

From “Environmental Education” to “Education for Sustainable Development”

– The shift of a paradigm –

by Alfred Rest*

I. Introduction

Today a worldwide cultural and ecological crisis is apparent and only education can serve society in a variety of ways to overcome this crisis. *Education is humanity's best hope and most effective means in the quest to achieve a sustainable development*,¹ i.e. to guarantee life and biodiversity on the planet Earth. We need a new vision and new concepts, structures and tools for education in the sense of holistic thinking and well balanced anthropocentric and biocentric approaches to achieving greater equity and social justice in society and alleviating poverty. Instead of bestowing our attention mostly on economic development and new technologies, we must highlight the many other dimensions related to economic and technological development, in particular ethics, moral and religious values, as postulated for instance by the *Biopolitics International Organisation* (BIO), based in Athens, since 1985.² Numerous recent United Nations programmes and resolutions, and UNESCO (United Nations Education, Scientific and Cultural Organisation) recommendations, CSD (Commission on Sustainable Development) and many international UN organisations are now giving these aspects high priority. In short, we need to “educate the heart as well as the head”.³ In general, both in international and national circles, education, public awareness and training, as taken up in Chapter 36 of Agenda 21, have been recognised and accepted as indispensable instruments for solving the problems and challenges facing humankind and biodiversity.⁴

II. Education for all: basic education

The importance of basic education and education for all as a top priority⁵ should be emphasised first, before we talk about environmental education. Chapter 36 of Agenda 21 states as its first objective (para. 36.4(a)): “to endorse the recommendations arising from the *World Conference on Education for ALL: Meeting Basic Learning Needs* (Jomtien, Thailand, 5–9 March 1990) and to strive to ensure universal access to basic education, and to achieve primary education for at least 80 per cent of girls and 80 per cent of boys of primary school age ... and to reduce the adult illiteracy rate to at least half of its 1990 level.”

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Basic education is closely linked with *eradication of poverty*. Over 100 million children between the ages of 6 and 11 never attend school, and tens of millions more enter school only to drop out within a few months or years. Moreover, there are over 800 million illiterate adults worldwide, most of whom have never been to school. The first requirement in the quest for development and equity must be to change this situation and make good-quality schooling available to all. But achieving that goal, alas, is still far off.⁶

III. From “environmental education” to “education for sustainable development”

Since the 1970s, numerous conferences and international activities have concentrated on the topic of environmental education. These include the recommendations and action plans of the *Belgrade Conference on Environmental Education* (1975), the *Tbilisi Intergovernmental Conference on Environmental Education* (1977), the *Moscow Conference on Environmental Education and Training* (1987), and the *Toronto World Congress for Education and Communication on Environment and Development* (1992) which are still valid and have not been fully explored.

Until the mid-1980s, environmental education was mostly regarded as a discipline which by certain pedagogical (teaching methods) and didactic (instruction) methods transferred skills. It reproduced, more or less, certain aspects of current society without preparing scholars and students to develop innovative ideas to transform society in future in a participatory, active manner. In formal education, for instance, curricula have tended in the past to reproduce an unsustainable culture, by showing up the risks and damage done to the environment, instead of empowering citizens to think about and work towards solutions to existing problems.⁷ Pessimistic, alarmist predictions are evidently not conducive to the long-term planning and action required by sustainable development.

At the end of the 1980s and the start of the 1990s, a new vision of education known as “education for sustainable development” had taken shape. Education was no longer seen as an end in itself, as manifested by the principle of lifelong learning, and as a means for personal enlightenment, but was now also seen as a means for *cultural renewal facing global problems*. Education is understood now to be a cross-cutting area according to the complexity of the biosphere and the uniqueness of life on Earth. Education not only provides necessary scientific and technical skills, but it also provides the motivation, justification and social support to pursue and apply them.

By shaping ethical values, such as intergenerational equity and social justice, people are enabled to use their ethical values to make informed and ethical choices. Education also makes individuals aware of their personal responsibility for the preservation and enhancement of biodiversity. It increases people's capacities to transform their visions of society into realities by actively taking part in decision-making processes. Altogether this new vision of education has to:

- bring about changes in values, behaviour and lifestyle that are needed to achieve sustainable development, and ultimately democracy, human security and peace;
- disseminate the knowledge and skills needed to bring about sustainable production and consumption patterns and to improve the management of natural resources, agriculture, energy and industrial production;
- ensure an informed population which is prepared to support changes towards sustainability emerging from other sectors.⁸

Having faced these general basic objectives of a "new education", we need action plans for the implementation of this vision. While sustainability is a long-term goal for human society and such processes will necessarily need to take place over time,⁹ there exists an *urgency to make progress quickly before time runs out*. We have to change structures and mindsets through education as soon as possible. Today there is an internationally negotiated framework for action that has been hammered out during a series of UN conferences dealing with different aspects of sustainable development, beginning in 1992 with *Rio (environment and development; Agenda 21)*, and followed in 1993 by *Vienna (Human Rights)*, in 1994 by *Cairo (population)*, in 1995 by *Copenhagen (social development)* and *Beijing (women)*, and in 1996 by *Istanbul (human settlements)*, and by the *nineteenth special session of the UN General Assembly in 1997*. In particular the UNESCO document "*Educating for a Sustainable Future: A Transdisciplinary Vision for Concerted Action*" (1997),¹⁰ which has been elaborated on for Chapter 36 at the request of the CSD, is worth mentioning. Numerous institutions and experts have been involved in the preparation of this document, including FAO (the Food and Agriculture Association), IUCN (the International Union for the Conservation of Nature and Natural Resources; or World Conservation Union), OAS (Organisation of African States), OECD (Organisation for Economic Cooperation and Development), UN-DESA, UNDP (United Nations Development Programme), UNEP (United Nations Environment Programme), UNFPA (United Nations Population Fund), WHO (World Health Organisation), WMO (World Meteorological Organisation) and the World Bank, and the

Greek Organising Committee for the *Thessaloniki Conference in 1997*.¹¹ Each of these conferences, as well as the three conventions on biological diversity, climate change and desertification, contain clear recommendations

or whole chapters devoted to education and public awareness. There is international consensus that these conferences and agreements represent a solid and comprehensive basis for moving forward.

There is also a general consensus on the various substantive elements and principles that form the basis of the new vision of education, although details for implementation still need further consideration. When looking at BIO's numerous conferences and recommendations since 1985,¹² it can

be seen that UN activities have, in the meantime, incorporated and stressed numerous proposals made by this non-governmental organisation.

IV. Clarification of the concept of education for sustainable development

Experience thus far suggests that some *confusion* persists about the concept, so that different people and organisations attribute various meanings to the same terms.¹³ This is not surprising, since the concept seeks to integrate many fields that had previously been seen as being separate. Also, the general concept of sustainable development is very broad and vague, and its various elements need further development and clarification. In 1999, CSD made the following statement for clarification:¹⁴

"The following misconceptions still prevail, namely, that:

- (a) Education *about* sustainable development is the same as education *for* sustainable development. In fact, the former concerns transmitting information about various principles and issues of sustainable development; and the latter – which lies at the heart of Agenda 21 – concerns the role of education, public awareness and training as key instruments in attaining sustainable development. Education *for* sustainable development is an integral part of promoting social and economic development, alleviating poverty, managing the use of natural resources, promoting sustainable consumption and production, controlling population growth, and so forth;
- (b) Sustainable development is mostly about the environment, and therefore 'education for sustainable development' is simply a new twist to the notion of 'environmental education'. In fact, environment is only one component encompassed by this broad concept;
- (c) Education is the concern of education ministries and the educational community. In fact, education from



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the perspective of sustainability implicates all sectors of society as both actors and beneficiaries;

- (d) Education is limited to the formal education of children. In fact, education is now seen as a lifelong process, which can be formal or non-formal at all levels and for people of all ages.

To address the aforementioned misconceptions, UNESCO, together with its partners, is continuing its efforts to clarify the concept and key messages for sustainable development, and to introduce this new thinking as widely as possible, through publications, conferences, participation in meetings and other channels.”

The concept of education for sustainable development, as understood in the above sense, can be accepted as a suitable instrument for future education. It differs significantly from the naturalist, apolitical and scientific work carried out under the banner of “environmental education” in the 1980s and early 1990s. It fills gaps between development, environmental quality, ecology and socio-economics and the political threats that underlie these. Nevertheless, the question may still be raised of whether the general concept of sustainable development, influencing the educational component, sufficiently balances the anthropocentric and biocentric approach, or disproportionately accentuates the economic and technological aspects of development. Only the effective implementation of this concept will answer this.

V. Indispensable elements and objectives of key messages for environmental education for the future

Before focusing on the concept of implementing new educational forms in the future, the main elements and objectives of environmental education should be fixed. The author recommends following the comprehensive approach and detailed proposals made by BIO,¹⁵ an example of which is below.

Issue 1: The shift to sustainable lifestyles: changing production and consumption patterns

- Many people believe that the problems associated with sustainability are due to the behaviour of others. People need to realise how individual behaviour contributes to both the creation of problems and their solution. It is necessary to create the awareness and indispensability of an individual responsibility that leads to individual action.
- Changes in lifestyle, as reflected in behaviour at individual, household and community levels, must take place.¹⁶ Particular emphasis is given to excessive and wasteful consumption patterns. Businesses should establish waste-free production cycles; otherwise the wasteful use of resources will lead to entropy.¹⁷ It is vital that governments and businesses take action to support sustainable lifestyles. Governments should uti-

lise taxation and regulatory actions as well as other incentive instruments to encourage change.

- New strategies for energy consumption and production of new, renewable energy sources are indispensable. The main mechanisms of energy conversion by diverse living organisms should be stressed. The need to use and develop alternative energy sources, such as solar energy, photovoltaic energy, bio-energy and hydrogen cells as well as wind- and water-related energy is emphasised.
- New communication strategies are critical. Information exchange among computer systems can be enhanced by setting up an international, computerised Biopolitical Bank of Ideas. There is a need to sensitise media to include more information on the bio-environment.

Issue 2: Ethics, morals, culture, social justice and equity in achieving sustainability

- Ethics, morals, culture, social justice and equity are inseparable in this context. The eradication of poverty is an essential goal and an indispensable condition for sustainability. Poverty makes the delivery of education and other social services more difficult, and leads to unsustainable population growth and environmental degradation. Ethics, morals and equity may have different meanings in different societies, which need to be carefully considered in the educational process. We need to evoke ethical responsibility for biodiversity; to increase the understanding of interdependence between all forms of life; to elucidate the moral issues arising from the application of modern biotechnology; and to sensitise the public to the need to anticipate future ethical dilemmas caused by technological progress. In particular, a new “ethic of time” is necessary to understand the links between past, present and future and to recognise means of preventing problems, regarding for instance the loss of biological and cultural diversity. In addition, a theological approach can support the development of self-control, humility and liberation from egoism as well as defend humanity’s values against the tendency of increasing depersonalisation.¹⁸
- The concept of profit needs to be redefined, including the dimensions of quality of life, preservation of natural resources, better health and the protection of biodiversity.
- New codes of ethics, providing rules and guidelines in the exercise of professional activities, should be established by professional groups. We have to develop new means to avoid “exporting pollution”.
- The instrument of environmental sanctions, implemented, *inter alia*, by a new International Court for the Environment,¹⁹ needs to be further developed.
- The urgent problems of debt release, debt-for-nature swaps²⁰ and transfers of capital can be solved by a new ethical approach.
- Cultural and environmental protection need to be

linked. Aesthetic aspects play a very important role in habitat-, city- and landscape planning. We need new dimensions in architecture and design, as well as to use more bio-materials.

- The knowledge of indigenous people, who live in harmony with human and natural systems, and its enormous potential need to be recognised.
- The role of youth, particularly at the local level, needs to be recognised, and their contribution and participation facilitated.
- Children should be considered not only as recipients of education but also as actors. A two-way link between teachers and scholars/students needs to be created. Children should be given the opportunity to learn through concrete projects and to develop their own ideas for the solution of problems.
- There are certain dangers in some of the information made available to the public today. Is "processed" information ethical?

Issue 3: Education for a sustainable future: general consensus as an impetus for action

- Education must be based on a holistic approach.²¹
- In a rapidly changing world the concept of lifelong learning is indispensable, as is the need to give a high priority to basic education in the developing world.
- Interdisciplinarity is required to deal with education in the perspective of sustainability.
- An intersectoral approach is needed in order to implicate all sectors of society in the educational enterprise.
- Cooperation at national and international levels is also indispensable. Cooperation at the national level is of particular relevance for bringing about the changes required in education. Businesses, NGOs, academic circles etc. could give essential input into the process of education and help in practical implementation. A future-oriented legislation is indispensable for the promotion of this process.
- Diverse efforts and expertise need to be coordinated and integrated to move forward together efficiently and effectively.

Issue 4: Reorientation of formal and non-formal education towards sustainability

- There is a need in general education to reorient towards sustainability. Adjustments or additions to existing educational systems will not be sufficient.
- Curricula need to be reappraised, as should teaching methods and types of assessment. All three of these areas need to be modified, as they are mutually supportive.
- There is a need for a holistic approach in curriculum planning and design. This is indispensable to integrate social and cultural aspects; in particular, values and ethics.
- Greater efforts are required to prepare teachers and teacher-trainers.
- Formal vocational education is indispensable not only

for the transfer of new skills, in particular in the fields of engineering and new technologies, but also to enhance the chances of employment.

- Non-formal education is as important as formal education.
- There is a need for the education, in particular bio-education, of policy-decision makers (representatives of governments, ministries, diplomats, public administrators), as well as in the fields of legislation and jurisdiction (lawyers and judges).²²
- Bio-education is specially needed in the whole private sector of business and economics.

Issue 5: Investment in education: contributing to a sustainable future

- Governments and international, regional and national financial institutions, as well as the production sectors should be encouraged to mobilise additional resources and increase investment in education, and public awareness.
- An independent fund for sustainable education should be considered. This fund would encourage contributions from the public at large, from businesses and from governments, and would give high visibility to these issues.

Issue 6: Public awareness and understanding

- Only environmental education can positively shape the attitudes of the profit-seeking sector.
- There is a need to capture the attention of the general public. The concept of sustainable development is not yet widely known or appreciated. Communication about this concept needs to be understandable to a general audience, and closely related to the local needs and interests of various groups in society.
- Where public awareness currently centres on economic development, a holistic approach is to be introduced in order to highlight the many other complex dimensions related to economic considerations.
- It is vital to stress the relationships between sustainability and the notions of partnership, poverty alleviation, and achieving social justice and greater equity in society including with regard to women, youth, and other groups.

VI. Implementation of work programmes on education, public awareness and training

Although there is general consensus on the elements and objectives which belong to future environmental education, the crucial problem of implementation still needs to be solved. The results of the Tbilisi Conference in 1977 may stand as an example: its basic principles were soon translated into educational goals, but could be transformed only with great difficulty into schoolroom practice in many countries.²³ Therefore, in May 2000 the *Commission on Sustainable Development*, in its *Report on Implementation of the work programme on education, public aware-*

ness and training²⁴ stressed the need to galvanise action at a national level by mobilising governments, teachers and NGOs.

1. Mobilising governments

Governments as key actors in most countries should:

- review national policies from the perspective of sustainable development;
- reorient formal education systems;
- integrate education within national strategies and plans for sustainable development; and
- raise public awareness.²⁵

The Director-General of UNESCO sent a letter²⁶ to all ministers responsible for UNESCO matters in all member States. This letter clarified and emphasised that education for sustainability was of direct concern not only to education departments, but also to departments of environment, planning, agriculture, health, commerce and others.

The CSD urged governments to develop, within five years, policy statements for reorienting education, including a definition of what needs to be done at local, national and regional levels, so that all actors will understand their respective roles and responsibilities. Nevertheless, the following main impediments²⁷ must still be overcome:

- lack of adequate financing for education;
- lack of concrete political commitment to match the importance attributed to the educational enterprise and
- sectoralisation of school systems, curricula and public bodies responsible for educational policy, management and financing. So, for instance, in Germany the general competence of the various states (*Länder*) in matters of education can hinder or delay the implementation of educational guidelines agreed by federal ministers.

It is worth mentioning too, that in mid-1999 the German government decided to create a new programme for secondary schools called Education for Sustainable Development for which the equivalent of US\$13 million has been allocated. Reform programmes for education have also been undertaken in Mexico, Bulgaria, Thailand, Pakistan and Burkina Faso.²⁸

2. Mobilising teachers

Since its first international conference in Athens in May 1987, BIO has taken the lead in matters of reforming environmental education. In particular by its concrete proposals for curriculum revision and by its bio-syllabus at the *Third International BIO Conference in Athens 1989*, this institution has created the basis for a reform of educational systems toward bio-education, including all levels of formal and non-formal education. This author recommends that this approach be followed and developed further. Via its *International University for the Bio-environment (IUBE)*, established in 1991, BIO can guarantee and promote the teaching and training of teachers, especially at the university level, and of decision-makers at every level. IUBE will also contribute to future environmental

research and public service. BIO's input into UNESCO's and CSD's programmes and related institutions is immense.

UNESCO is currently developing a multimedia professional development programme entitled *Teaching and learning for a sustainable future* with the following objectives:

- to develop an appreciation of the scope and purpose of education for sustainability;
- to clarify concepts and themes and how they can be integrated into all subject areas across the school curriculum;
- to enhance skills for integrating issues of sustainability into the range of school subjects and classroom topics;
- to enhance skills for using a wide range of interactive and learner-centred teaching and learning strategies that underpin the knowledge, critical thinking, values and citizenship objectives implicit in reorienting education towards sustainable development.²⁹

A pilot version of this programme will be tested in UNESCO field offices in all the regions. Another initiative of note is the creation by *York University (Canada)* of a UNESCO Chair for Reorienting Teacher Education Towards Sustainable Development. The goal of this chair is to develop an international network of teacher-training institutions that will undertake research and experimentation according to common objectives and a common methodology. The outcome will be a set of international guidelines based on experience in different parts of the world.

3. Mobilising non-governmental organisations

NGOs represent a formidable resource for communicating key education messages for sustainable development. There have been many important activities undertaken by NGOs on their own, collectively, or in cooperation with UN bodies, including the work of *Peace Child International (Millennium Young People's Congress, Hawaii, October 1999)*, the *UNEP Global Environmental Outlook Report*, entitled "*Pachamama*" or the "*Young Reporters for Environment Guidebook*", prepared by the *Foundation for Environmental Education in Europe*, located in the Netherlands. In 1999, UNESCO organised a consultation conference in Paris with the Chair and other representatives of the NGO Education Caucus.³⁰ UNESCO maintains official relations with 337 NGOs. It is anticipated that emphasis will be given in future to building a process that taps into these existing collaborative mechanisms and creates synergy among them, as well as exploring how links might be made with other such groupings.

4. Identification and share of best practices

In its curriculum revision and bio-syllabus, BIO has already pointed out numerous innovative practices promoting education. These approaches should be followed, but need further consideration and development.

UNESCO has also developed an *International Registry of Innovative Practices Promoting Education, Public Awareness and Training for Sustainability*, in coopera-

tion with the US government, Environment – Canada, and the Canadian Man and Biosphere Programme. The registry provides a clearing house mechanism consisting of components developed with a common protocol.³¹

5. Promotion of investments in education

Investment is a crucial way of unleashing the full force of education. An analysis is needed of:

- the extent to which current investment meets the needs of a country, and
- whether current investments in education take into account the new vision of education as a tool for achieving overarching political, environmental, social and economic objectives.

International and regional financial institutions are already investing in education, usually as a component of more comprehensive loans or aid packages. Nevertheless, this investment is not sufficient. Private sector investment, including into training programmes, also needs to be reviewed from this perspective. The ultimate challenge for all parties concerned with education is to coordinate investments from various sources at a national level into a coherent overall effort that will assist countries in moving forward as quickly and effectively as possible. The aforementioned model of a fund for environmental education should be taken into further consideration.

VII. Special issues for consideration by BIO

The subsequent recommendations, though not exhaustive, are a starting point for discussion.

1. Organisational aspects

- BIO's vision of environmental education for the future needs an intensive publicity campaign;
- BIO should strengthen its cooperation with UN bodies, in particular UNESCO, NGOs and the private sector to increase its influence on current projects being supported by numerous governments. Thereby it can expedite the chance to achieve its innovative approaches.

2. Aspects of substance

As well as continuing its curriculum revision and bio-syllabus approach, stressing bioethics and bioculture, BIO should draw special attention to:

- educating (policy) decision-makers in the public and private sectors to make them aware of their individual responsibility for biodiversity (biodiplomacy, bio-business projects);
- bio-legislation, including instruments of sanction³² and education of lawyers and judges;
- the setting up of an International Court for the Environment;
- the project of a computerised Bio-Bank of ideas;
- strengthening the efforts of IUBE by cooperation with related universities, such as York and the UN University (UNU);
- new forms and technologies in the field of bio-energy;

- bio-technology;
- aspects of investment for education; and
- best practices for education (sustaining the bottom-up approach).

VIII. Conclusion

Environmental education is indispensable in order to guarantee future life and healthy bios on the planet Earth. Environmental education understood in a holistic, interdisciplinary sense, according to the BIO concept of 1985, corresponds to "education for sustainable development". Only education based on *new ethics and values* can arouse towards biodiversity *individual responsibility and participation* from all parts of our society, both of which are indispensable for an effective implementation of a vision of intergenerational equity,³³ social justice and cultural reform. As for future bio-legislation in its broadest sense, the education and legal training of all decision-makers concerned is needed. An efficient implementation of legal principles and rules can only be achieved by enhanced control through *judicial instruments*. With regard to transboundary/transnational environmental risks and hazardous activities, the Permanent Court of Arbitration (PCA) will play a prominent role in acting as a guardian for the preservation and protection of biodiversity. By mechanisms for environmental dispute resolution, this institution will very effectively contribute to the enhanced implementation and further development of international environmental law.³⁴ Recent UN activities, in particular those of UNESCO and CSD, manifest the new general *consensus* of the international community to promote and implement the vision of future environmental education. By strengthening its cooperation with these institutions and utilising such impulses, BIO can put its long-standing vision for bio-education into effect. But as time runs out, we have to act swiftly and change structures and mindsets by education *as soon as possible*. (See Recommendation adopted on page 118.)

Notes:

1 UN Economic and Social Council, Commission on Sustainable Development (CSD), Sixth Session 20 April–1 May 1998, Report of the Secretary-General; Capacity-building, education and public awareness, science and transfer of environmentally sound technology, E/CN.17/1998/6/Add.2.

2 For information about BIO and its programmes see www.biopolitics.gr.

3 Cf. CSD, Sixth Session, 20 April–1 May 1998, Final Report: International Conference on Environment and Society: Education and Public Awareness for Sustainability (Thessaloniki, 8–12 December 1997) under issue 4.

4 See CSD, Eighth Session, 24 April–5 May 2000, Implementation of the work programme on education, public awareness and training, Report of the Secretary-General, 7 February 2000 (E/CN.17/2000/8), under paras 1–3.

5 See CSD, Implementation of the work programme on education, public awareness and training (note 4), under paras 22–24.

6 Cf. Report of the Secretary-General (note 1) under para. 17.

7 See Report of the Secretary-General (note 1), para. 21; Gerhard de Haan, Von der schulischen Umwelterziehung zur Bildung für Nachhaltigkeit, Paradigmenwechsel, in *Politische Ökologie* 1997, p. 22.

8 Report of the Secretary-General (note 1), para. 39.

9 CSD estimates that achieving the changes sought requires a period of perhaps 20 years or more. Cf. CSD, Seventh Session 19–30 April 1999, Implementation of the international work programme on education, public awareness and training, Report of the Secretary-General (E/CN.17/1999/11, 29 January 1999), Chapter III.

10 UNESCO, Paris, November 1997 (EPD-97/Conf.401/CLD.1).

- 11 For further details see note 2, Chapter II.
- 12 For the details cf. A. Vlavianos-Arvanitis, *BIO-SYLLABUS, A model of global bio-education promoted by the International University for the Bio-Environment*, Athens 1992.
- 13 See, for instance, the IUCN Commission on Education and Communication, ESDebate, International debate on education for sustainable development (eds F. Hesselink, P.P. van Kempen and A. Wals) IUCN, 2000.
- 14 CSD, Seventh Session 19–30 April 1999 (note 9), Chapter A, paras 3–4.
- 15 For details cf. A. Vlavianos-Arvanitis, *Biopolitics, Bio-Syllabus* (note 12).
- 16 R. Bleischwitz and H. Schütz, Unser trügerischer Wohlstand. Ein Beitrag zu einer deutschen Ökobilanz, in: *Wuppertal Texte 1*, Wuppertal Institut für Klima, Umwelt, Energie, 1993.
- 17 J. Rifkin, *Entropy: A New World View*, 1980.
- 18 For further details of the theological approach see A. Vlavianos-Arvanitis, *BIO-Syllabus* (note 12), chapter on bio-theology.
- 19 A. Rest, Need for an International Court for the Environment? Underdeveloped Legal Protection for the Individual in Transnational Litigation, in *Environmental Policy and Law* 24, 1994, p. 173; *idem*, The Indispensability of an International Court for the Environment, in *Ambiente e Cultura, Patrimonio commune dell'umanità* (eds G. Cordini and A. Postiglione), Naples, 1999, p. 39; the recent PCA Optional Rules for Arbitration of Disputes Relating to Natural Resource and/or the Environment of June 2001 cf. A. Rest, Der Ständige Schiedshof als Internationaler Umweltgerichtshof. Die neuen Verfahrensregeln zur schiedsgerichtlichen Streitbeilegung von Ressourcen-Nutzungs- und Umweltkonflikten, in (10) *UmweltWirtschaftsForum* 2002, p. 4; C.P.R. Romano, *The Peaceful Settlement of International Environmental Disputes. A Programmatic Approach*, Kluwer Law International, 2000, p. 125.
- 20 For this mechanism see A. Rest, Ecological Damage in Public International Law. International Environmental Liability in the Drafts of the UN International Law Commission and the UN/ECE Task Force, in *Environmental Policy and Law*, 21, 1992, pp. 31–35.
- 21 A. Rest, Internationaler Umweltschutz, in: *Ergänzbare Lexikon des Rechts*, under 4/1070, Luchterhand Publications, 2000, pp. 1–20.
- 22 Numerous research studies on domestic jurisdiction show that judges are not so proficient at applying international environmental law. For details cf. A. Rest, An International Court for the Environment: The Role of the Permanent Court of Arbitration, in *International Alternative Dispute Resolution: Past, Present and Future. Centennial Papers*. Edited by The International Bureau of the Permanent Court of Arbitration, The Hague, 2000, p. 53.
- 23 Cf. report of the Secretary-General of the UN Economic and Social Council, CSD, May 1998 (note 1), under para. 29.
- 24 Cf. note 4.
- 25 Cf. CSD, Eighth Session, 24 April–5 May 2000 (note 4), under para. 7.
- 26 Letter of August 1999.
- 27 Cf. G.D. Buchan, Obstacles to effective environmental education, in *Environmental Education and Information*, 21, 2000, pp. 1–10.
- 28 For further details cf. CSD, Eighth Session (note 4), para. 9.
- 29 Cf. note before, under paras 10 *et seq.*
- 30 For further details see CSD, Eighth Session (note 4), under paras 14–17.
- 31 CSD, Seventh Session, 19–30 April 1999 (note 9), para. 16.
- 32 For details cf. A. Rest, Neue Mechanismen der Zusammenarbeit und Sanktionierung im internationalen Umweltrecht. Gangbare Wege zur Verbesserung der Umwelt? in *Natur und Recht*, 16, 1994, pp. 271.
- 33 In its famous judgment of 30 July 1993, the Supreme Court of the Philippines stopped the deforestation of tropical forests for the benefit of future generations. It based its grounds, *inter alia*, on the principles of intergenerational equity and responsibility, as well as on the basic human right to a decent and healthy environment. For details see A. Rest, The Oposa Decision: Implementing the Principles of Intergenerational Equity and Responsibility, in *Environmental Policy and Law*, 24, 1994, pp. 314.
- 34 Cf. the working papers of T. van den Hout: Resolving Environmental Disputes. From Negotiation to Adjudication; A. Postiglione: The need for the International Court of the Environment; and A. Rest: Peaceful settlement of transnational environmental conflicts. Why not by an International Court of the Environment? presented at BIO conference “Resolving the Environmental Crisis. The Need for an International Court of the Environment”, Athens, 20–22 January 2001. For further details see www.biopolitics.gr under Publications; *BIO News* No. 26, April 2001 at pp. 1, 8–10, 12–15 (environmental education).

