life, but be as broad as life itself also; that is, it is an approach to education that serves all people, draws upon all domains of knowledge, and seeks to integrate learning into all of life's major activities.

The time when education was the activity of childhood and work the pursuit of adults is long over. Education, at all levels, is a continual process in which instruction is offered to people at every stage of life — formally and informally by different systems. The foundation of lifelong learning is basic education which extends beyond pre-school, primary and junior secondary schooling, to include basic literacy education for adults who may have missed important educational opportunities earlier in life. Only by taking this view will we successfully include the excluded, and reach those who otherwise could not be reached.

The rapid growth of knowledge has rendered the notion of schooling as a 'once and for all' preparation for life utterly obsolete. Knowledge is advancing exponentially, yet not nearly as fast as the need for understanding and solutions.

The G8 Summit held in Cologne in 1999 issued a charter for lifelong learning. The charter argues that the challenge of globalisation is for every country to become a learning society and to ensure that its citizens are equipped with the knowledge, skills and qualifications they need, not just for improved living standards but also an improved quality of life. Economies and societies are increasingly becoming knowledge based; therefore, education and skills are indispensable to economic success, social cohesion and civic responsibility.

Lifelong learning can include aspects of basic education, but also adult and community education, appropriate technical and vocational education, higher education and teacher education, all vital ingredients of capacity building for a sustainable future.

Adult and Community Education

Action towards sustainable development ultimately depends on public awareness, understanding and support. In democratic societies, public policy responds to the will of the people. It is here that public awareness and understanding of the need for sustainable development best expresses itself through support for laws, regulations and policies favourable to the environment.

People express their preferences as they decide how to spend their money, as well as through the ballot. Public action, through voting or otherwise, is contingent on more than 'public awareness'. What is needed is an understanding of the issues, and of the likely consequences of a given purchasing or electoral decision. Public understanding is the foundation for people to fulfil their roles as responsible citizens, consumers and public-spirited individuals.

Public awareness and understanding are, at once, consequences of education and influences on the educational process. A public well informed of the need for sustainable development will insist that public educational institutions include in their curricula the scientific and other subject matters needed to enable people to participate effectively in activities directed towards achieving sustainable development. The students that emerge from such courses will, for their part, be alert to the need for public authorities to make adequate provision for the protection of the environment in all development plans.

BOX 9

Community Education at Chilika Lake, India²⁵

World Wetlands Day was commemorated at Chilika Lake on 2 February 2002 to encourage people to use wetlands and their resources wisely. Chilika Lake has been damaged by siltation, choking of the inlet and outer channels, weed infestation, a decrease of water area, and a low fish catch due to reduced migration from the sea, and was highly prone to inland flooding etc.

Pallishree, an NGO, and the Chilika Development Authority organized a program of events in cooperation with local stakeholders, communities and schoolchildren. Over 5,000 people attended the events. The main activity was a boat rally at Barkul. Other activities included observing Irrawaddy dolphins (an endangered species found only in Chilika), bird watching, a wetland drama, a children's program and an interactive program for stakeholders.

Pallishree has also established five Centres for Environmental Awareness and Education. Their activities have brought about significant changes in people's attitudes and behaviour and have increased awareness concerning wise use of lake's resources. These centres conduct educational programs to improve public awareness as well as income generating activities, and publicize lake conservation activities in their respective localities.

The Chilika Development Authority and Pallishree confidently say that World Wetlands Day (WWD) will continue to be commemorated at Chilika Lake, in order to build local people's trust and confidence in the sustainable utilization of the lake's resources, and demonstrate the Authority's commitment to wise use of wetlands and their resources.

Two key lessons of adult and community education are very relevant to education for sustainable development. First, women are most often the first to notice sustainable development problems. They see them, for example, in their local communities, in the quality of drinking water, in declining soil productivity and in their children's health. The actions of women are also often the most vital in addressing these problems. This essential relationship between gender and sustainable development means that the education of girls and women must lie at the core of education for a sustainable future.

Second, and most often following the first, is the realisation that people are not unaware of the social and environmental problems they face. In fact, more often than not, people have learnt quite a lot about them — from the media, social movements, scientists, governments and, most importantly, their daily experience. Consequently, there is a need to move beyond awareness raising, and to engage people critically and creatively in their own communities, planning and engaging in action for socially just and ecologically sound development at the local level.²⁶

The precautionary principle tells us that a major reason for focusing on adult education for sustainable development is that it would be unwise to wait for the present generation of school and college students to grow up and begin applying what they are learning. Indeed, it is today's adults who are the primary voters, consumers, workers, teachers, scientists, and parents. At the Conference on Adult Education (CONFINTEA V), meeting in Hamburg in 1997, members of the International Council for Adult Education's Learning for Environmental Action program said today's adults: 'must have the opportunity to develop their critical thinking skills, and to use their ideas, knowledge, power and imaginations to begin to make change rather than simply maintaining the ecological status quo.'²⁷ Thus, they defined education for sustainability as a key process and outcome of adult and community education.

Technical and Vocational Education

Technical and Vocational Education (TVE) is vital to two of the most urgent human resource problems facing global society: the need to develop appropriate skills for sustainable development; and the high levels of unemployment and under-employment in many countries.

TVE trains technicians, who are the interface of nature, technology, economy and society and have a key role to play in helping society resolve environmental and development issues. Challenges such as: reorienting technology and managing risks, meeting essential needs such as food, water, sanitation and at the same time conserving natural resources, reducing energy and resource consumption, and many more will have to be tackled by them. Technicians, who are aware of, and have acquired practical skills for sustainable development, can ultimately apply more sustainable practices, as they are the ones who are involved in production.

Recognising the crucial role of TVE graduates in devising and implementing practical solutions to problems such as environmental degradation, the UNESCO International Congress on Technical and Vocational Education stressed that TVE systems should not only focus on economic dimensions but should also incorporate emerging issues such as use of environmentally sound technology.

Formal programmes of TVE are important in countries of both the North and the South. However, non-formal TVE is also important as a strategy for empowering out-of-school youth, the homeless, street children and other marginalised youth. Current education systems are sometimes not serving the best interests of such young people. Programmes are needed to develop practical and entrepreneurial skills in area such as recycling, alternative energy technologies, and handicrafts that can stimulate and support young people to apply their creativity, skills, and solidarity in income-generating activities, especially in the so-called informal or 'popular' economy.

The popular economy has become the main vector for productive activity for the majority of the world's poor, especially those living in the world's rapidly expanding cities. The popular economy represents the last resort against extreme poverty, youth unemployment and social exclusion, and is made up of a multitude of small businesses, often family-run, but also of individual activities run by women and youth. Jobs vary greatly, and include: recycling discarded household equipment, repairing machines, sewing, selling and transporting water, making craft goods, and market stalls. To contribute effectively to sustainable development, TVE needs to address training needs for these jobs, also (Box 10). The case study in Box 4 is an example of this within the framework of basic education.

BOX 10

Enda Graf in Grand Yoff – An Informal-Sector Polytechnic²⁸

The Enda Graf premises in Grand Yoff, Senegal, reflect the spirit of Enda, a non-formal education organisation that began in Dakar and is now present in twelve countries in Africa, Latin America and Asia. Enda has concentrated its activities in cities, convinced that one of the keys to sustainable development will be found in the rapidly expanding cities of the South. One of Enda's priorities is work with young people, who represent the future of towns and cities and make up, in some cases, more than half their population.

Visitors to Enda Graf enter a wide patio planted with trees for shade and an area to sit and chat. The patio leads to the meeting hall and offices. Local craftspeople gather here in groups to discuss matters with staff from local saving and loan associations. The cooperative brings together more than 100 artisans from many different areas of work, and has taken on almost 280 apprentices, about 35 to 60 a year.

'The education system trains young people without developing their abilities to face real life,' Morwouly Ndiaye, the President of the Grand Yoff artisans' cooperative, says. 'And when they fail at school, their parents "throw" them into a workshop.' The Grand Yoff cooperative aims to do the exact opposite.

After an initial training period, in which both parents and apprentices discuss and agree on the value of manual labour, a seven-year training period begins. Morwouly Ndiaye explains that it takes this long because the apprentices go through several workshops, learning every trade: carpentry, metal work, masonry, etc. 'The result is that they really know how to get on in life when they leave. If one job doesn't work out, they can fall back on the other skills they have acquired.'

In addition to technical training, the apprentices see how small businesses function. They sell their products themselves and learn how to save so that they can have a certain amount of capital and credit when they leave. These 'informal-sector polytechnic' students do not receive diplomas but, compared with other young people who leave state training establishments with experience in only one field, they are well protected for the future.

Successful training initiatives for participation by marginalized youth in the popular economy have at least three principles in common:

- They reflect the dynamism and flexibility of the neighbourhoods, the young people, and the organisations that support them. This requires flexibility on the part of authorities that regulate the economy to develop policies that encourage, rather than hinder, small-scale local entrepreneurial activities.
- Programmes seek to develop the 'whole person' rather than just their knowledge and skills or their potential to earn a living. They also provide activities and support structures that encourage self-esteem, basic life skills (saving, credit, etc), self-protection strategies (from violence, sexual abuse and HIV/AIDS), and electoral enfranchisement.
- Partnerships are needed, especially with local schools and other educational institutions, to provide out-of-hours literacy and basic education classes and flexible examination systems to enable young people to find alternative pathways back into formal education.

Higher Education

Higher education has an crucial role to play in sustainable development. In the decade since the Earth Summit, many higher education institutions worldwide have made significant efforts to incorporate sustainable development into academic programmes, research, community outreach and their own management operations.

It is, for example, increasingly important to include materials on sustainable development in courses for journalists, engineers, managers, doctors, lawyers, scientists, economists, administrators and numerous other professions. As students arrive at the university from secondary schools with experience in and a taste for interdisciplinary work, universities in many countries are slowly adapting to meet their needs and demands. Major research projects, such as that on climate change, work across disciplines. However, the frontiers between academic disciplines remain staunchly defended by professional bodies, career structures and criteria for promotion and advancement. Some progress has been made but much more remains to be done to break down disciplinary barriers and develop student — and staff — expertise in working collaboratively on real world problems in real world settings.

Universities can also render a valuable service by integrating components of sustainable development into their outreach programmes for teachers, senior managers and local leaders such as mayors, parliamentarians and others in leadership positions. They can also play a key role in international co-operation and, perhaps, could do so more effectively if they gave fuller consideration to North-South research partnerships to conduct interdisciplinary inquiries into environment and development issues.

National partnering and networking has proven to be successful in sharing examples and lessons of good practice and encouraging their adoption by others. Of significance is the formation of a Global Higher Education for Sustainability Partnership (GHESP) by CRE-COPERNICUS, University Leaders for a Sustainable Future, International Association of Universities and UNESCO.²⁹ The objectives of GHESP include:

- To promote better understanding of, and more effective implementation of, strategies for the incorporation of sustainability in universities and other higher education institutions, beginning with signatories to the charters and declarations sponsored by the partner organizations.
- To undertake a global review and assessment of progress in making sustainability central to curriculum, research, outreach and operations in institutions of higher education, and, in so doing, assist UNESCO in its role within the UN system in contributing to the preparation of Rio + 10, as well as contribute to the follow-up of the World Conference on Higher Education.
- To identify and share effective strategies, models and best practices for promoting higher education for sustainability; and analyze experience thus far, with a view to making recommendations based on these studies in consultation with key stakeholders from both North and South, including business, governments, other UN bodies such as the United Nations University (UNU), as well as other relevant non governmental organizations.

Key lessons for success in implementing innovative policies and practices that achieve sustainable outcomes in universities include:

- A demonstration of commitment from senior executive: Full, visible and tangible support from senior university executives is critical to success in implementing sustainability strategies. A clear signal can be sent to the university community by becoming a signatory to one of the key declarations on sustainability in higher education (e.g. Talloires, CRE-COPERNICUS, Kyoto, etc).
- A 'triple-bottom line' perspective: sustainable universities focus not only on efforts to 'green' the curriculum and their management practices but also on measures to promote social and economic sustainability.

- A sustainability strategy: universities that are successful tend to have a comprehensive strategy for sustainability that has been negotiated and agreed through the university's decision-making structures.
- Implementation and cultural change: the likelihood of sustainability strategies leading to real outcomes depends on successful cultural change across a university, and developing appropriate attitudes and skills among students and administrative and academic staff.
- Monitoring and evaluation: a process for regular monitoring and evaluation and reporting is vital to ensuring continuous and effective implementation.

Sustainability Science

Universities are major drivers of research and development in all fields of endeavour, including sustainable development. The international acceptance of the Millennium Goals means that a vision of providing every child, woman and man with an opportunity for a productive and healthy life is now within reach. Achieving the vision will not be easy, however. Much will depend on political will, international partnerships and social mobilisation. Much also will depend on national and international cooperation in science to provide the technological developments and applications that will be required.

The Budapest Declaration on Science agreed by nearly 2000 scientists at the World Conference on Science in 1999 focuses on this need, arguing that 'Science and Technology should be resolutely directed towards prospects for better employment, improving competitiveness and social justice. Convened by UNESCO and the International Council for Science (ICSU), the conference called for sustainability to be both the goal of scientific endeavour and a guide to processes for new approaches to scientific research.

Termed 'sustainability science' this approach is rapidly gaining support. It begins not with theoretical questions – as important as these are – but with the pressing questions, issues and problems facing people at local, ecosystem and global scales. As a result, sustainability science is responsive and seeks to provide tools that bridge the gaps between the research community, those who need its advice, and the processes of policy making, planning and decision-making. Sustainability science is interdisciplinary and participatory. It accepts the validity of traditional ways of knowing, values the knowledge and research efforts of local communities and seeks to build partnerships with communities and decision-makers that strengthen the capacities of people to solve their own problems.

In seeking to harness science for meeting basic human needs, sustainability science is emerging as an important challenge to the 'publish or perish' and 'patent and profit' cultures that have tended to draw the efforts of scientists and scholars away from the major issues facing humankind.

Teacher Education

There are over 60 million teachers in the world, and every one is potentially a key agent for bringing about the changes in values and lifestyles needed for sustainable development. Consequently, innovative teacher education is needed to tap this potential. Indeed, this was a key priority within Chapter 36 of Agenda 21 and associated Work Programmes developed for education.

The administrations and faculties of institutions of teacher education have the potential to bring about tremendous change, because they create the teacher education curriculum, train new teachers, provide professional development for practicing teachers, consult with local schools, and often provide expert opinion to regional and national ministries of education.

Key initiatives around the world to promote teacher education for sustainability over the past decade include:

- a *Toolbox* in-service education project conducted by the National Consortium for Environmental Education and Training in the United States
- diverse initiatives in the United Kingdom sponsored by WWF, Forum for the Future and the UK Panel on Sustainable Development and several local education authorities
- the Environmental Education Initiative in Teacher Education in Europe
- the UNESCO Learning for a Sustainable Environment: Innovation in Teacher Education project in Asia and the Pacific
- a professional development programme for over 70 teacher education colleges in the province of Karnataka in India
- a network of teacher education and resource centres in China sponsored by WWF
- a national teacher education programme in New Zealand that has trained over 40 people to provide in-service training for teachers in their local regions
- a national teacher education programme in South Africa that has appointed a coordinator in each province, established a range of curriculum and resource development projects, and is developing a national structure for the accreditation of teachers who complete the courses
- an international network of some 50 teacher education institutions, each of which is conducting a project to reorient all or part of its pre-service curriculum towards sustainability, facilitated by a UNESCO Chair for the Reorientation of Teacher Training to Address Sustainability at York University (Canada)
- the on-line and CD-ROM based multimedia teacher education programme, *Teaching and Learning for a Sustainable Future*, developed by UNESCO as a demonstration project for adaptation and translation to suit local educational and cultural contexts.

BOX 11

Teaching and Learning for a Sustainable Future: A Multimedia Teacher Education Programme³⁰

Teaching and Learning for a Sustainable Future is a multimedia teacher education program produced by UNESCO. It contains 100 hours (divided into 25 modules) of professional development for use in pre-service teacher courses as well as the in-service education of teachers, curriculum developers, education policy makers, and authors of educational materials. The programme which is available in two multimedia formats – a CD-ROM and an Internet program available at URL: <<http://www.unesco.org/education/tlsf/index.html>> – enables educators to plan learning experiences that empower their students to develop and evaluate alternative visions of a sustainable future and to work creatively with others to help bring their visions of a better world into effect.

Content

The programme contains 25 modules, divided into 4 thematic sections:

Curriculum Rationale: Exploring global realities; Understanding sustainable development; A futures perspective in the curriculum; Reorienting education for a sustainable future; Accepting the challenge
Teaching about Sustainability Across the Curriculum: Sustainable futures across the curriculum; Citizenship education; Health education; Consumer education

Interdisciplinary Curriculum Themes: Culture and religion for a sustainable future; Indigenous knowledge and sustainability; Women and sustainable development; Population and development; Understanding world hunger; Sustainable agriculture; Sustainable tourism; Sustainable communities

Teaching and Learning Strategies: Experiential learning; Story-telling; Values education; Enquiry learning; Appropriate assessment; Future problem-solving; Learning outside the classroom; Community problem solving

Evaluation

The development of the programme involved an international reference group, advice from over 50 programme specialists in UNESCO, consultations across the UN system and extensive international evaluation by several hundred teachers and educators, sustainable development experts and multimedia specialists. The evaluation comments include:

‘In my country, more and more people are paying much attention to sustainable development, but there is a need for more materials and resources. So this program will be very helpful, especially in pre-service teacher training.’ (China)

‘I have been grappling with these issues for many years. It was wonderful to see that it has all been pulled together in such a broad, systematic, inspiring and practical way.’ (South Africa)

‘Very timely. It is a highly informative and richly referenced. It is also user-friendly and the instructions are clear. Hence, there was no difficulty in using and learning from the package. It combines graphics, sound and text, with web connections. A good learning experience.’ (India)

‘Most enlightening and well researched. Sources and references are excellent. I want to involve some of my colleagues and integrate it into our courses.’ (USA)

‘As schoolteachers, we can say that this program is very valuable and complete. We discovered a lot of innovations, new teaching methods and new methods of presentation of information that were not known to us before.’ (Uzbekistan)

‘The depth and interdisciplinary design of the program, as well as the possibilities for widespread dissemination, will place it as a landmark work toward focus, learning, and internationalisation of the values required for sustainable living.’ (Earth Charter Secretariat, Costa Rica)

Adaptation and Translation

UNESCO is aware that no single teacher education programme can suit the needs of all potential users. Thus, *Teaching and Learning for a Sustainable Future* has been designed and developed so as to facilitate translation into other languages as well as adaptation to respond to regional, national, or local needs. UNESCO is ready to work with government ministries, regional organisations, teacher education institutions and others responsible for the professional development of teachers to help facilitate these changes.

A partnership of UNESCO, the Government of South Africa, the SADC Regional Environmental Education Centre, several universities and the Wildlife and Environment Society of South Africa completely adapted the original programme to publish a southern African version.

ISSUES, CHALLENGES AND POSSIBLE WAYS FORWARD

You have issued us the challenge. We will not disappoint you

Wangarai Mattai, Kenya SEWA

The challenge of sustainable development is difficult and complex and, poses particular challenges to education planners, institutions, and teachers. Chief among these is achieving an understanding of the meaning of sustainable development appropriate for *educational* settings. However, this problem is not really that difficult —at its heart is the simple idea of ensuring a better quality of life for everyone, now and for generations to come, and this is the entire purpose of education in a nutshell.

Sustainable development simply provides a framework for thinking about what sort of world this could be, and what is needed to build such a world, that is, what goals, values, concepts and skills will be needed. Analysis of lessons learnt over the past decade of educational innovation illustrates that educational systems and institutions are coming to understand the importance of education for sustainable development, the new vision of education it encompasses, and the contributions it can make to basic education, secondary, technical and vocational and higher education, in teacher education and in adult and community education.

Issues and Challenges

Issues and challenges remain, however. While progress has been significant, it has been uneven. No one country displays all the possible dimensions of education for sustainable development and no country has integrated education into all aspects of its sustainable development plan. No one education system or country has been able to implement all dimensions of the reorientation process described in this report.

Among the significant remaining issues and challenges are the following:

- better integrating education for sustainable development into sustainable development policies in a wider range of countries, e.g. economic, environment and population policies
- better integrating education for sustainable development as a framework for education policies, especially national action plans related to EFA goals
- developing and implementing policies, guidelines and strategic plans on education for sustainable development more widely
- addressing issues of governance to improve coordination between Ministries of Education and Ministries of Environment, Natural Resources, Agriculture, etc.
- emphasising education for sustainable development in non-formal education as well as in formal education
- strengthening institutional capacity building and professional development processes for improved planning and implementation of education for sustainable development
- increasing monitoring, evaluation and reporting of sustainable development education initiatives and their outcomes and impacts
- increasing attention to the sustainability of initiatives so that policies, programmes and activities are embedded in long-term education plans and financial arrangements.

Possible Ways Forward

In summary, what are the most effective ways of moving forward?

First, there is the need to make education more inclusive, to enrol all children in schools or alternative programmes and provide adolescents and adults with opportunities for initial and continuing learning. Such strategies should emphasise the inclusion of women and girls, who are so often excluded, because educating girls and women has major benefits, not only in terms of reducing the numbers of children and improving their health and wellbeing, but also because women make up half the world's workforce and their deep concerns with quality of life issues makes gender a prime sustainable development issue.

Second, there is a need to increase the relevance of education to achieve maximum impact. Improving the orientation and quality of existing programmes is a prime need. An existing secondary curriculum, for example, can be oriented towards sustainability by re-thinking the ends it serves and adjusting its content and approach to suit the new objectives being pursued. Such reforms, whether to secondary education or higher education, can yield significant results without requiring huge efforts or imposing enormous expenditures. Population education, health education, education for sustainable consumption, appropriate vocational education – all need to be integrated into core learning for people of all ages.

Third, capacity building is a major need. Teachers are the key to learning and the quality of education. The UNESCO-UNEP International Environmental Education Programme once described the preparation of teachers as 'the priority of priorities.' Increased efforts to reorient teacher education courses and programmes towards sustainability can empower teachers to maximise student and community participation in negotiating what and how students learn and for what purposes. All student teachers should have opportunities to develop familiarity with (i) the concepts and processes of sustainability, and (ii) the professional roles and skills needed to teach for a sustainable future. To this end, regular opportunities should be provided for continuing in-service professional development for teachers to reflect upon and develop their commitments and practices in teaching for a sustainable future.

Fourth, strategies for promoting education for sustainable development must not relegate ecological concerns to one sphere and put development concerns in another; nor must they see decisions concerning economics or ecology as being science-based and value free. The aim of education for sustainable development is to put the pieces of life back together again in order that we may see development not as an economic puzzle or ecological danger, but as a set of rational and moral choices guided by a vision of the future to which we aspire.

Reorienting education for sustainability does not require large additional sums of money; it does require political will, from governments willing to model an inter-departmental, cooperative approach to sustainable development. Schools, other educational institutions and the community at large could then take up that lead with whole-of-school, community-inclusive approaches that aim to engage each individual, adult and child, in the process of seeking sustainable lifestyles. Sustainability is the goal; it is a goal that cannot be reached by technological 'fixes', by scientific research, or by government edict. It is a goal that requires commitment from across the community, a commitment that can only be developed through education.

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