

Bio-Assessment of Technology

New CD produced by BIO



sponsored by the **European Commission**

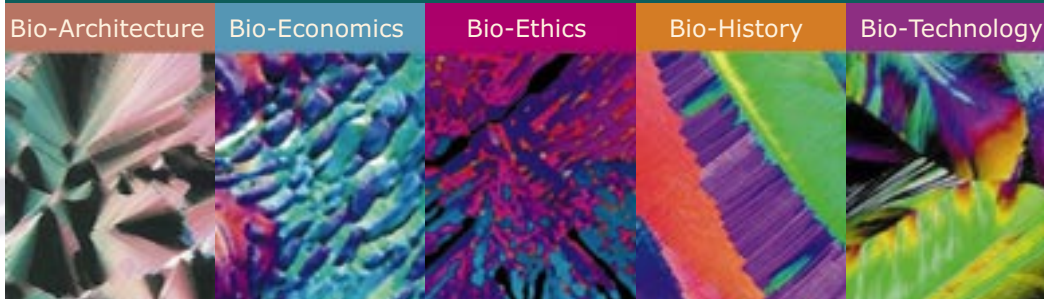
Bio-Syllabus for European Environmental Education is the new B.I.O. CD-ROM, soon to be released thanks to the sponsorship of the European Commission. It actions the B.I.O. belief that education is the key to enlightening academics, students and professionals in every field of human endeavour to become environmentally conscious and responsible world citizens. It also supports the European Commission goal of emphasising the importance of communication, information, education and training as a means of stimulating awareness of environmental issues and promoting behavioural changes in all sectors of society in line with making European Union members more aware of and more informed about the environment and sustainable development.

Divided into eleven main sections featuring ten topics and a special profile on the work and global support of B.I.O., *Bio-Syllabus for European Environmental Education* aims to serve as an efficient and user-friendly educational implement, drawing attention to the multidisciplinary nature of environmental protection. Characterised by a strong European element, this CD-ROM is an example of B.I.O.'s outreach education in practice. It has been designed as a general information source and more detailed resource tool so that researchers, trainees, scholars, public administrators or business executives can peruse our extensive collection of published material and also find out more about the work of B.I.O.

The topics presented include architecture, diplomacy, economics, energy, ethics, legislation health, history, technology and tourism, in the form of an electronic library. This electronic library can be used to study a plethora of references and original contributions from leading international thinkers and decision-makers. Sound and photographic material of some of the most important B.I.O. concepts and events accompany the electronic library.

Since its inception in 1985, B.I.O. seeks to vaccinate all existing institutions with a love of bios - life - and impart this message to students and training professionals, be they economists, diplomats, biologists. Countering the trend towards over-specialisation, it seeks to open up all areas of study and training to an appreciation of life on our planet, and to facilitate the implementation of multidisciplinary environmental concepts in education. Green topics are no longer relegated to the sidelines, and environmentally focused off-shoots in many subject areas such as bio-history, bio-legislation, bio-tourism, and bio-architecture are promoted. B.I.O. also aims to influence decision-makers at every level and impress upon them the need to incorporate respect for the environment in their short- and long-term planning. However, its central concern is to formulate and disseminate new educational alternatives with a view to

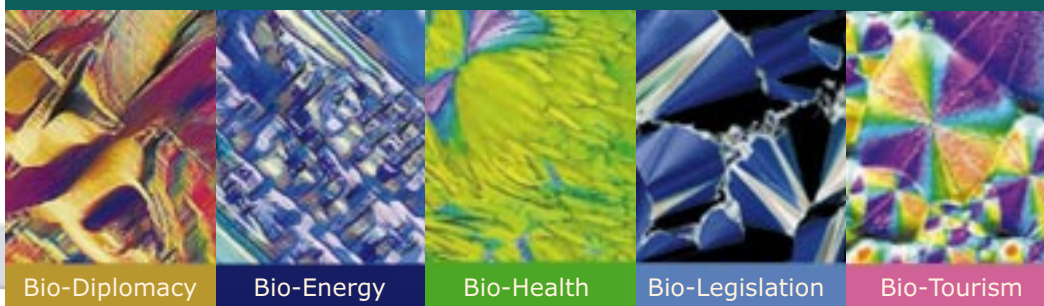
Biopolitics International Organisation



Bio-Syllabus

for European Environmental Education

Edited by Dr. Agni Vlavianos-Arvanitis



instituting a value system that is biocentric. In doing so, it avoids duplicating efforts initiated by other organisations.

It is hoped that this CD-ROM will encourage European environmental education and training, at all relevant levels, and contribute to changing individual behaviour toward more sustainable patterns. It is also hoped that it will cater to the need for better teaching aids for pedagogic research in environmental issues, which are currently considered seriously deficient by the European Commission.

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Globalisation with ethics – cultural Olympiads

The emerging process of globalisation ascertains future requirements in society and stimulates new challenges and possibilities for humanity. While we are becoming interested in economic growth, there is also an increased awareness of the need for environmental preservation and a better quality of life. To alleviate regional conflicts and reconcile environmental harmony and economic development, new policies must be emphasised. In order to be successful, however, these policies have to be based on a framework of environmental ethics. Bio-culture provides these ethical guidelines and urges a reassessment of current assumptions with a view to a global appreciation of bios.

A deeper understanding of our responsibilities as human beings on this planet is vital in this process. Environmental damage is often worse in areas with human rights abuses. Where human rights are weak, environmental concerns cannot be raised effectively. Moreover, we have to be aware that the bio-environment deserves direct moral consideration. How can we ethically reconcile our existence with the rapid deterioration of life on our planet?

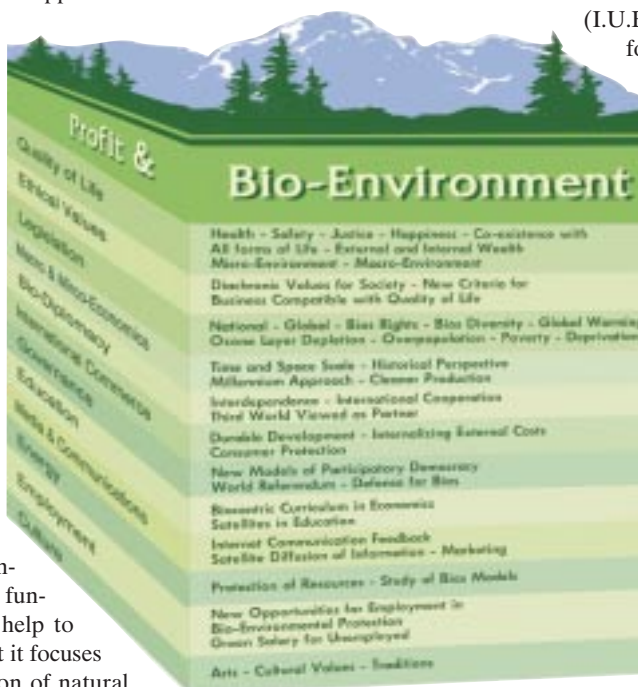
Environmental destruction is still cheap, because the world has not yet endorsed bios as the real wealth of humanity. A three-dimensional approach to economic development, featuring the environment as the core of all structural and fundamental economic policies, could help to redefine the concept of profit so that it focuses more on internal wealth, preservation of natural

resources as a measurable part of a nation's prosperity, better health and the protection of biodiversity, dimensions which constitute a "genuine" profit for society.

Time is running out, and immediate action is of the essence if we are to achieve a better future. We are now consumed in an inverted pyramid structure, where nothing is in balance because the right priorities have not been set. The pyramid may once again become re-inverted once we acknowledge the value of basing the entire structure of society on biocentric principles.

The International University for the Bio-Environment (I.U.B.E.) - an initiative which actions the B.I.O. aspiration for global environmental literacy - is a catalyst that can infuse society with these necessary models. It provides a new educational challenge, fighting the trend towards over-specialisation and seeking to open up all areas of study and training to an appreciation of life on our planet.

The current crisis in values is a great threat, not only to the environment but also to peace. This is why there is a pressing need to use the diachronic ideals of the past to motivate every member of society towards the conservation of the environment. The Olympic Spirit can play a leading role in uniting the forces of culture and technology to instil the appreciation of the aesthetic value of life on our planet. An "Olympiad of Values," and not merely of physical prowess, can give direction to globalisation and become a world aspiration for the millennium. Cultural Olympiads and Bios Prizes for each speciality with the participation of every individual and profession - as proposed by B.I.O. since its inception in 1985 - can mobilise every citizen of the world to contribute to the spiritual renaissance of humanity.



BIO goals

INTERNATIONAL CO-OPERATION FOR THE BETTER UNDERSTANDING AND APPRECIATION OF BIOS (LIFE) AND THE BIO-ENVIRONMENT

The bio-environment recognizes no ideological or geographical boundaries, no East-West, North-South or developed-developing countries. Bios provides the unifying force for the harmonious co-existence of all forms of life, leading to a new era of bio-diplomacy.

A WORLD REFERENDUM

to allow for people throughout the world to express their willingness to preserve bios on our planet.

INTERNATIONAL LEGISLATION ON BIOS RIGHTS

It is important to protect all forms of life by enacting rules that prevent the deterioration of the bio-environment, and ensure the fundamental right to a clean environment and to a better quality of life.

BIO-CULTURE - BIO-ENVIRONMENT

Two essential dimensions for building new societal values for the next millennium.

PROMOTION OF BIO-EDUCATION

through the International University for the Bio-Environment. The International University for the Bio-Environment was launched in order to reform education world-wide, and promote a biocentric curriculum at every educational level.

BIO-ASSESSMENT OF TECHNOLOGY

A diachronic search for new societal values that will channel technological progress in a direction that leads to a better quality of life through the appreciation of the bio-environment.

RAISING PUBLIC AWARENESS OF THE RAMIFICATIONS OF THE BIOLOGICAL SCIENCES

in order for more people to realise that progress in the biological sciences relates to their own field of interest. This acknowledgement may lead to new fields of human endeavour, such as bio-legislation, bio-medicine, bio-ethics, bio-arts, bio-linguistics, bio-economics, bio-athletics, bio-communication, bio-history, bio-education and bio-diplomacy.

ENVIRONMENTAL OLYMPICS AND BIOS PRIZES

The Biopolitics International Organisation has been proposing the introduction of cease-fire during the Olympic Games, a proposal which has been incorporated as a United Nations Resolution. In order to promote the bio-assessment of technology and a global bio-culture for the new millennium, B.I.O. proposes the establishment of international committees in every field of human endeavour, assigned with the responsibility to assess progress in their respective fields. Bios Prizes in every discipline will be awarded to individuals or institutions that have contributed to the preservation and appreciation of the bio-environment.

PROPOSED ACTION

Action is crucial in order to apply technological progress towards preserving the bio-environment. It is therefore essential to:

- develop a **bio-syllabus** and new curricula for every level of education, as well as electronic and audio-visual materials on issues related to bios and the environment
- introduce a positive feeling of self-respect in the unemployed by paying a **Green Salary** instead of benefits, with the commitment to work for the protection of the environment
- encourage a **clearing-house** for individuals and organisations to provide, through the use of computer link-ups, a network of people wishing to co-operate on the promotion and appreciation of bios
- generate **environmental action groups** drawing both on the enthusiasm of the young and the experience of senior citizens, to tackle local issues
- encourage a **bios-supporting economic strategy** to replace destructive policies, and promote a world-wide interdisciplinary exchange of information on the appreciation of the environment
- promote the establishment of a computerised **Bank of Ideas** in which scientists, scholars and philosophers, as well as any interested party, may contribute their thoughts and create a rich repository of information and reflections on bios.

2000 SPONSORS

European Commission
Kitty P. Kyriacopoulos
System International Foundation
A.G. Leventis Foundation
Greek Ministry of Culture
Action Link/Action Synergy
OPAP
Maramenos & Pateras
Zeneca Hellas S.A.
Lonza Ltd.
Hellas-on-Line
Ioannis Vassiliou
Xerox Hellas S.A.

BIO represented in 111 countries

Africa

Algeria, Benin, Botswana, Burkina Faso, Chad, Congo, Egypt, Ethiopia, Gambia, Ghana, Guinea, Ivory Coast, Kenya, Madagascar, Malawi, Mali, Mauritius, Morocco, Mozambique, Nigeria, Senegal, Seychelles, South Africa, Sudan, Tanzania, Togo, Uganda

The Americas

Argentina, Bahamas, Barbados, Bermuda, Brazil, Canada, Chile, Colombia, Cuba, Ecuador, Guyana, Honduras, Mexico, Panama, Peru, United States, Uruguay, Venezuela

Asia

Armenia, Bahrain, Bangladesh, Cambodia, China and Hong Kong, Georgia, India, Indonesia, Iran, Israel, Japan, Jordan, Kuwait, Lebanon, Malaysia, Pakistan, Philippines, Saudi Arabia, Singapore, Sri Lanka, Taiwan, Thailand

Europe

Albania, Austria, Belarus, Belgium, Bosnia-Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, FYROM, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Malta, Moldova, Monaco, Netherlands, Norway, Poland, Portugal, Romania, Russia, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom, Vatican City, Yugoslavia

Oceania

Australia, Papua New Guinea, New Zealand, Samoa, Solomon Islands

Editorial

The outreach education programmes of B.I.O. are aimed at sensitising the world community about the importance of embracing biocentric values. Throughout its fifteen year history, B.I.O. has promoted cutting-edge reforms in education and has taken the environment beyond the confines of conventional scientific approaches. With themes such as bio-legislation, bio-economics, bio-architecture, bio-diplomacy, we have introduced new concepts in environmental protection, encompassing every academic and professional initiative. The soon to be released Bio-Syllabus for European Environmental Education is an example of bio-education in practice (p. 1,6,7,8,9,10,11,12,13).



Dr. Agni Vlavianos-Arvanitis
President and Founder of BIO

Great progress in raising global awareness of environmental issues has been made since B.I.O.'s inception in 1985. In the past, national and international fora seldom addressed environmental concerns. Today, the environment constitutes more than 60% of their agenda. Environmental conditions have improved where vigorous programmes have been implemented. However, we still have a long way to go. Without a sound vision of environmental harmony, valuable time is lost and worthy efforts are often hindered or meet with derision. The rapid deterioration of the ozone layer and the ensuing global warming (p. 5) are a case in point. While reductions in greenhouse gas emissions are being pursued at a global level, most measures lack long-term viability or are minimally enforced. The challenge for emerging protocols and accords is to make provisions that safely and efficiently meet growing energy demands while minimising environmental threats.

The development and promotion of international law and policy that support the protection of natural resources and biodiversity is therefore a priority. One programme strategy is to strengthen international and national mechanisms that uphold and reward conservation efforts. Also, the importance of an international judicial mechanism to regulate environmental issues cannot be overstressed. B.I.O. has the privilege of being actively involved in working groups and initiatives for the establishment of an International Court of the Environment, which, in addition to serving as a means of settling international environmental disputes, will promote new ideals in legislation and judiciary control (p. 5).

Safeguarding biological and cultural diversity and preserving the gift of bios is crucial to the rights of future generations, but we must act now. By the time reforms and measures are enforced, they tend to be already outdated. The bio-assessment of technology can provide the necessary conceptual framework for technological and societal development with a view to global long-term perspectives. Technology has enormous potential to help the environment and this potential must be properly channelled. Every profession and every sector of society can help in this effort, and with the guidance of biocentric values we should all be mobilised and strive for a brighter future.



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New York forum looks at state of the world

STATE of the WORLD FORUM

New York, September 4-11

The growing integration of the world through information technology and economic globalisation illustrates profoundly the need for rigorous multi-stakeholder dialogue and inquiry into the practical design and the compassionate, sustainable management of human systems. The State

of the World Forum 2000, held in New York, USA, September 4-10, convened decision-makers and multi-stakeholders from the business sector, trade unions, civil society organisations, science and technology to nurture mutual respect and co-operation and to promote harmonious global debate.

The meeting's theme piece, *Shaping Globalisation: Convening the Community of Stakeholders*, successfully provided evidence that it is possible to move beyond exclusion and protest and bring diversity into unity to address the global demands of our planet's current situation. The B.I.O. President attended the Forum and discussed international co-operation in environmental protection as a key element of globalisation.

Plenary and roundtable sessions also addressed the need for globalisation to heal the wounds of poverty, to raise awareness of challenges in science and technology, to provide equal access to quality health and education services to children, to strengthen the role of a civil society, to bridge corporate and social concerns in business, and to democratise and improve global governance. Some topics included: *Meeting the Needs of Children in Difficult Circumstances-A Dialogue from Local and Global Perspectives*; *Natural Capitalism-Creating the Next Industrial Revolution*; *Advances in Biotechnology for the Human Genome and the Human Being-The Ethical, Philosophical and Spiritual Issues*; *Global Philanthropy-How Can We Bequeath a Sustainable World to Our Children*.

Environmental protection a must

Alexandria, Egypt, May 9-11

To widen the spectra of discussion on environmental problems among scientists from different countries, the Euro-Arab Co-operation Centre, in collaboration with the International Scientists Association and Alexandria University, sponsored the 10th International Conference on "Environmental Protection is a Must" from May 9 to 11, 2000, in Alexandria, Egypt. The conference convened under the auspices of the Egyptian Minister of High Education and Scientific Research, Professor **Mofid Shehab**, and the President of Alexandria University, Professor **Mohamed Nasr El-Deen Domer**.

The objectives of this initiative, organised by the Vice President of Alexandria University for Environmental Affairs and Community Development Professor **Mohamed Abdella**, the General Secretary of the Social Fund for Development Dr. **Hussein El-Gamal**, the President of the Euro-Arab Co-operation Centre W. Arens and the President of International Scientists Association **Samy El-Gindy**, were to exchange results in environmental research, update present knowledge on the impacts of air, soil and water pollution, and make recommendations and suggestions to concerned authorities.

The B.I.O. President was invited to participate in the conference opening ceremony and was also elected Member of the Board of the Euro-Arab Co-operation Centre.

Achieving democracy, stability and peace in South Eastern Europe

The decisive role of women

Athens, September 29

The International Institute for Democracy and the Greek Political Association of Women sponsored the Conference of Women Parliamentarians of South Eastern Europe, an initiative attended by members of parliament and government representatives from Bosnia-Herzegovina, Bulgaria, Croatia, FYROM, Greece, Hungary, Montenegro, Romania, Slovenia, Spain, Turkey and the UK, as well as members of the European Parliament.

The theme of the conference was "Achieving Democracy, Stability, and Peace in South Eastern Europe: The Decisive Role of Women." Distinguished Euro-MP and Secretary General of the Greek Political Association of Women, **Anna Karamanou**, invited the B.I.O. President to the conference to share the Biopolitics viewpoints.

Biopolitics has repeatedly focused on the key position that women can assume in the achievement of global peace and stability. The gift of bios is the most precious possession on our planet, which only represents a minute speck in the infinity of the universe. Dividing our planet up into smaller and smaller increments will only result in great threats to the environment.

The answer for a positive future lies in embracing the spirit of bios and implementing projects for international co-operation in environmental protection. With their wisdom and experience, women parliamentarians can play a leading role in the development of such projects and promote a biocentric vision of hope and global reconciliation.

Academician Laszlo Kapolyi honoured in Athens

Meeting with business leaders and diplomats



Academician Laszlo Kapolyi, the Hungarian Ambassador, Istvan Pataki, and Dr. Agni Vliavianos-Arvanitis.



Academician Kapolyi with the Ambassador of Ukraine, Yuriy Sergeyev

On June 12, distinguished B.I.O. Trustee and leading Hungarian industrialist, Academician **Laszlo Kapolyi**, received a special award for his contribution to the promotion of bio-culture during a reception held in his honour at the residence of the Hungarian Ambassador in Athens, **Istvan Pataki**.

During his brief visit to Greece, Academician Kapolyi also attended a luncheon event at the Athens Club, where he had the opportunity to meet with top business people, diplomats and European Union officials, and to exchange views about the future of B.I.O.

Academician Laszlo Kapolyi, a prominent Hungarian industrialist and former Minister of Industry, is a leader in the field of energy and communications. He is President of System International Foundation, a corporation specialising in new technologies, and a distinguished B.I.O. Trustee, as well as Co-Chair of the International University for the Bio-Environment.

He has served as Secretary of State responsible for Energy, Minister of Industry, Government Commissioner for Energy Policy, and Fellow President of the Advising Corps of the Council of Ministers. He is Member of the Hungarian Academy of Sciences, Chairman of the Hungarian Socialist Democratic Party, Member of the Committee of the Academy in Veszprem, Honorary Doctor of Heavy Industries, Miscolc, and of the Mining University, Moscow, and Visiting Professor at the Fletcher School of Law and Diplomacy, Tufts University, Boston, USA. He is also University Professor of the Academy of Mining and Metallurgy in Krakow, and Member of the Club of Rome and the Presidium of the ASPEN Institute, Italy, as well as Honorary Member of the Russian Academy of Science.

BIO contributes to Romanian policy reforms

September 25-27

The President of the Romanian National Agency of Civil Servants (NACS), **Ludovic Orban**, and NACS General Director, **Grigore Mihail Pandelas**, have invited B.I.O. to contribute to the development of improvements in the field of civil service in Romania.

In view of preparations for joining the European Union, Romanian policy-making processes at the government level are in the midst of major reform. Modifications in sectors such as the environment, finance, agriculture, justice and socio-economic infrastructure will require a lot of attention. Through the International University for the Bio-Environment, B.I.O. has offered to assist in finding solutions to the present necessities in public administration in Romania, by organising training seminars that will promote an exchange of know-how in policy and management.

The B.I.O. President visited Bucharest September 25-27, and engaged in extensive discussions with State officials and representatives from the College of Management about launch-

ing programmes in bio-education, bio-diplomacy and bio-legislation. She also met with **Alexandra Petrescu**, Special Adviser to the President of the Romanian Republic, who expressed the support of the Romanian Presidency and great interest in close collaboration.

Bio-policy and bio-diplomacy can serve as paradigms for international co-operation and, along with bio-economics, comprise useful models for the implementation of a new vision in government and academia.

Bio-policy and bio-diplomacy can serve as paradigms for international co-operation and, along with bio-economics, comprise useful models for the implementation of a new vision in government and academia. Furthermore, within the framework of the Youth Bios Olympiad - a B.I.O. initiative held annually in St. Petersburg - Dr. Vliavianos-Arvanitis

proposed the launch of environmental youth projects for the Danube countries and the Black Sea region. During a press conference to the diaspora Romanians, she emphasised that diversity in culture, ethnicity and religion are the richness of humanity and have to be encouraged. We can maintain and appreciate our own identity by respecting and endorsing the identity of others. This is the real wealth of our planet.



BIO progress

HONOURS AND DISTINCTIONS

- The B.I.O. President is re-nominated for the Nobel Peace Prize, by Nobel Laureate International Physicians for the Prevention of Nuclear War
- Nomination for the J. William Fulbright Award for International Understanding
- The President is elected Member of the Board of the Euro-Arab Co-operation Centre

B.I.O. CONFERENCES

- "Bio-Environment - A New Renaissance in Business" B.I.O. conference with the participation of experts in legislation, marine protection, clean energy sources, finance and management, held within the framework of the Hellenic-Italian Chamber of Commerce's 5th Annual Conference. Holiday Inn Hotel, Athens, Greece
- "Bio-Diplomacy: The Future of International Relations" B.I.O. luncheon event with keynote speeches by Ambassadors from several countries. The Athens Club, Athens, Greece
- Round table discussion "New Century - New Dimensions - Environment," World Conference on Bioethics organised by the International Bioethics Society (SIBI), Gijon, Spain
- Fifth Youth Bios Olympiad in St. Petersburg

B.I.O. ACTIVITIES

- Bios Prize awarded to Ted Turner, Atlanta, USA

SEMINARS/SPECIAL EVENTS

- "Bio-Culture - Bio-Environment - Millennium Values," keynote presentation at the millennium celebration on the island of Patmos, Greece
- Biopolitics at the Pontifical Academy for Life's General Assembly, The Vatican
- Participation in the seminar on "Environmental Obligations and Opportunities for Business," British Embassy, Athens
- Keynote speech at the organisational meeting for the conference on "What Lifestyles for the Third Millennium?" Council of Europe, Paris
- Biopolitics presentation in "Forum 2000" conference of the American Foundation for Greek Language and Culture, Tampa, Florida, USA
- Biopolitics at the Wilton Park Conference on "Earth Summit 2002: Identifying the Agenda," Wiston House, UK
- Keynote presentation at the International Centre for Bioethics Conference, International Institute for Human Rights Studies, Trieste, Italy
- Opening lecture at the conference on "Environmental Protection is a Must," held by the Euro-Arab Co-operation Centre and the University of Alexandria, Egypt
- B.I.O. participates as a partner in the Leonardo da Vinci European Union Project "Bio-environment and New Millennium"
- Biopolitics keynote at the conference on

"Tourism and Culture," Ancient Olympia, Greece

- Participation in the Working Group for an International Court of the Environment, Permanent Court of Arbitration, The Hague
- Participation in the Earth Charter Launch in the presence of HM Queen Beatrice of the Netherlands, Peace Palace, The Hague
- Ten-day B.I.O. lecture series on environmental management and legislation for university teachers and government employees from Eastern Europe, in the framework of the EU Tempus Programme. Academia Istropolitana Nova, Bratislava, Slovakia
- Opening lecture, Fourth Annual Conference of Arcadians Abroad, Arcadia, Greece
- Plenary Session presentation at the conference Praga 2000 Natura Megapolis, organised by the Czech IUCN, Prague, Czech Republic
- Participation in the State of the World Forum, New York, USA
- Participation in the Working Group of the International Court for the Environment Foundation, New York, USA
- Contribution to the proceedings of the environmental conference held at the University of Krakow, Poland
- Co-operation in the field of public administration and training with the National Agency of Civil Servants, Romania. Meetings with State officials at the office of the President of the Romanian Republic, and with representatives from the School of Management.
- Plenary Session opening address and keynote presentation on health and environmental education. International Conference on "Chemical Education and Sustainable Development," Mendeleyev University, Moscow
- Chairing of the session on "What is Globalisation's Impact on the Environment?" Wilton Park, UK
- Plenary Session opening address and keynote presentation on health and environmental education. International Conference on "Chemical Education and Sustainable Development," Mendeleyev University, Moscow
- Biopolitics panel discussion organised by the Indonesian Council for World Affairs and B.I.O. member Ambassador Irawan Abidin
- Keynote lecture at the Greek Culture Celebrations, University of South Alabama, USA
- Lecture at the conference sponsored by the Institute of Petroleum Research. Cairo, Egypt.
- Presentation at the conference on "The jurisdiction and control for the actuality of the human right to the environment," sponsored by the International Court for the Environment Foundation. Rome, Italy
- Steering Committee meeting, EU Leonardo da Vinci programme "Bio-Environment and New

Millennium." Larnaca, Cyprus. B.I.O. participates as a partner organisation in the project, coordinated by Action Link/Action Synergy S.A.

- In co-operation with Action Link/Action Synergy S.A. and Academia Istropolitana Nova within the framework of the EU Phare project, B.I.O. will host participants of the environmental summer seminar held in Bratislava, Slovak Republic. Co-operation in environmental projects with Greek municipal authorities

B.I.O. PUBLICATIONS

- "Bio-Syllabus for European Environmental Education" CD-ROM and printed education manuals (in prep.) sponsored by the European Commission
- "Bios Olympiad," Monograph by A. Vlavianos-Arvanitis (Greek edition, 111 pp.)
- "Biopolitics - the bio-environment - Bios Olympiad," proceedings from the B.I.O. conference held in 1999 in Ancient Olympia (Greek edition, in press)
- "Environmental Legislation, Energy and Environment, Industry and Environment" Open education manuals prepared within the framework of the European Union Leonardo da Vinci "Bio-Environment and New Millennium" project
- Quarterly publication of BioNews, the official B.I.O. newspaper
- "Bios Prizes in St. Petersburg - a Millennium of Bio-Culture," video release (English, Greek)
- "The Kogi of Colombia - a Tradition of Safeguarding the Environment," video release (English, Greek)
- "Biopolitics - the bio-environment - the biopolitical context of pluriculturality," contribution to the volume of proceedings from the conference on "The Challenges of Pluriculturality in Europe" in co-operation with Europe House Zagreb
- "Biopolitics - the bio-environment - biopolis versus megapolis: a millennium vision," contribution to the volume of proceedings and CD-ROM from the conference "Praga 2000 Natura Megapolis" of the Czech IUCN
- "Protecting water resources and the bio-environment: a priority policy for the millennium," contribution to the volume of proceedings from the Medcoast/EMECS 99 Joint Conference held in Antalya, Turkey. Published by the International EMECS Centre, Japan

MEDIA COVERAGE

- Interviews with ANT1 TV Satellite-Pacific, broadcast in Australia, Canada and USA
- Weekly B.I.O. articles in the Athenian daily "Adesmeftos"
- Press conferences and TV interviews in Spain, Russia, Romania, Slovenia
- Bio-economics, bio-legislation, bio-diplomacy, and bio-philosophy featured extensively on the B.I.O. Internet web site (<http://www.hol.gr/bio>)

BIO Resolutions – call to action for World Environment Day 2000



One of the primary concepts the B.I.O. has promoted since its inception in 1985 is the urgency of adopting a common responsibility towards environmental protection and appreciation.

On the occasion of World Environment Day, 5 June 2000, B.I.O. drafted a set of resolutions and sent out a massive mailing, via the internet to members and representatives in 111 countries around the world. The letter which follows reflects the basic principles and goals of B.I.O.

The environment is a source of joy for humanity and, yet, a global environmental crisis is seriously threatening the continuation of life on our planet.

The only possible way to reverse destruc-

tive trends and to provide hope for the future is for world leaders and opinion formers to acknowledge

Affirming that our first duty and obligation is to ensure that future generations will not have to face environmental problems created and accumulated by our generation

Endorsing that the right to a healthy environment is a fundamental human right

Recognising that new ethics and values based on the appreciation of and respect for the environment are crucial for the continuation of life on our planet

Emphasising that the international community has an obligation to co-operate in environmental protection and in the eradication of poverty

Acknowledging that the mobilisation of

both culture and technology is required for the effective promotion of environmental values in the millennium

It is resolved that:

1. A "bio-assessment" of technology, with environmental protection as the ultimate goal, is the only solution for countering global climate change and truly benefiting from technological progress.
2. A **World Referendum**, where every individual on the planet will cast their vote and affirm their willingness to save the environment, will result in a grass-roots mobilisation and a global call for environmental respect and protection.
3. It is essential to support the establishment of an **International Court for the Environment**, to provide the guidance and vision necessary to prevent environmental

disasters.

4. **Global environmental** education is urgently needed to achieve environmental literacy around the world.
5. An electronic "Bank of Ideas" featuring state-of-the-art environmental technology, feedback and insight from all over the world, can promote the efficient dissemination of environmental know-how and assist in pollution prevention and clean-up.
6. **Environmental Olympics** and world "cease-fire" during the Olympic Games can provide the necessary vision for a millennium of peace and global environmental harmony.

2 June 2000

This document can also be accessed at the B.I.O. web site under "What's New."

International Court of the Environment

International Court of the Environment Foundation

New York, September 7

Rome, November 10-11

The International Court of the Environment Foundation (ICEF), an initiative directed by Italian Supreme Court Justice **Amedeo Postiglione**, and endorsed by leading personalities and experts from around the world, promotes the creation of an internationally established judicial mechanism to resolve environmental disputes.

On the occasion of the United Nations Millennium Summit, a special ICEF meeting relating to structural changes and enhancements of the UN System was held at the Metropolitan Club in New York, USA, on September 7. The purpose of the meeting was to report on the status of the efforts to estab-

lish an international environmental court and to discuss co-ordination of these efforts with the Permanent Court of Arbitration (The Hague) and the UNEP. Also in connection with the UN Summit, a resolution in favour of the creation of an International Court of the Environment was drafted and signed. The meeting was attended by members of the Italian Senate and Supreme Court, the Chairman of the ICEF North American Committee **Kenneth McCallion**, the B.I.O. President and other personalities.

The next ICEF meeting will convene September 10-11 in Rome, Italy. The main subject of the meeting will be the jurisdiction and control for the actuality of the human right to the environment.

Earth Charter launched at Hague

The Hague, 29 June

Leaders from around the world convened at the Peace Palace in The Hague, on June 29, 2000, to launch the Earth Charter in the presence of Her Majesty Queen Beatrix of the Netherlands. The Earth Charter is a declaration of fundamental principles for building a just, sustainable and peaceful global society in the 21st century. It seeks to inspire in all peoples a new sense of global interdependence and shared responsibility for the well-being of the human family and the larger living world. It is an expression of hope and a call to form a global partnership at a critical juncture in history.

The document has been put together by the Earth Charter Commission, an initiative comprised of eminent personalities such as **Mikhail Gorbachev**, **Maurice Strong**, **Steven**

Rockefeller, **Federico Mayor**, **Ruud Lubbers** and others.

The B.I.O. President was present at the launch, which confirmed the proposals that B.I.O. has been putting forth since its inception in 1985. It is encouraging to see that bio-centric goals and ideals are gaining such wide support. The environment at the core of every policy and action has been the primary B.I.O. concern, as well as the basis of its fifteen-year effort to promote a new vision in society. Humanity is wasting time, and environmental disasters are a constant threat. When B.I.O. was first created, very few acknowledged the urgency of environmental action. Fortunately, today, after a long and often difficult struggle, the world community is realising that the future must be based on a global appreciation of bios.

International Court of the Environment Working Group

Peace Palace, The Hague

On May 17, a Permanent Court of Arbitration (PCA) Working Group met at the Peace Palace in The Hague to discuss the role of dispute resolution mechanisms in international investments and environmental protec-



tion. The meeting was chaired by PCA General Secretary **Tjaco van den Hout**, with the participation of: Dr. **Mohamed Bekhechi**, Senior Counsel at the World Bank; **Charles Di Leva**, Director of the IUCN Environmental Law Centre; **Parvez Hassan**, Legal Counsel with IUCN

Pakistan; **Christopher Pinto**, Secretary-General of the Iran United States Claims Tribunal; Professor **Alfred Rest** of the University of Koln; Professor **Philippe Sands** of the University of London and New York University Law School; Dr. **Agni Vlavianos-Arvanitis**, B.I.O. President and Founder; **Phyllis Hamilton**, **Alexa Duvergier-Pichon** and **Bette Schiffman**, Members of the Permanent Court of Arbitration; **Alfonso Ascensio**, Legal Advisor with the Mexican Ministry of Foreign Affairs; and **Professor Oliver Hinte** of the University of Koln.

The working group meeting resulted in a fruitful exchange of views about speeding up the establishment of an International Court for the Environment as a means for solving environmental disputes. B.I.O. has repeatedly emphasised that the International Court for the Environment, rather than functioning as just another punitive institution, should provide guidelines and a vision for the prevention of environmental catastrophes, under the auspices of the Permanent Court of Arbitration.

To further this goal, B.I.O., with the invaluable assistance of Professor Alfred Rest, has prepared a formal statement for the urgent need to implement an International Court for the Environment:

Biopolitics International Organisation

Resolution for the Establishment of an International Court of the Environment

Recognising that there exists a global environmental crisis that threatens all the major ecosystems and life - bios - on our planet;

Reiterating that all States and all people shall co-operate in a spirit of global partnership in the essential task of eradicating poverty and in protecting the environment as an indispensable requirement for sustainable development for the benefit of present and future generations;

Emphasising that the international community has an obligation, as the guardians of global natural resources, to conserve, protect and restore these resources and to preserve all other species from further pollution, contamination and extinction;

Reasserting that the right to a healthy environment is a fundamental human right;

Recalling, inter alia, Principle 22 of the Stockholm Declaration and Principle 13 of the Rio Declaration according to which States shall develop further the international law regarding liability and compensation for the victims of pollution and other environmental damage caused by activities within their jurisdiction or control to areas beyond their jurisdiction;

Reiterating the indispensability of an International Court of the Environment to resolve transnational and international environmental disputes and to preserve and protect global ecosystems;

Recalling that such an institution could also contribute to the development and promotion of international environmental law; and

Recognising that such a court is intended to be complementary to a national and regional compliance, enforcement and judicial systems it is resolved that:

1. There is an urgent need for the immediate establishment of an International Environmental Court with mandatory jurisdiction to resolve transnational and international disputes in environmental matters, and thereby to conserve and protect the global environment and all species from further degradation and extinction. This institution can also make an essential contribution to the further development and creation of international environmental law.

2. There is a fundamental human right to a healthy environment that can be protected through such a court. To implement such a right and to prevent any deleterious effects to the environment the harmed or potentially injured victim, as well as generally accepted and recognised environmental non-governmental organisations and interest groups, and legal persons from industry and businesses as well, must have legal access to such a court, equitable to the access of States and International Organisations.

3. Until an International Court of the Environment is established, the Permanent Court of Arbitration (The Hague) should be the competent institution for the settlement of disputes by providing the flexible mechanisms of commissions for fact finding/inquiry, mediation, conciliation, and arbitration, according to its set rules of procedures.

7 June 2000

Dr. Alfred Rest
University of Cologne
Institute of Public International Law

Dr. Agni Vlavianos-Arvanitis
President and Founder
Biopolitics International Organisation

Ozone – Global Warming Alerts

The hole in the ozone layer over the Antarctic is at its largest ever according to Japan's Meteorological Agency - more than twice the size of the surface of the Antarctic. The hole was estimated to be 28.4 million square kilometres, larger than the previous worst record of 27 million sq. km in 1998, agency officials said.

The ozone layer absorbs ultraviolet radiation. This biologically damaging, high-energy radiation can cause skin cancer, injure eyes, harm the immune system, and upset the fragile balance of an entire ecosystem.

Other scientists measuring the effects of global warming in the Arctic and Antarctic report more alarming findings.

Disintegration of the Antarctic ice shelf and glacial core samples show that the present temperature is the warmest in 500 years and rapidly increasing.

Colonies of Adelie penguins have declined. One Antarctic island has lost half of its 8,000 nesting pairs.

The growth of birch is increasing at the expense of plants that caribou and other wildlife favour as food sources.

Scientists suspect that the tree lines of boreal forest will move north, resulting in

drier forests that burn more often. In addition, insects will proliferate.

The Arctic is also experiencing the warmest weather conditions in 400 years. This is consistent with most climate models, which predict disproportionate warming at the poles caused by higher levels of carbon dioxide and other greenhouse gasses in the atmosphere.

Arctic wildlife is now showing the effects of global warming. The caribou in Northern Canada has been hard hit by deeper snow on winter feeding grounds, a predicted consequence of warmer winter temperatures and a more open Arctic Ocean. Increased snowfall in recent years has also made it more difficult for Alaskan caribou calves to survive.

The sea ice in the Arctic Circle is decreasing at a rate of 37,000 square kilometres per year and is about 40% thinner than it was only 40 years ago, resulting in many disastrous effects on wildlife one of which is a loss of polar bear habitat. Also, it is expected that because of the increased precipitation over parts of the Arctic, there will be an influx of fresh water into the North Atlantic that could cut off the ocean "conveyor belt" that transports heat around the globe and helps govern the Earth's climate.

5th Annual Youth Bios Olympiad

St. Petersburg, Russia
September 18-21, 2000

Bios belongs to the young, and young people from around Russia and other Eastern European countries participated with great enthusiasm in the Fifth Annual Youth Bios Olympiad, held in St. Petersburg, September 18-21. This timely initiative was organised by B.I.O., in collaboration with the Ecological Club for Post-Graduates, Students and School-children of the Baltic/Ladoga Region, and the city and regional authorities of St. Petersburg. Thanks to the unwavering efforts of Professor **Alexander Shishkin**, Head of the Ecological Standardisation Laboratory at the St. Petersburg State Technological University for Plant Polymers, the Fifth Annual Youth Bios Olympiad enjoyed great success.

Participants—ranging from grade-school children to university students—presented a multitude of creative projects on the environment (posters, research papers, art projects). Some of the most popular topics were soil and water protection, ecology, recycling technology, and the economics of environmental conservation. Every year, more than 100 projects are submitted at the Youth Bios Olympiad, and awards are given based on creativity, originality and presentation. For many school children, participation in the Youth Bios Olympiads counts towards their admission to

university or other tertiary education institutions.

Some of the titles of this year's projects included:

- The influence of ethylene on plants growth in big cities
- Wind energy potential in the Gulf of Finland district
- Research in Prioratsky Park
- Ecological research on the soil cover of Rozhdestvenskaya Volost
- Research on the Tajtsy settlement
- Research on the Sjas'kelevo and Tajvorovo settlements
- Research on anthropogenic soil pollution in the town of Gatchina
- Research on the Rozhdestveno settlement. Determination of the volume, activity of γ -radio-active radionuclides in the air
- Heavy metals concentration. Concentration determination in the soils and plants of the "Veteran-5" Gatchina town agricultural area
- Economics research of the Nikol'skoye village park
- The complex examination of school microdistricts in Gatchina town. Food products (tea) and water β, γ -activity determination
- Research on the stratosphere ozone in Central Chernozemje
- Employment of an electrophysical method for the determination of pine tree sustainability to organic toxins
- Possible ways of solving the ecological problems of the Griboedova canal



Continued on page 15



Bio-Legislation—

ues" which needed to co-exist with the economic goals of the common market. This call resulted in the adoption of the first Environmental Action Programme, to be followed by four more. Environmental directives were based on either Article 100 EEC, or on Article 235 EEC, or indeed on a combination of both. The use of Article 100 was given the formal go-ahead by the European Court of Justice (ECJ) in 1980.

The Single European Act then amended the EEC Treaty and initiated the third phase of the EC's environmental policy. Both Article 100A and Article 130R-T now explicitly included environmental competencies. However, the existence of a variety of legal bases for environmental protection led to confusion and to a number of cases in the European Court of Justice.

The Maastricht Treaty not only added environmental protection to the aims of the EC Treaty (Article 2 EC); it also amended the provisions of title VII (Environment).

The Amsterdam Summit

It would seem correct to say that the environment was never high on the agenda of the IGC. Indeed, at first it was unclear whether it would figure on it at all. Member States such as France, Germany, and the UK did not discern a pressing need for environmental issues to be considered in the reshaping of the Treaty. On the other hand, others, especially the Nordic Member States, insisted that the environment be included in the IGC exercise. The inaugural declaration of the Italian Presidency referred to ecological imbalances which were to be addressed by the EU, so as to achieve the goal of "sustainable development." Thus, the environment was part of the IGC talks, but for most Member States it was not a priority.

Nevertheless, "sustainable development" became a Union objective, together with the principle of a high level of environmental protection; the provisions of Article 100A (the environmental guarantee) were clarified; the integration principle was strengthened and all EC environmental legislation will now be

as to the results to be achieved, but allow the national authorities the choice of form and methods.

The Commission has created informal networks of national inspectors to encourage more effective and consistent enforcement. In the environmental area, the Commission has created the **Network for the Implementation and Enforcement of Environmental Law** or **IMPEL**, which serves as an informal forum for senior national environmental inspectors to exchange information and experiences.

In the occupational health and safety area the Committee of Senior Labour Inspectors plays a similar role. This inspectors' committee consists of two representatives of each national labour inspectorate. The inspectors meet twice a year and may issue opinions to the Commission on issues relating to national enforcement and suggest initiatives to the Commission to encourage more effective enforcement of EC law.

Further, as part of the preparation of Central and Eastern European countries for EU accession, the Commission provides technical assistance to candidate members, including assistance on matters relating to the implementation and enforcement of EC legislation.

Ombudsman

In reliance to the Danish model, the office of the EU Ombudsman was established pursuant to the Maastricht Treaty. Article 8d, EC Treaty provides that **every citizen of the Union may apply to the Ombudsman** established in accordance with Article 138e. In accordance with their duties, the Ombudsman shall conduct inquiries for which they find grounds, either on their own initiative or on the basis of complaints submitted to them directly or through a member of the European Parliament, except where the alleged facts are or have been the subject of legal proceedings. Where the Ombudsman establishes an instance of maladministration, they shall refer the matter to the institution concerned, which shall have a period of three months in which to inform the Ombudsman of its views. The Ombudsman shall then forward a report to the European Parliament and the institution concerned. The person lodging the complaint shall be informed of such inquiries. The Ombudsman shall submit an annual report to the European Parliament on the outcome of their inquiries.

However, in practice, neither the Ombudsman nor the Parliament have power, legally, to require the Commission to re-open its procedures under Article 169. Even the Ombudsman, if they were to have found maladministration in the closing of the Article 169 procedure, could have imposed no penalty or mandatory order.

Role of the Commission

The Commission monitors the application of Community environmental law by checking that transposal measures are notified and that they implement directives properly, and by monitoring the application of regulations. The Commission carries out these tasks either on its own initiative or in response to complaints, questions from Members of the European Parliament and petitions received by the European Parliament exposing possible infringements of Community law.

In 1998, the Commission continued to refer environmental cases to the Court of Justice in accordance with Article 171 of

International environmental law

International environmental law is at a very early stage of development and has evolved at a time when the heterogeneity of the international community has rapidly intensified and when economic problems have correspondingly increased and the needs and aspirations of the poorer states have become urgent.

The most important international organisation is the United Nations, with its United Nations Environmental Programme (UNEP). Its purpose is quite broad, because it covers pledges to achieve international co-operation in solving international problems of an economic, social, cultural or humanitarian nature. International organisations have no authority to produce and impose international law and are only a part of the law-making process. Their most obvious key role is that they provide a permanent forum in which state members can engage in a continuous negotiating process to arrive at the compromises necessary to propel the law forward, in situations of different legal, cultural and religious systems and values.

Current Status

The traditional sources of international law are international treaties and customs. However, other texts, such as UN General Assembly resolutions or Declarations, which, in principle, have no binding effect, could be considered at least as guidelines towards a rational interpretation of international environmental law. Treaties must be ratified by states in order to bind them legally. UN General Assembly Resolutions and Declarations have not, in principle, a binding effect. Nevertheless, some strongly support that unanimous resolutions, accompanied by a conform subsequent conduct by the signatory states constitute, at least, a customary rule of law.

Principles

The main principles of international environmental law include:

- ♦ Duty to prevent, reduce and control environmental harm
- ♦ Transboundary co-operation in cases of environmental risk
- ♦ The "Polluter Pays" principle
- ♦ Principles of equal access and non-discrimination
- ♦ Principles of sovereignty over natural resources

In the present state of international environmental law, treaties cover most of the issues pertaining to the protection of the environment, and international organisations, such as the UNEP, constitute an important forum for negotiation between states and for formulating law. Though the evolution in this field has been enormous since the 1972 UNCHE, one can agree with the critics that remark that international environmental law remains preponderantly "soft" in character, unsystematic and insufficiently comprehensive in scope.

European environmental law— implementation and enforcement

The Road to Amsterdam

The first phase of relevance for EC environmental policy covers 1957 to 1972. The 1957 EC Treaty did not contain any specific reference to environmental protection. Articles 43 (agriculture), 75 and 84 (transport), and 113 (common commercial policy) were all specific Treaty provisions which could have triggered action to protect the environment. They were not, however, used in this initial phase. Directives having Article 100 EEC (the common market) as the legal basis did contain some elements of environmental protection.

The 1972 Paris Summit represents the beginning of the second phase. European leaders underlined the so-called "soft val-

International environmental law remains preponderantly "soft" in character, unsystematic and insufficiently comprehensive in scope.



drafted following the improved co-decision procedure.

Today the principle of integration of the environment into Union policies is one of the foundations of the action taken by the Community on the environment. Since the entry into force of the Treaty of Amsterdam, Article 6 of the EC Treaty provides for environmental protection requirements to be integrated into Community policies and activities, with a view to promoting sustainable development.

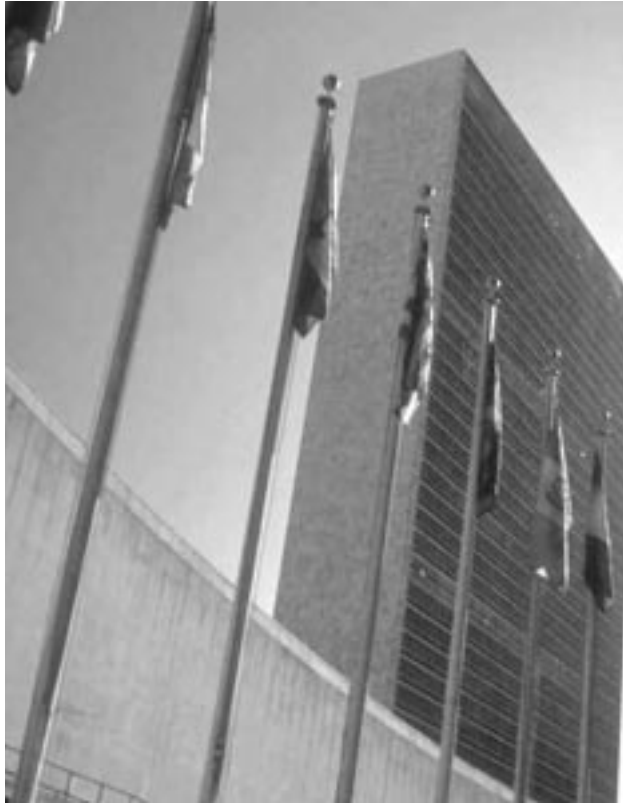
Finally, it reaffirmed the EU's commitment in respect of acceleration of the Rio Process, and identified two objectives of particular importance: the eradication of poverty and the change of consumption and production patterns. A special session of the UN General Assembly (UNGASS) did not however reach consensus on concrete targets for sustainable development.

Institutional securing

Although EC environmental legislation has grown pervasive over the past two decades, the EC's role in enforcement is at most indirect. As is well known, Member States are left with broad discretion in transposing EC directives (the most common form of EC environmental legislation), which are binding

The EC Treaty identifies two objectives of particular importance: the eradication of poverty and the change of consumption and production patterns.

Environmental Law



the Treaty. Article 171 has proved its effectiveness in this instance, since Member States may now be assumed to know that following a judgement given against them for failure to perform their obligations they must come into line without delay.

The Commission's monitoring activity is not confined to actions in the Court nor even to the final pre-litigation stage - the transmission of reasoned opinions and the scrutiny of Member States' responses to them. These are but the final stages of the infringement procedure, whereas many cases are settled without reaching those stages. This phenomenon is particularly common in the environmental field, where a large number of situations to which the Commission's attention is drawn by complaints, parliamentary questions and petitions turn out not to be infringement situations as there is no legal basis in Community law or the allegation by the complainants or petitioners is unfounded in fact or in law. The national administrations engage in extensive correspondence and regular contacts (package and ad hoc meetings) with the Commission, which thus exercises its function of watchdog of Community environmental law.

Liability for damage to nature is a prerequisite for making economic actors feel responsible for the possible negative effects of their operations on the environment.

On 16 December 1998 the Commission adopted a proposal for a Council Recommendation providing for minimum criteria for environmental inspections in the Member States. The proposal is based on a study prepared by the IMPEL network (Implementation and Enforcement of EU Environmental Law) and sets out guidelines for inspections, consisting of minimum criteria for organisation, operation, monitoring and publicity. The Recommendation would apply to environmental inspections of industrial and other plant emitting pollutants and discharges that require authorisation; this includes nuclear installations with research and medical facilities. The aim is to boost the monitoring of the application of Community law in national legislation and ensure that Community environmental legislation is evenly applied in all the Member States.

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What the future holds for environmental protection in the EU

Environmental liability

These days, we are confronted with cases of severe damage to the environment resulting from human acts. The recent incident with the Erika Petroleum tanker resulted in a large contamination of the French coast and the suffering and painful death of several hundred thousand sea birds and other animals. This was by far not the first case of an oil spill at sea with terrible consequences for the environment.

Some years ago, a catastrophe of a different kind happened near the Donana nature reserve, in the South of Spain, when the breach of a dam containing a large amount of toxic water caused enormous harm to the surrounding environment, including innumerable protected birds.

Last, but not least, in January 2000, a ruptured dam resulted in a cyanide spill in the Szamos and Tisza rivers in Romania and Hungary, that caused an immeasurable environmental catastrophe to the surrounding riparian areas and, subsequently, to the Danube.

These and other similar events raise the question of who should pay for the costs involved in the clean-up of the pollution and the restoration of the damage. Should the bill for this be paid by society at large, in other words, the tax payer, or should it be the polluter who has to pay, in cases where the polluter can be identified?

White Paper

A White Paper issued by the Commission (February 9, 2000) sets out the structure for a future EC environmental liability regime that aims at implementing the "polluter pays" principle. It describes the key elements needed for making such a regime effective and practicable. Not all forms of environmental damage can be remedied through liability. Therefore, liability can be applied, for instance, in cases where damage results from industrial accidents or from gradual pollution caused by hazardous substances or waste coming into the environment from identifiable sources.

However, liability is not a suitable instrument for dealing with pollution of a widespread, diffuse character, where it is impossible to link the negative environmental effects with the activities of certain individual actors. Examples are effects of climate change brought about by CO₂ and other emissions, forests dying as a result of acid rain and air pollution caused by traffic.

Environmental liability is a way of implementing the main principles of environmental policy enshrined in the EC Treaty (Article 174(2)), such as the polluter pays principle. If this principle is not applied to covering the costs of restoration of environmental damage, either the environment remains un-restored or the State, and ultimately the taxpayer, has to pay for it.

Therefore, a first objective is making the polluter liable for the damage he has caused. If polluters need to pay for damage caused, they will cut back pollution up to the point where the marginal cost of abatement exceeds the compensation avoided. Thus, environmental liability results in prevention of damage and in internalisation of environmental costs. Liability may also lead to the application of more precaution, resulting in avoidance of risk and damage, as well as it may encourage investment in research and development for improving knowledge and technologies.

Polluter pays

In order to make the "polluter pays" principle really operational, Member States should ensure effective decontamination and restoration or replacement of the environment in cases where there is a liable polluter, by making sure that the compensation which he has to pay will be properly and effectively used to this end.

If liability exerts the preventive effect described earlier and restoration is ensured when damage does occur, it should also improve compliance with EC environmental legislation. Therefore, the link between the provisions of the EC liability regime and existing environmental legislation is of great importance. Whereas most Member States have introduced national laws that deal with strict liability for damage caused by activities that are dangerous to the environment in one way or another, these laws are very different in scope and often do not cover in a consistent way all damage caused by activities that are known to bear a hazard for the environment. Moreover, these liability regimes are only operational with respect to damage to human health or property, or contaminated sites. Generally, they are not applied to damage to natural resources. It is therefore important that an EC environmental liability regime should also cover damage afflicted upon natural resources, at least those that are already protected by EC law, namely under the Wild Birds and Habitats Directives, in the designated areas of the Natura 2000 network. Member States should ensure the restoration of damage to these protected natural resources in any event, also in cases where a liability regime could not be applied (for instance, if the

polluter cannot be identified), since this is an obligation under the Habitats Directive. The preventive effects of liability should have a boosting effect in an enlarged Union, thus facilitating the implementation of environmental rules by new Member States.

The proposed regime should not only cover damage to persons and goods and contamination of sites, but also damage to nature, especially to those natural resources that are important from a point of view of the conservation of biological diversity in the Community (namely the areas and species protected under the Natura 2000 network). So far, environmental liability regimes in EU Member States do not yet deal with that.

So far, operators seem to feel such responsibility for other people's health or property - for which environmental liability already exists, in different forms, at the national level - rather than for the environment. They tend to consider the environment a "public good" for which society as a whole should be responsible, rather than an individual actor who happened to cause damage to it. Ultimately, liability is a certain way of making people realise that they are also responsible for possible consequences of their acts with regard to nature. This expected change of attitude should result in an increased level of prevention and precaution.

Main features

Possible main features of a Community regime are outlined, including: no retroactivity (application to future damage only); coverage of both environmental damage (site contamination and damage to biodiversity) and traditional damage (harm to health and property); a closed scope of application linked with EC environmental legislation: contaminated sites and traditional damage to be covered only if caused by an EC regulated hazardous or potentially hazardous activity; damage to biodiversity only if protected under the Natura 2000 network; strict liability for damage caused by inherently dangerous activities, fault-based liability for damage to biodiversity caused by a non-dangerous activity; commonly accepted defences, some alleviation of the plaintiffs' burden of proof and some equitable relief for defendants; liability focused on the operator in control of the activity which caused the damage; criteria for assessing and dealing with the different types of damage; an obligation to spend compensation paid by the polluter on environmental restoration; an approach to enhanced access to justice in environmental damage cases; co-ordination with international conventions; financial security for potential liabilities, working with the markets.

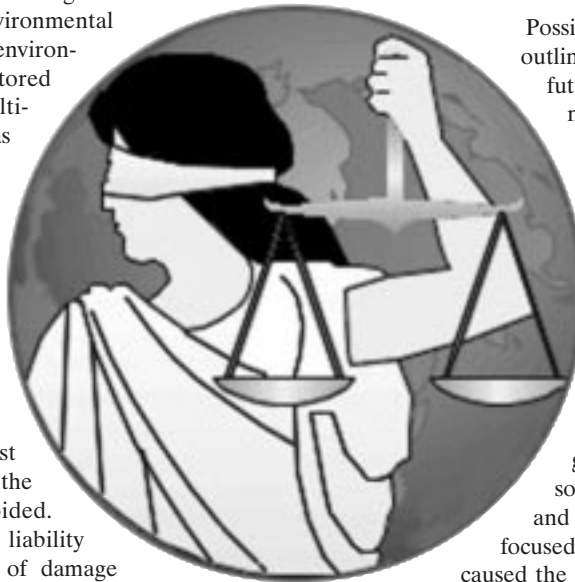
Different options for Community action are presented and assessed: Community accession to the Council of Europe's Lugano Convention; a regime covering only transboundary damage; a Community recommendation to guide Member State action; a Community directive; and a sectoral regime focusing on biotechnology. Arguments for and against each option are given, with a Community directive seen as the most coherent. A Community initiative in this field is justified in terms of subsidiarity and proportionality, on grounds including the insufficiency of separate Member State regimes to address

It is important that an EC environmental liability regime should also cover damage afflicted upon natural resources.

all aspects of environmental damage, the integrating effect of common enforcement through EC law and the flexibility of an EC framework regime which fixes objectives and results, while leaving to Member States the ways and instruments to achieve these. Effectiveness of any legal liability regime requires a workable financial security system based on transparency and legal certainty with respect to liability. The regime should be shaped in such a way as to minimise transaction costs.

The White Paper concludes that the most appropriate option would be a framework directive providing for strict liability for damage caused by EC regulated dangerous activities, with defences, covering both traditional and environmental damage, and fault-based liability for damage to biodiversity caused by non-dangerous activities. The details of such a directive should be further elaborated in the light of consultations. The EU institutions and interested parties were invited to discuss the White Paper and submit comments by 1 July 2000.

EU Member States have a discretion as to how they implement Directives. This usually involves either adopting or changing legislation, but exceptionally nothing need be done if existing legislation is sufficient



Bio-Architecture



Architecture and Urban Planning

Many of the European city problems could be resolved by paying greater attention to the environment. Architecture and urban planning which are based on environmental preservation are the only option for maintaining quality of life and preventing lasting environmental damage. Pollution reduction, waste minimisation and energy conservation can be furthered through environmentally-friendly urban design and construction. Awareness of these issues and information on possible opportunities existing world-wide are vital to the development of new possibilities and new scopes in restructuring urban and agricultural areas, as well as human settlements in general.

The environment is an endless source of inspiration. "Bio-architecture" links the appreciation of the environment and biodiversity with urban design and planning. A "Biopolis," as promoted by B.I.O. since its inception in 1985, is the manifestation of this appreciation and functions as a model for the harmonious co-evolution of humanity with the bio-environment. It is based on the application of clean energy sources (solar, wind, hydrogen, etc.), cleaner production and environmentally friendly materials, and aims at creating a self-sufficient, aesthetically pleasing urban environment with minimal waste generation and with an active participation of every member of society in the protection of bios.

Diplomacy

Pollution does not discriminate along national boundaries, therefore the environment is possibly the strongest link in international co-operation. Especially where issues of "transborder pollution" are concerned, the need for internationally agreed upon preventative policy is crucial. Diplomacy can encourage international co-operation in environmental protection to enable countries not only to control, but also to promote the eradication of environmental deterioration, through international co-operation and the sharing of experiences and know-how. The role of the European Union in major international environmental fora (Rio, Kyoto etc.) can be crucial, as it can make a significant contribution to the reversal of global climate change and the implementation of Agenda 21.

"Bio-diplomacy" aims at pursuing environmental goals through diplomatic channels. It contributes to preserving the natural environment and the great wealth of bios. Diplomats of all ranks and nations should be able to appreciate the great importance of this task and make the best possible use of all the levels of power at their disposal. The co-ordinated pursuit of bio-diplomacy at the international, national, regional, and local level, will undoubtedly provide for increased co-operation among people across all dividing lines.

The management of international water resources poses a major challenge for the world community, and bio-diplomacy can prove decisive in this field. Since most water

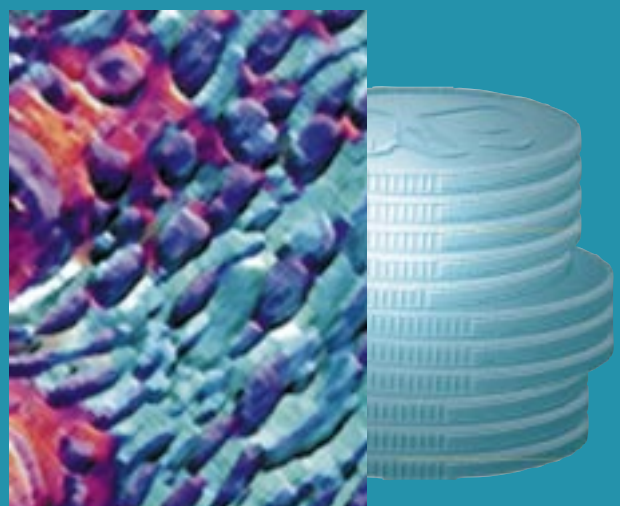
Bio-Diplomacy



Bio-Sy for European Enviro

*Bio-Syllabus for European Environmental Education is an example of B.I.O.'s outreach concepts in public education, administration, diplomacy and business. Its purpose is to...
sional initiatives. Topics include architecture, diplomacy, economics, energy, ethics, legi...
and a comprehensive selection of educational articles on the environm...*

Bio-Economics

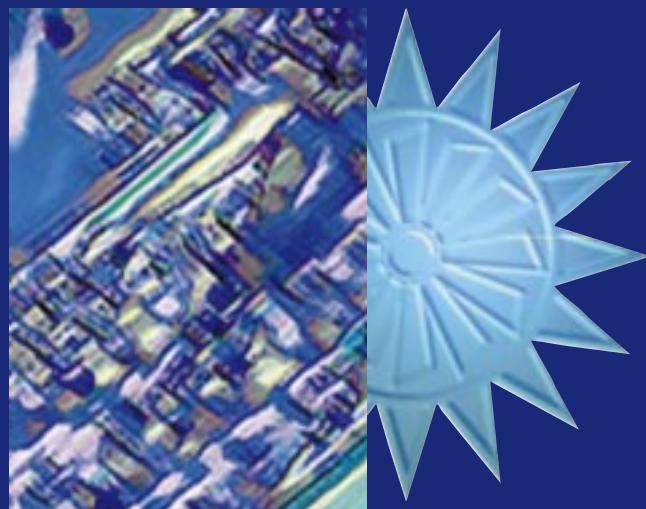


resources are finite, it is becoming increasingly complex to manage them on a renewable basis. The development of efficient plans is crucial to our survival on this planet and should become a priority issue in international relations.

Economics

The emerging Monetary Union ascertains the future requirements for Europe. While we are becoming interested in economic growth, there is also an increased awareness of the need for environmental preservation and a better quality of life. To support the European Union Fifth Environmental Action Programme's "Towards Sustainability" strategy, economic instruments must be encouraged to adopt environmentally friendly production processes and environmental management schemes such as EMAS. The long-term goal of transforming the European economy into one whose devel-

Bio-Energy



opment will be sustainable for generations to come can be achieved via sustainability promoting economic policies in industry, energy, transport, agriculture and regional development.

People today are realising that economic projects on all levels cannot be carried out for the sole sake of gaining maximum monetary profit. Important measures have been taken world-wide in an attempt to minimise the deleterious effects of the economy on the environment and communities around us. The world economy is now at the point of radically changing its attitude towards environmental preservation. This will undoubtedly entail significant changes in the system of economic values, and corporate leaders are encouraged to introduce bios-oriented values into their activities. The value-system shift in economics consists in essence of the substitution of the previous pollution control (pollute-and-compensate) doctrine by new pollution-prevention and environment-economy harmonisa-

tion (pollute-not) strategies, commonly referred to as cleaner production. Complementary to this is renewable energy, which enables us to prevent the depletion of conventional energy resources. Renewable energy also means creating less pollution.

Energy

The sustainable production and use of energy poses some important challenges to the development of European environmental policy. Among the issues of great interest are the increasing role of renewable energy resources, the reduction of energy consumption, environmental taxes on emissions related to energy production (carbon emissions) and the changes in the lifestyle of European citizens necessary to ensure a sustainable use of energy.

Until quite recently, technological progress relied heavily on the extensive exploitation of fossil fuels, such as coal, oil, gas and, in the last decades, uranium. Now, considerable efforts are being made to economise these non-renewable

Bio-Ethics



energy resources and to decrease the environmental pollution caused by their consumption. It is one of the basic objectives of B.I.O. to sensitise experts in the field of energy who in turn will look for alternative sources of energy, thereby removing the "dependency" on non-renewable resources in order to achieve a sustainable world economy. In this context, considerable importance has been attached to the research and development of alternative renewable and environmentally-clean energy sources, such as semi-conductor solar batteries, wind energy, hydrothermal energy, fusion energy, as well as energy obtained with the use of living organisms and bio-energy.

Ethics

Human actions are altering environmental properties in processes in ways that have many unknown implications. Recent evidence that human intervention is seriously threatening life on our planet adds urgency to the need for "environmental ethics" to help society re-evaluate priorities and take action against negative trends. The EU sets guidelines for development which meets the needs of the present without compromising the ability of future generations to meet their own needs. Within this framework, a moral background based on environmental appreciation and respect would guarantee a society made up of responsible and affected citizens. The development of ethical guidelines for environmental protection should be researched and implemented in Europe in a timely manner.

Bio-ethics is an essential part of Biopolitics, aimed at maintaining and promoting bios - life. It is primarily concerned with the ethical issues pertaining to all forms of life. In this way, bio-ethics supplements bio-legislation, which deals with the legal problems associated with bios. In many instances, bio-ethics and bio-legislation should be used in concert; for example, genetic engineering has raised issues with both legal and ethical dimensions. Bio-ethics can be considered both a conceptual science with a philosophical dimen-

Syllabus Environmental Education

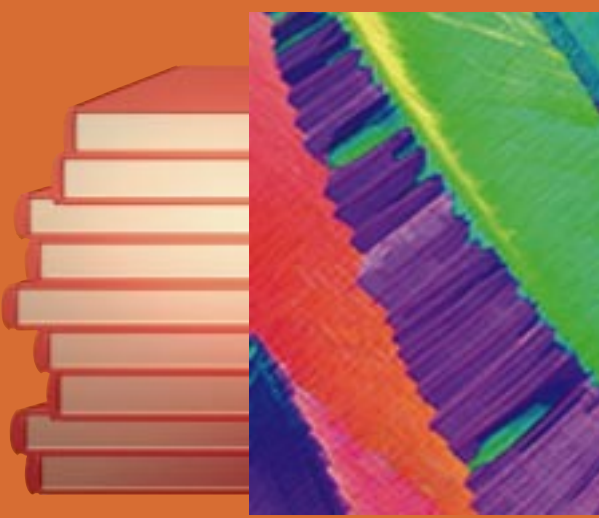
Environmental education in practice. B.I.O. has prepared it to be used for the promotion of biocentric education and to demonstrate how environmental principles apply to a plethora of disciplines and professional fields: health, history, technology and tourism. It combines text, audio-visual material, and content contributed by leading experts from over 110 countries world-wide.

sion and, at the same time, a direction for action. It is closely related to the principle of reverence for life. Of paramount importance for bio-ethics is the philosophical idea that any individual, any form of bios is of unique, absolute value. How then can we reconcile our existence as human beings on this planet with the rapid deterioration of the environment?

Legislation

Integration of environmental dimensions in all major policy areas is a key factor. Environmental protection targets can only be achieved by involving those policy areas causing environmental deterioration. Only by replacing the command-and-control approach with shared responsibility between the various actors, eg. governments, industry and the public, can commitment to agreed measures be achieved. International Environmental Legislation is a crucial element in the implementation of such policy. Although Principle 10 of the Rio Declaration proclaimed that all people should

Bio-History



and human rights concerning access to healthcare are becoming the pivot points of debates and legislative frameworks. In this effort, consideration should be given to the role the environment can play in determining the future of humanity, and decisions should be based on the interdependence among all forms of life. The biomedical implications arising from the advancement of science, and concerns over pollution and dwindling natural resources cannot be treated in isolation. The environment as a common point of reference provides a powerful link for the comprehensive treatment of the challenges we face.

History

Under the influence of our developing civilisation the environment has been drastically changed. These changes have given rise to a new milieu to which humanity itself,

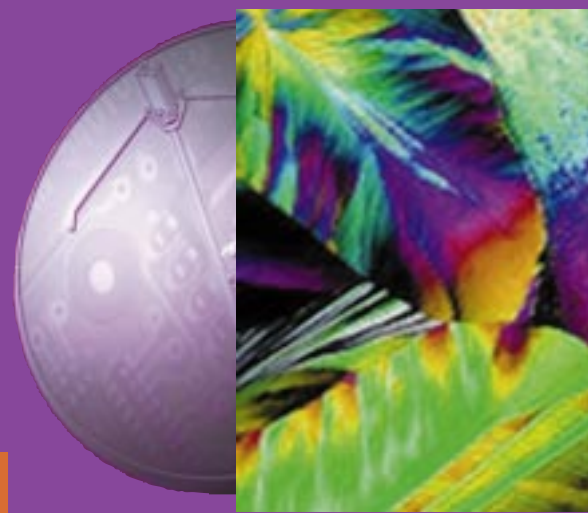
Bio-Legislation



which has caused these changes, has not adapted. However, in order to survive and to protect the environment, we must now find a way not only to adjust to the changes in the environment, but also to compensate for the deleterious effects of our activities. By establishing close links between biological evolution and human history, we can face the challenges of a new era and establish harmonious relations with the environment in order to overcome the serious environmental problems of our times. Native cultures, languages and ethnicity were, and still remain, an important component of European environmental diversity. The European perspective, as promoted by the Fifth Environmental Action Programme, involves economic and social development for current and future generations which ensures the continuity of our ecosystems.

A major direction for bio-history concerns the interactions between the biosphere and humankind in different historical eras. It also concerns the ways that the environ-

Bio-Technology



ment has influenced the evolution of human civilisation. Environmental consciousness in the course of human history can be distinguished by a direct focus on practical action, the progress of mythology, the philosophical interpretation of the natural world and an integrated conception of the bio-environment. In the bio-historical context, the modern phase of bio-history is characterised by highly developed science, technology, and culture, but also by environmental problems and issues.

Technology

Technology expands human potential but can also have disastrous consequences for the state of the environment and life on our planet. Technological development that proceeds without concern for its impact on the environment is not viable. New technologies that prevent pollution, rely on clean energy sources and encourage resource conservation should be further researched and pursued. Moreover, progress in every field of human endeavour should be evaluated in terms of its contribution to environmental appreciation and protection. Policy on industry-related risks, scientific research in and development of clean technologies and nuclear safety and radiation protection, must be implemented globally.

The "bio-assessment of technology," as promoted by B.I.O. since 1985, involves a thorough re-evaluation of priorities in technology and the development of initiatives that respect and help the environment. These initiatives include environmentally-friendly technology, as well as progress in genetic engineering and biotechnology, which should, however, always be carried out with the aim of protecting every form of life on our planet.

Tourism

Tourism is one of the most rapidly developing industries world-wide. The European Union promotes environmentally-friendly tourism and encourages environmental impact assessment as one of its major integration policies. Within this framework, it is important to stress environmental and cultural appreciation in tourism, and to further activities that promote an international exchange of experiences on the basis of environmental preservation.

The environment recognises no boundaries and brings people together in a common cause. The infinite biodiversity of our planet can be cherished through conscious efforts to turn travel and tourism into initiatives for a global appreciation of bios. Cultural diversity, tradition, history and "mythos" can become the cornerstones of a new form of tourism: bio-tourism. Bio-tourism is not just a conventional travel plan. It is a way to explore the world's natural and cultural heritage. Through knowledge comes appreciation and through appreciation strong ties and friendship can be established. Bio-tourism operates outside political and national divides. It is a vehicle for peace based on co-operation and mutual understanding.

Bio-Tourism



Bio-Health



have "effective access to judicial and administrative proceedings, including redress remedy," there has been a growing recognition that environmental justice cannot be achieved without effective international legislation dedicated to addressing environmental issues. After well-documented environmental disasters, such legislation is not a mere aspiration but indeed a necessity. The integration of the environment into all aspects of European and global policy and the issue of environmental liability are therefore priorities.

The central concept of bio-legislation is to link the protection of bios rights to the defence of the rights of future generations. Furthermore, bio-legislation acknowledges that in addition to "human rights" there exists a series of "human obligations" geared toward our common responsibility to preserve the environment and improve quality of life on a global level. It is therefore essential for international legislation to make explicit reference to the protection of bios on our planet and for current environmental acts to be expanded upon and re-evaluated.

Health

The environment is the single most important factor influencing human health. Soil and air pollution, water contamination and inadequate food production, due to soil erosion and acidification, are just a few agents that can prove detrimental to public health and all stem from poor environmental management. Without proper understanding of the urgent need to halt environmental deterioration, it will be impossible to counter these threats. Since modern medicine stresses prevention as superior to treatment, efforts should focus on eliminating the sources of pollution, and establishing a "healthy" and clean environment. In relation to the specific themes of the EU Fifth Environmental Action Programme, there has been progress in a number of areas: reduction of ozone depleting substances, emissions of heavy metals and sulphur dioxide, improvements in approaches to nature protection, surface water quality, industry-related risks and waste.

Public health issues, scientific research appropriateness



Bio-Health

The rapidly changing, chemicalised and polluted world of today is resulting in the human body's increasing inability to cope with substances in the environment. In view of growing environmental concerns, nutrition has been challenged in an unprecedented way to reconsider its basic tenets. Environmental medicine, clinical ecology, toxicology, molecular biology, and genetics are all evolving to meet these challenges, providing new insight for understanding nourishment. Irradiation, use of additives and pesticides, packaging, organic farming, sustainable agriculture, deforestation and genetically modified foods are rapidly becoming issues of global importance for public health.

The further we extend nutrition out into the environment, the closer we are going to get to molecular events inside our cells. Nutrition is the governing factor in the microenvironment of the cell. What we eat directly influences the behaviour and metabolism of our cells, which are called upon to use and excrete the substances we provide them with through the foods we consume. The more we think about nourishment as a process directed at the planet as well as the body, the healthier we are all going to be. A healthy environment is a prerequisite for a healthy human population.

Air pollution

Most common forms of air pollution irritate our eyes, throat and lungs. Burning eyes, coughing or tightness of the chest is common with exposure to high levels of air pollutants. Responses to air pollution vary greatly in different people. Fortunately, for most healthy people, the symptoms of air pollution exposure go away as soon as the air quality improves. However, people with heart or lung disease react more severely to polluted air. During times of heavy pollution, their condition may worsen to the point that they must limit their activities or even seek additional medical care. Children probably feel the effects of pollution at lower levels than adults. They also experience more illness, such as bronchitis and earaches, in areas of high pollution than in areas with cleaner air.

Air pollution is the source of many harmful materials in the human bloodstream and may enter through the nose, mouth, skin, and the digestive tract. While carrying beneficial substances, such as oxygen, blood can also carry toxic substances to all of the body's organs as well, making every organism vulnerable to environmental poisoning. The central nervous system is

In the United States alone, air pollution kills over 50,000 persons a year—a death toll higher than that of traffic accidents, breast cancer, or AIDS. European air pollution levels equal or exceed those of the United States.

a primary target for many serious air pollutants, such as lead, which is a major environmental hazard. In some cases, the harm inflicted by air pollution on the human body is clear and direct; in others, it weakens the body, leaving it susceptible to other ailments. In the United States alone, air pollution kills over 50,000 persons a year—a death toll higher than that of traffic accidents, breast cancer, or AIDS. European air pollution levels equal or exceed those of the United States. In China, India, Thailand and other industrializing nations, air pollution is so great it is literally palpable.

There are six main air pollutants and each can cause serious health problems. Although the effects depend on many factors, generally, higher concentrations of pollutants and longer exposure to that pollutant result in a greater chance of serious health problems. Particulate matter is a mixture of several harmful substances which are grouped together because they can stick to very small particles of dust. Due to their extremely small size, people breathe them into the deepest part of the lungs where they have a severe impact on lung function. Ozone is usually referred to as smog. When people breathe air with higher levels of ozone, it makes them cough, become short of breath, and feel tightness in the chest. It can also irritate the nose, throat and eyes. If people are exposed to higher levels of ozone in the air for a long time, it can cause lung scarring and emphysema. Sulfur Dioxide and Nitrogen Dioxide are two dangerous pollutants that have similar health effects because both seriously irritate the lungs. In high concentrations, they cause very severe breathing difficulties and respiratory paralysis. Lead, a metal used to boost the power of gasoline, destroys the intelligence of children and can increase blood pressure in adults, raising the risk of heart attack and stroke. It affects almost every organ of the body, particularly the nervous system. At higher levels it can damage the kidneys and the immune system, and can cause cancer in animals. Carbon monoxide is an invisible gas that limits the amount of oxygen in the blood. Its most critical effects are on breathing, the circulatory and central nervous systems. In moderate concentrations, it makes people dizzy and causes headaches. In people sensitive to its effects, it can cause strokes or heart attacks.

Children born near sources of atmospheric and industrial

pollution are about 20% more likely to die of leukemia and solid tumor (nonblood) cancers before they reach adulthood. Infants exposed to polluted air are at greater risk of dying from respiratory problems during the first year of life. There is a real, positive association between air pollution and postneonatal respiratory mortality.

Climate change

Human induced changes in the global climate system and in stratospheric ozone pose a range of health risks. Irrespective of any actions that might be taken to reduce or halt environmental changes, humans will be exposed to some degree of climate change and increased ultraviolet radiation over the coming decades. Scientists estimate that average global temperature is likely to increase by one to 3.5 degrees centigrade by the year 2100. This increase in temperature will have an impact on human health along with other ecological and demographic changes.

It is anticipated that climate change and stratospheric ozone depletion will create a range of health problems. Some will result from direct effects such as heatwave-related deaths and skin cancer induced by ultraviolet radiation. Other direct effects of climate changes would be the impact of the hotter temperatures themselves.

People with heart problems are vulnerable because one's cardiovascular system must work harder to keep the body cool during hot weather. In addition, climate change is expected to alter the frequency, timing, intensity and duration of extreme weather events such as tornadoes, hurricanes and extremely heavy rainfall. Direct results of these events are injury or death. It has also been estimated that for every 1% decrease in

stratospheric ozone, there will be an increase in cataracts by about 0.6%. UV-B may also play a role in causing or exacerbating other eye disorders. Indirect effects will result from disturbances of complex physical and ecological processes such as changes in patterns of infectious disease, drinking water supplies, and agricultural yields. Other effects include post-traumatic stress disorder and contamination of drinking water from flooding. Some health effects may become evident within the coming decade, others will take longer.

A few decades ago, the western world began to believe that exposure to the sun promotes health. The dangers of general exposure came more clearly into view as sun-seeking habits

became more widespread. The longer-term effects of exposure to the sun involve the accumulated dose of exposure, usually over a period of years. Small quantities of ultraviolet-B radiation (UV-B) are essential to human health, acting as a catalyst in the generation of vitamin D. Large amounts of UV-B, however, are harmful to a wide range of biological systems. The key human health effects from exposure to UV-B include skin cancer, cataracts, and immunosuppression. The deleterious effect of UV-B on human beings is related to prolonged, deliberate, as well as inadvertent sunlight exposure, which leads to the development of nonmelanoma

skin cancer and malignant melanoma of the skin. The development in some individuals of skin cancers are of three major kinds: basal-cell cancers (nonmelanoma), squamous-cell cancers (nonmelanoma), melanomas.

Skin cancers

The causative role of damaging ultraviolet radiation in the development of nonmelanoma skin cancer of the exposed areas is indisputable and is based on latitude dependence and high incidence in a susceptible population. The susceptible population includes white, fair-skinned persons who sunburn easily and who receive prolonged occupational or recreational exposure. Occupations such as farming which involves greater accumulated exposures, should show higher incidences. Skin cancers should be heavily concentrated on the parts of the body most exposed to the sun. New data indicates that for a 1% depletion of ozone, the overall incidence of non-melanoma skin cancer will increase by about 3%.

Food and biotechnology

Agricultural chemicals are the basis in order to produce increases in productivity over the last fifty years. The synthetic chemical pesticide industry that emerged in the 1950's offered farmers miracle chemical compounds to control pests and enhance yield. Chemical pesticides were cheap, effective in small quantities, easy to apply, and widely toxic. The results are well known. Widespread adoption of chemical pesticides contributed to unprecedented increases in crop yields, but also resulted in the poisoning of farmworkers and rural residents, contamination of food and drinking water, destruction of wildlife habitats, and decimation of wildlife. From the long-term perspective, agricultural chemicals have turned out to be less than miraculous.

Today, biotechnology could be used to support an agricultural system based on the principles of ecology, stability, and sustainability. Or it can serve as another aspect of conventional, industrial-style agriculture. Biotechnology is being shaped within the same social context and value system that led to chemical dependence. The same agricultural companies that developed and promoted chemical-style farming, are now proclaiming biotechnology as the route to sustaining high yields, while reducing our dependence on chemicals and the problems created by this dependence. Millions of dollars are invested in research to create genetically engineered plants, animals, and



Air, Soil, Water



Water

Society's demands on water resources and pollution by wastes diminish their ability to support beneficial uses, whether for drinking, recreation, cooking, irrigation, food production, industry, navigation, or as a vital part of the natural environment at the centre of biodiversity. Lack of sustainability and ineffective systems contribute considerably to aggravate the current status of the water supply and sanitation sector: close to a billion people do not have access to an adequate supply of safe water and lack a sanitary means of excreta disposal. Contamination of distribution pipelines due to intermittent supply, low water pressure in the distribution network, inadequate wastewater collection systems and leaking pipes are also common problems in developing countries. If measures to ensure the sustainability and organization of facilities were implemented, it would bring about improvements in health. One in seven Europeans do not have access to safe drinking water. Cholera, typhoid fever and hepatitis A are making a comeback in some countries. Access to safe drinking water cannot be taken for granted, especially not in

eastern Europe. Each year in Latvia, several hundred cases of hepatitis A and bacterial dysentery are reported and attributed to contaminated drinking water. Numerous outbreaks of typhoid fever, hepatitis A and bacterial dysentery have been reported across Europe in the past decade. In Sweden, there have been roughly 27,000 people affected by water-borne illnesses during the past 10 years.

Arsenic in drinking water

Arsenic is a natural part of the earth's crust in some parts of the globe and may be found in water, which has flowed through arsenic-rich rocks. In Bangladesh, West Bengal (India) and elsewhere, most drinking water used to be collected from rivers

microorganisms to repel pests, make fertilizers, and enhance yield. Herbicide-tolerant crops represent a simple strategy for chemical companies to market more of their herbicides. Studies link various weedkillers with cancer, nervous disorders, behavioral changes, and skin diseases in humans and animals. In addition to poisoning farmworkers who handle herbicides, weed killers enter groundwater and other drinking water supplies, contaminate food, and destroy wildlife and their habitats.

Throughout Europe and Asia, a growing number of scientists, elected officials, and activists have sounded the alarm over bioengineered agriculture. Japan, the largest importer of American crops, is now considering mandatory labeling of products. Some European nations have stopped buying U.S. corn in order to stop any gene-altered grain at their borders.

Dioxins

Experts have warned of the dangers of high-fat foods that lead to heart disease or cancer. Studies show that they may also contain a dose of highly toxic chemicals. Dioxins are getting into food supplies at levels that are highest in high-fat foods, and lowest in low-fat foods such as fruits and vegetables.

Dioxin is a toxic waste product formed when municipal and hazardous waste is burned, and when chemicals containing chlorine, such as pesticides and paper products, are manufactured. Once an animal has eaten these toxic chemicals that are in the environment as a by-product of industrialization and incineration, they accumulate in the fat. Besides cancer, minute amounts of these chemicals have been shown to lead to nervous system and liver damage, as well as to mimic hormones that disrupt reproduction and human development. Developing fetuses and infants are most at risk from the effects of dioxins. In just six months of breast feeding, a baby in the United States will, on average, consume the EPA's maximum lifetime dose of dioxin.



and ponds with little or no arsenic. Due to the fact that contaminated water transmits diseases such as diarrhoea, dysentery, typhoid, cholera and hepatitis, wells were drilled for the provision of safe water. The consequences of this act were unexpected. Water was poisoned with arsenic found in the underground rocks. Drinking arsenic-rich water over a long period is unsafe and in some countries around the world the health effects are well recognised. However, delayed effects from arsenic poisoning, the lack of common definitions and poor reporting, and local awareness in affected areas are major problems in determining the extent of the arsenic-in-drinking-water problem and developing adequate solutions.

Arsenic poisoning is an unfamiliar problem that may affect a very large number of people and cause dramatic future health effects as a result of water already consumed. The number of people drinking arsenic-contaminated water has increased over the past 25 years due to well-drilling and population growth.



Nutrition

Genetic engineering—Food for thought

The recent spotlight on genetically modified foods and public attitudes towards them has revealed some fundamental misunderstandings about what genes are and what they do. Many people are confused over the function of genes and do not realise that they are consumed everyday as part of our normal diet.

Genes are found in almost every cell of all plants and animals. They are units of inheritance composed of DNA and are transmitted from parents to offspring during reproduction. Consequently, every time we eat a plant or animal, we ingest millions of genes and thus the DNA they are made of. They have no effect on us however, because they are broken down as the food is digested or, if they are contained in resistant structures, like seeds, they pass unchanged through the body and are excreted.

There is no reason to believe things are any different for genes in genetically modified foods. Even though certain changes are introduced to the genes, the building blocks of DNA

are exactly the same. This doesn't mean, however, that gene-altered foods should be any easier to swallow, or any less risky. Research suggests that genetic engineering of food products could create unexpected new allergens or contaminate products in unanticipated ways, resulting in threats to public health. In addition, many scientists fear that bioengineered crops could spark widespread environmental damage, creating insecticide-resistant bugs and herbicide-resistant "superweeds."

Humans have been genetically manipulating food for centuries. Traditional plant breeding could be called a form of genetic engineering. Farmers routinely select strains of crops for desirable characteristics, such as higher yields, disease resistance, and more pleasing textures or colours. But there is one key difference: In traditional plant breeding, genes are mixed between plants that are closely related, if not virtually identical, from a genetic standpoint. The protests over genetically engineered foods centre instead on the potential hazards of "clipping" a gene sequence from the DNA of one plant or animal species - using specialised enzymes as the scissors - and then inserting it into the DNA of another species. The problem with such gene splicing, say some leading scientists, is that transferring genes between different plant species - or even between animals and plants - can change the characteristics of crops in unintended and perhaps dangerous ways.

Gene-altered crops may endanger human health in several ways. New crops could produce unexpected allergens, or chemicals that can interfere with enzymes or hormones in the body. In a case of genetically modified soybeans - one of the earliest attempts at modified foods - DNA from Brazil nuts was used. People allergic to Brazil nuts unsuspectingly developed allergic reactions to the beans. One of the most disturbing prospects, however, is that engineered proteins from living things that humans have never consumed will end up on our plates, and that some could trigger heretofore unknown health effects.

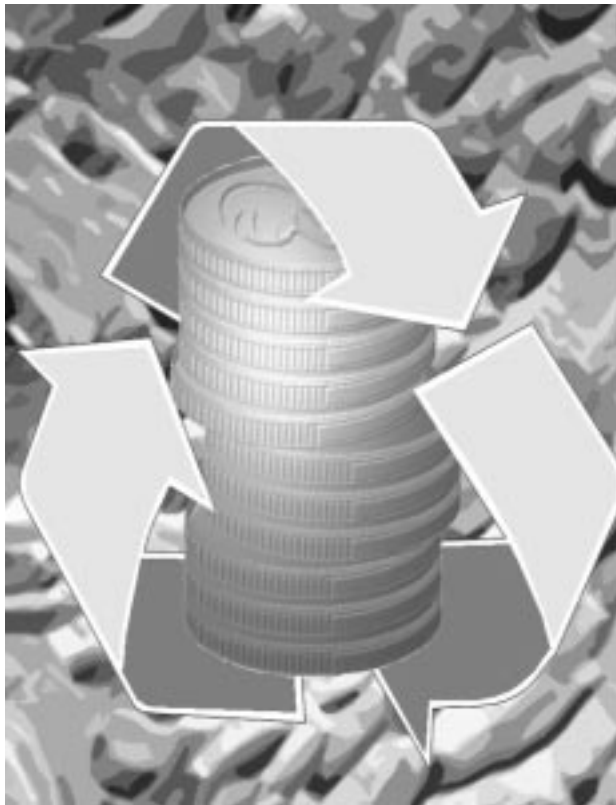
Tampering with crops might also cause unintended damage to ecosystems. Scientists from Cornell University in the USA reported that pollen from genetically engineered corn could escape from farm fields, settle on nearby milkweed plants, and kill the larvae of beneficial insects, such as monarch butterflies that feed on milkweed.

Recombinant DNA technology is an inherently risky method for producing new foods. Its risks are in large part due to the complexity and interdependency of the parts of a living system, including its DNA. Wedging foreign genetic material in an essentially random manner into an organism's genome necessarily causes some degree of disruption, and this disruption could be multifaceted.

The danger lies mostly in how little we know. It is impossible to predict what specific problems could result in the case of any particular genetically engineered organism. Progress cannot be halted but, through the bio-assessment of technology, it can be steered in the right direction. It is therefore imperative that a biocentric ethical framework be set, to guide this promising and helpful technology on a course that will benefit humanity and the environment as a whole.

In preparing this article, information from www.motherjones.com and www.EUFIC.org was used.

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Bio-Economics

Bio-Management and Recycling

dictates current rates and financial planning for recycling initiatives. Recycling of household waste ultimately depends on:

- ♦ a sufficient supply method
- ♦ secure and stable markets
- ♦ adequate legislation
- ♦ the collection method
- ♦ separation and clean-up
- ♦ consumer participation
- ♦ consumer education

Consumer behaviour

An immensely important aspect of recycling is that it requires for its success a healthy involvement from all different sections of society (industry, consumers, government etc.). Consumer behaviour is a basic element that affects whether a recycling scheme is effective or not. Consumer behaviour is in its turn affected by a wide range of different factors, some of which are discussed below.

Education and information strategies

The introduction of information and prompting strategies has displayed significantly increased participation rates and recovery rates. Often however, when interventions relating to prompts and information strategies are removed, behaviours can change and participation/recovery rates may fall back down to pre-intervention levels. This assumption is not applicable for schemes that have ongoing education/information strategies that last as long as the programme is operating. However, these strategies are not that cost-effective and may have limitations when applied on a large-scale basis. The most important predictor of observed recycling behaviour is having specific and adequate knowledge about the curbside programme and more importantly how to correctly recycle. Greater education of the public is a key strategy, and can improve recovery rates.

Communication tools in education/information strategies include articles, bill posting, newsletters, directories of recycling service providers/facilities, business-to-business assistance, an environmental booth for public events, photography exhibitions, presentations, innovative door-to-door visitors to explain, inform, encourage and remind residents about all aspects of the recycling scheme and to deal with complaints and suggestions and environmental publications for local school children as well as visits to recycling facilities. Also, wider communication can involve on-site presentations for representatives of national and local government and packaging, waste management and environmental interests, and a more detailed academic analysis of available schemes.

Convenience

Convenience is an important factor of recycling schemes and has been suggested to improve and increase recycling behaviour. Making participation more convenient reduces personal cost, and thus should increase participation. It is measured in terms of container provision, collection frequency and collection day. Providing containers free of charge increases conveyance and provides a visual reminder to recycle. Higher collections tend to be associated with higher collection frequency (materials are stored in home for less time, recyclers have more opportunity to recycle, and if one pick-up day is missed the wait for the next is shorter and the extra build up of material less). Collecting recyclables on the same day as municipal solid waste (MSW) may be convenient because it is easier for recyclers to remember to recycle on the day they already put out their

M S W .

Problems with waste

Most inner urban landfill sites are nearly full and new tips are located further and further from the sources of garbage. The transport costs generated by this make landfill disposal an increasingly expensive form of waste management. There is also strong community opposition to the siting of new landfill facilities. Correcting these problems isn't just a job for the government; everyone can play a part.

Every day, each of us do things and make decisions that affect our environment: disposing of household waste, deciding which products to buy, even deciding whether to take the car somewhere or walk instead. Recycling and bio-management make a worthwhile contribution in the efforts to improve the environment.

Recycling and reclamation

Reclamation is defined as the process of removing materials from the waste-stream and preparing them for recycling. Recycling is the collection, separation, clean-up and re-processing of that reclaimed material to achieve its conversion to a new marketable material.

Recovery and recycling is a commonly acceptable method in successful and effective municipal solid waste (MSW) management. It can save energy and natural resources, and reduce the amount of refuse for final disposal. There is a world-wide trend to separate waste, partly to recycle that portion which is clean enough, and partly to meet the demands of legislation such as the European's Union's packaging regulations which are to be implemented throughout Europe.

Municipal solid waste recycling

The most popular option for household waste recycling (waste from private domestic accommodation, caravans, hospital premises, and nursing homes, private garages, moored vessels, camping sites, prisons and meeting halls) is curbside recycling schemes. The basic structure of these projects consists of:

- ♦ Wheeled bins that are situated outside residential houses where recyclable waste is deposited. The bins in some cases may have different sections for different recyclable materials. This method is applied in order to encourage source separation of waste and research has shown that it increases recovery rates. However, it can decrease participation rates because people that don't have the time to separate the recyclable materials may abandon the idea of recycling altogether. In some projects, especially those that involve multi-storey buildings, a bag for recyclables is distributed to residents in order to make it easier for them to get the recyclables to the bin (one bin might be appointed to three or four multi-storey buildings).
- ♦ Specially designed vehicles that collect the recyclables from the bins and transport them to a materials recycling facility.
- ♦ A materials recycling facility (MRF) where the waste is sorted manually and then re-processed.

Public participation is essential for the success of recycling schemes, but there must also be a market for the recycled materials, otherwise recycling is pointless and not economically viable. The rate of recycling is ultimately market driven. The market

Householders can be classified on their performances in plastics recycling as follows:

The Educated Recycler—all materials washed, all bottle tops removed, all plastic film folded

The Enthusiast—absolutely anything that bares any resemblance to plastic; but always washed

The Half-Hearted—anything plastic thrown into recycling bag. Nothing ever washed, often half-full bottles

The Abuser—recycling bags used for any rubbish

However, there have been mixed results on this issue; for instance, one research project concluded that higher collections are associated with different collection days contrary to expectation.

Economic incentives

Increased participation in recycling programmes can come through the use of lottery and money incentives, prizes, raffles and cash contingencies on the return of recyclable goods. However, these interventions have limitations that compromise their larger scale adoption. For example, financial costs can limit the applicability of money incentives, if they are applied over a long timescale. Moreover, recycling that wholly depends on interventions such as cash contingencies, can potentially return to pre-intervention levels after the contingencies are ended. It is suggested that the only way for incentive-based recycling interventions to succeed in the future, is if the market price for recyclable materials increases by introducing indirect economic profits in the price of recyclable materials.

Satisfaction

A possible alternative to the use of extrinsic incentives, such as economic incentives, is to consider the role of intrinsic motivation. Research has revealed that a good deal of human behaviour is explained in terms of goals and rewards that arise out of active participation in an on-going activity. Satisfaction is also referred to as a general belief that recycling will benefit society as a whole, especially in the future, and is simply "the right thing to do" as we ought to preserve our environment.

European Union legislation

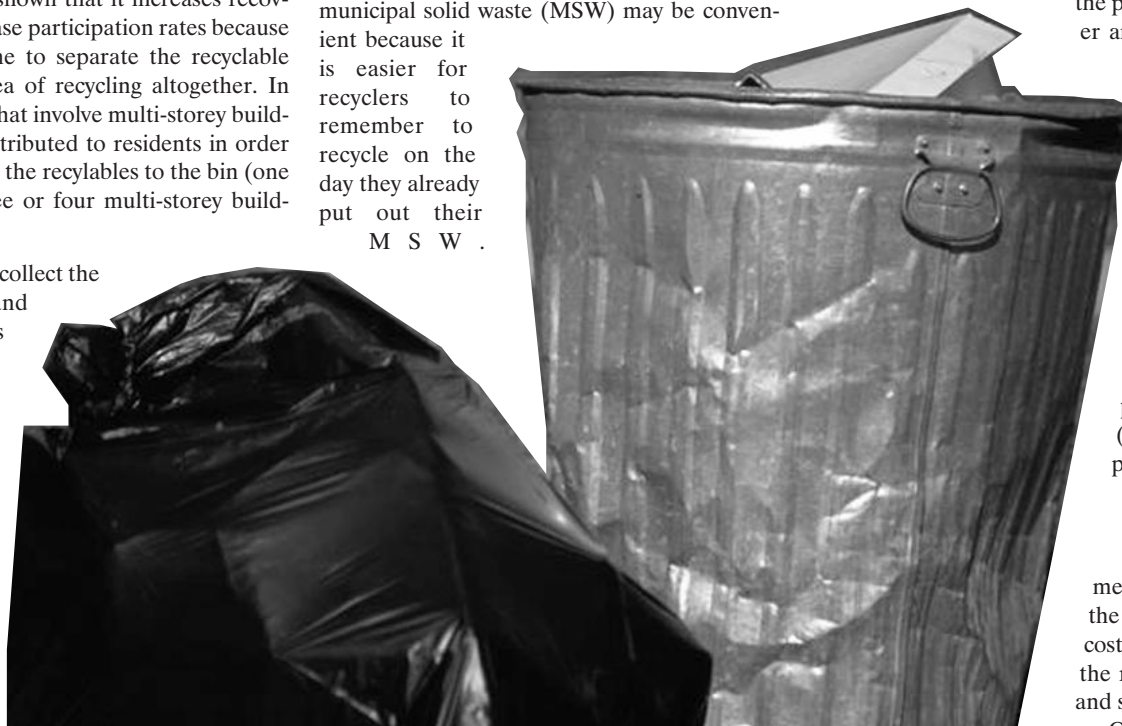
In December 1994, the European Parliament passed the Directive on Packaging and Packaging Waste (94/62 EC). The directive set targets for recycling and recovering packaging waste, under which 50% of waste packaging in the member states must be ritualised through recycling and other recovery methods by 2001. The EEC required all 15 member states to form their own legislation to meet the above targets. The British government, for example, in 1997 introduced the Producer Responsibility Obligations (Packaging Waste) Regulations. The Regulations which have been phased in over the past three years, legally bind businesses to recover and recycle a specified percentage of the waste they produce. The criteria for businesses falling under the Regulations are that they must:

- (1) be involved in the following activities: manufacturing raw materials used for packaging, converting raw materials into packaging, packing or filling packaging, selling packaging to the end user, wholesalers have become obligated from January 2000;
- (2) produce, handle, or supply more than 50 tonnes of packaging materials or packaging each year, including imported, but not exported packaging.
- (3) have a turnover of more than 1 million pounds

Liquid waste recycling

Liquid waste recycling is the most environmentally-friendly waste management option for the treatment of liquid waste. To some extents it is cost-effective too, benefits can be achieved through the re-use, recycling and recovery of waste sewage and sludge.

Options that can be explored include the use of



Managing Waste



treated effluent for irrigation, wetland development, industrial process or and cooling water. Treated sludge can be used for fertilizer and soil conditioner, and in the production of topsoil for disturbed lands.

Waste water recycling

Much of the water we use ends up as waste water. Waste water is produced when we use showers, toilets and machinery in our homes, shops, offices and factories. It is also produced by polluted stormwater from urban and agricultural areas. The largest percentage of potable water is discharged into rivers and oceans via the sewerage system.

It is possible to collect and reuse waste water in residential houses, offices, factories and farms, as it can be treated to the standards required for agriculture, industry and even drinking. Waste water can be redirected prior to treatment, such as when shower water is directly re-used for flushing toilets, or after treatment, such as when treated sewage effluent is used for irrigating golf courses and orchards.

The main benefits of recycling waste water are:

- ♦ that lesser quantities of potable water are used for purposes other than drinking. This lowers water supply costs, as potable water is expensive and limited, treatment costs and the need to build more dams.
- ♦ that stormwater and sewage discharges are reduced, lowering the stress on streams, sewerage systems and stormwater systems during wet weather.
- ♦ that waste water used for irrigation undergoes natural treatment lowering the nutrient loads in waterways and reducing the pollution load in our rivers and oceans.

However, there are financial, environmental and health considerations involved in recycling waste water. In certain circumstances, re-use systems can be expensive, as they may require for example the installation of pipework for recycling systems between residential houses and sewage treatment plants in existing suburbs. Furthermore, recycled water systems must be well managed and must treat wastewater to a sufficient standard to ensure there are no health and pollution risks. But the benefits often outweigh the costs and risks. Appropriate waste water recycling systems can help both our environment and our economy.

Composting—recycling household organic waste

We pay a high price in both monetary and environmental terms for the disposal of household garbage. By composting the organic parts of household garbage, much of our waste can be recycled, saving money and protecting the environment.

Composting is a biological decay process which converts organic waste into an earth-like substance. Compost is partially decomposed organic matter produced in the natural environment from decaying leaves and litter on the forest floor. In the home garden, we can achieve the same end result more quickly by building a compost heap. If the compost heap is large enough and the conditions in the heap allow the micro-organisms to thrive, then the composting process will be rapid.

Compost adds life to soil. It improves plant growth, increases the capacity of soil to hold nutrients and the ability of plants to resist disease. The current dependence on artificial fertilisers can also be reduced by returning organic matter to the soil as compost. It is the organic matter in soil which makes it resistant to erosion, maintains its fertility and stabilises its structure. Compost also helps to control urban runoff by improving the rate at which water can be absorbed by the soil.

Plastics Recycling is Possible

In industrialised countries, the business of collecting and processing postconsumer plastics continues to grow, with increased amounts of plastics being handled, and a greater variety of plastics targeted for recycling. Companies that make virgin plastics are becoming increasingly involved in plastics recycling. Durable plastics items, as well as packaging, are being recycled in increasing quantities. New methods have been introduced for identifying used plastics by colour and type and efficiently separating them from other materials. New applications for recycled plastics, and blends that include recycled plastics, are being developed. Mixed waste plastics are being processed into new polymer products and are being converted into chemicals and fuels, which is more desirable than merely burning them for energy recovery.

Germany achieves a 43% plastics recycling rate.

One of the most obvious utilities of plastics is the packaging industry. They are used for packaging foods and drinks keeping them fresh, healthy and eye-pleasing for the consumer. Plastics recycling in the past few years has received much attention due to the fact that plastic packaging has taken over glass, paper and steel packaging to a very big extent. Also, if planned and implemented properly, plastics recycling can be very cost-effective in monetary and environmental terms. However, the main option for the management of plastic waste today remains its disposal to landfills, and plastics recycling is still in its early stages. Germany is an exception to this situation as it achieves a 43% plastics recycling rate as opposed to Austria's 6% and Ireland's 0%.

Plastic waste is classified into two broad categories:

- post-industrial plastic waste: the material that results through various procedures in an industrial unit, and is either a mixture of materials or is virgin plastic.
- post-consumer plastic waste: the products that have been separated and detained from the rest of the solid waste for collection and processing.

Plastics can be recycled through feedstock recycling or through mechanical recycling methods.

Feedstock Recycling

Feedstock recycling is achieved by the breaking of the polymer chemical bonds of plastics through chemical treatment and the use of the breaking products for a further polymerisation to create new products. It is used mainly in highly developed countries, like the USA and Germany, and basically requires a comprehensive chemical industry to function adequately.

Mechanical Recycling

Mechanical recycling is the procedure where all the plastic waste that has been recovered and separated from the bulk of the municipal solid waste, undergoes a recovery procedure and afterwards is used again in the production of new products, similar or different from the initial products. It is also worth mentioning that the reclaimed material in plastics mechanical recycling is more useful than pure plastic, as it has been enriched during the recycling procedure with useful additives.

The Visible Face of Ocean Pollution Plastics in the Sea

Plastic is the most common manufactured item sighted at sea and is often found thousands of kilometres from land in otherwise untouched areas. It is strong, long-lasting, cheap and light, qualities which have made it very popular, but have also ensured that it is dangerous and unwelcome in the sea. Because plastic can float and be carried by wind and sea currents across oceans, it can harm unsuspecting marine creatures far away from where it was originally discarded.

Plastic kills more than 100,000 marine mammals each year. In the Atlantic, 30,000 seabirds die annually from plastic entanglement.

Most, if not all of these items, are tossed from boats. While recreational boat users cannot be blamed for all the problems of plastics pollution, research indicates that boat users drop an average of half a kilogram of garbage into the water on every trip.

The toll on wildlife

Plastic can injure and kill marine animals. Many become entangled in plastic rubbish and die by drowning, or more slowly by being prevented from catching and eating food, swimming, flying or escaping predators. Floating nylon bands and straps are an increasing problem. These deadly loops can easily slip over the head of a curious young seal or penguin, chafing and wounding the skin. Dolphins and sharks have often been seen with sharp edged plastic straps around their necks and bodies. This is a serious problem resulting in the pointless death of large numbers of marine animals.

Entanglement is the most obvious threat plastics pollution poses on wildlife, but many creatures fall victim to more subtle effects by feeding on plastic wastes. A study of albatross chicks on Midway Island, a remote Pacific atoll, found that 90% had plastic pieces in their gullets. Marine turtles die when they confuse plastic bags with jellyfish, their main food source. Infections, ulcerations, blockages, poisoning eventually take their toll. More disturbing still, once the animals die and decay, the plastic is free to repeat the cycle.

where it was originally discarded.

The main plastic items commonly found at sea include bags, bottles, cups, drinking straws, caps and lids, utensils, six-pack holders, clingwrap, fishing line, bait bags, and

floats. Most, if not all of these items, are tossed from boats. While recreational boat users cannot be blamed for all the problems of plastics pollution, research indicates that boat users drop an average of half a kilogram of garbage into the water on every trip.

Many plastics can last for decades. Some six-pack holders will be around for 450 years.



Paying the price

Fishing line or nylon rope wrapped around a propeller can disable a craft instantly, while plastic bags commonly block cooling intakes causing engines to overheat and fail. This can prove expensive and inconvenient at the best of times. In poor weather conditions it could prove fatal. Economic costs are not the only concerns. Constant exposure to spoiled beaches and shores lowers community standards and expectations for a clean environment.

Under the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78), there is a total prohibition on the disposal of plastics into the sea. MARPOL requires that: "All garbage on board a vessel must be retained for disposal on shore if the vessel is within 12 nautical miles from land. If it is more than 12 nautical miles from land, one may dispose food, paper, glass, metal and crockery, but not plastics."

Clean beaches and waterways are part of our natural heritage. If we allow plastics pollution to continue, what will be our legacy?

The above information was acquired from the New South Wales Environment Protection Authority.

Human Genome – Breaking the Code

Optimism and concern

The human genetic code is like an open book that only recently have we been able to decipher and read. It is impossible to predict the impact of this discovery on the future of science but, if the right ethical framework is in place, we can guide progress towards a safe direction.

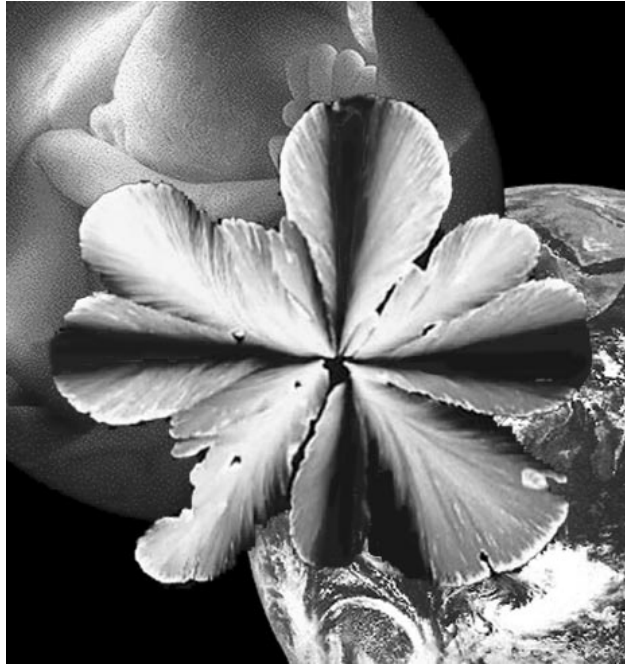
Genetic engineering can play a crucial role in global politics and economic development. It is also decisive for the future of medicine. The question now remains: Will the mapping of the human genome open Pandora's box and lead to unprecedented catastrophe, or will it - with the proper guidance from bio-ethics and bio-legislation - prove to be the most revolutionary breakthrough in the 21st century?

The success of the Human Genome Project has been the fruit of international co-operation among 18 different countries. Research began in 1990 with the aim of arriving at today's results in 15 years. With the aid of technological progress, it is expected that the human genome will be fully mapped by 2003. The Human Genome Project, based in Maryland, USA, is co-ordinated by the USA Department of Energy and the National Institute of Health. There is close collaboration with the UK-based Wellcome Trust and with laboratories in France, Germany, Japan and China. This close collaboration is in itself a success story, as the field of genetics is highly competitive.

The Human Genome Project has already revolutionised biology by providing tools and resources for basic research and has catalysed the growth of the life sciences industry. Current and potential applications of genome research address needs in molecular medicine, waste control and environmental cleanup, agriculture and animal husbandry, biotechnology, energy sources, and risk assessment.

Gene sequencing and mapping and the identification of genetic diseases has changed the way we look at modern medicine. Gene therapy is replacing conventional treatments for many ailments and the possibilities are endless. What sounds like science-fiction today, may well be achievable tomorrow.

Mythology has returned. Technology, today's Prometheus, with sensitivity and prophecy provides light and fire, crusades for a revelation of the seeds of truth, and makes possible the advent of a new era. Through the mapping of the human genome, biology and biotechnol-



ogy offer new perspectives in the understanding of the mechanisms of life and new chances for the improvement of public health on a global level. It is, however, necessary for a bio-ethical background to be firmly in place so that humanity can truly benefit from these breakthroughs.

Environmental dimensions

Environmental exposure has enormous impact on human health and disease. Understanding genetic susceptibility to environmental agents will allow more precise identification of those agents that cause disease, and can lead to more effective disease prevention and improved public health.

The human health/disease condition is determined by the complex interplay between genetic susceptibility, environmental exposures and ageing. The rapid advances in molecular genetic technologies is providing new opportunities to understand the genetic basis for individual differences in susceptibility to environmental exposure. By identifying genes and allelic variants that affect individual response to environmental agents, scientists can better predict health risks and assist regulatory agencies in the development of environmental protection policies.

World Bioethics Congress meets in Gijon

The International Society of Bioethics (SIBI) sponsored the World Bioethics Congress in Gijon, Spain, 20-24 June 2000. The purpose of this initiative, which was placed under the auspices of the King and Queen of Spain, was to expand the role of the biological sciences and biotechnology in society. Respect for human rights and dignity, and the ethical responsibility to safeguard the environment and biodiversity will define the future progress of biotechnology.

The conference deliberations covered a plethora of issues including the human genome, the limits of research and experimentation, progress in the field of cell, organ and tissue transplants, as well as new dimensions such as environmental protection as a primary bio-ethical responsibility.

Ambassador **Kai Falkman**, distinguished B.I.O.

Trustee from Sweden, discussed the concept of "bio-diplomacy" and the importance of international co-operation in the protection of bios. He stressed that a bio-centric approach can broaden our horizons and lead to the implementation of new measures and regulations for environmental management. He also emphasised that respect for the gift of bios helps in the attainment of international agreements aimed at the harmonious co-existence of all forms of life.

The B.I.O. President who is also Vice President of SIBI's Scientific Committee, presented the new dimensions proposed by B.I.O. for the future and chaired the session on environmental protection. She also contributed to the compilation of the final Bioethics Declaration Document which was endorsed by all the participants of the Congress.

Members of the SIBI Scientific Committee and authors of the Bioethics Declaration of Gijon

Marcelo Palacios (Spain), Physician. SIBI Founder and Scientific Committee President
Agni Vlavianos-Arvanitis (Greece), B.I.O. President and Founder, Vice-president of the SIBI
 Rev. **Maurice Dooley** (Ireland), Representative of the Holy See
Jean Michaud (France), Vice-president of the National Committee for Sciences of Life and Health. Paris
Jose Egozcue Cuixart (Spain), Incumbent of the Cellular Biology Chair. Autonomous Univ. Barcelona
Santiago Grisolia (Spain), Professor, President of Valencia Foundation for Advanced Studies and Research
Amos Shapira (Israel), Incumbent of the Law and Biomedical Ethics Chair. Univ. of Tel Aviv

Carlos M^o Romeo Casabona (Spain), Incumbent. Director of the Law and Human Genome Chair. Univ. of Deusto
Erwin Deutsch (Germany), Incumbent. Director of the Medical and Pharmaceutical Institute of the Univ. of Gottingen
Santiago Dexeus (Spain), Prof. Director of the Dexeus University Institute. Barcelona
Guido Gerin (Italy), President of the International Institute for the Study of Human Rights. Trieste
Juan Ramon Lacadena (Spain), Incumbent of the Genetics Chair. Biology Faculty. Univ. of Madrid
Margarita Salas (Spain), Professor of the Centre for Molecular Biology "Severo Ochoa". Autonomous Univ.

of Madrid
Alain Pompidou (France), Professor of Biology in the University Rene Descartes. Paris
Victoria Camps (Spain), Incumbent of the Ethics Chair of the Autonomous Univ. of Barcelona
Erwin Bernat (Austria), Professor of the Public Law Institute. University of Graz
Luis Martinez Roldan (Spain), Incumbent of the Philosophy Law Chair. University of Oviedo. Secretary of the SIBI.
Paula Martinho da Silva (Portugal), Member of National Council of Ethics for the Sciences of Life
Jesus A. Fernandez Suarez (Spain), Professor of Law Philosophy. Universidad of Oviedo

Bioethics Declaration of Gijon 2000

At the end of the World Congress on Bioethics (Gijon, Spain, 20-24 June 2000), the Scientific Committee of the International Society of Bioethics (SIBI), insists that science and technology must take into consideration the common good.

Recognising

- ♦ the Universal Declaration of Human Rights proclaimed by the General Assembly of the United Nations on 10 December 1948,
- ♦ the Universal Declaration on Human Genome and Human Rights of UNESCO on 11 November 1997,
- ♦ the Asturias Convention on Human Rights and Biomedicine of the Council of Europe of the 4 April 1997.

Aware of the enormous progress in biology and medicine, the imperative need to assure respect for human rights, the danger that abusing this progress could entail for human rights,

Affirming that it is for Bioethics to enlighten public opinion in regard to scientific and technological progress,

the SCIENTIFIC COMMITTEE makes the following observations and recommendations:

1. Bioscience and its technologies should serve the welfare of mankind, sustainable development of all countries, world peace, and the protection and conservation of nature. This implies that developed countries should share the benefits of bioscience and its technologies with the inhabitants of less favoured areas of the planet, and serve the welfare of the human being.
2. It is an important task of Bioethics to harmonise the use of biomedical science and its technologies with human rights, in relation to the values and ethical principles proclaimed in the Declarations and Convention above mentioned, in so far as they constitute an important first step towards the protection of human beings.
3. The teaching of Bioethics should be incorporated into the educational system, and should be the object of understandable and accurate texts.
4. All members of society should receive adequate and accessible general information about scientific advances, biotechnology and its products.
5. Specialised and public debate to guide opinion, attitudes and proposals, should be encouraged. This debate will involve, interactively, experts from the various disciplines, citizens from different backgrounds, as well as mass-media professionals.
6. The exercise of personal autonomy should be guaranteed while at the same time fostering the principles of justice and solidarity. The identity and uniqueness of the human being should equally be respected.
7. Everyone has the right to the best medical care available. The patient and the doctor should decide together the scope of medical treatment of the former. The patient should be adequately informed before he/she expresses his/her free consent.
8. The human genome is the heritage of all humanity and is not patentable as such.
9. A fundamental purpose of assisted reproduction techniques is to medically treat the effects of human infertility, and to facilitate procreation if other treatments have proven unsuitable or inefficient. Assisted reproduction techniques may also be used for diagnosing and treating hereditary diseases, as well as for authorised research.
10. The production of identical human individuals by cloning should be banned.

The use of stem cells for therapeutic purposes should be allowed provided that it does not involve the destruction of embryos.
11. Research on human beings should be carried out taking into account the freedom of science and respect for human dignity and must get the prior approval of independent ethical committees.

Experimental subjects must give their fully informed and free consent.
12. Genetically modified foodstuffs should first be tested for safety in regard to human health and nature in accordance with the best scientific knowledge of the moment. They may be produced and put on the market only after all the necessary requirements of information, precaution, safety and quality have been fulfilled.

Bioethics must observe the precautionary principle.
13. Trafficking in human organs should be banned. Further research on xenotransplantation should be done before clinical trials can be performed on human beings.
14. The ethical debate on end-of-life issues should be continued in order to analyse in depth the different ethical and cultural conceptions in this context and in order to assess the way to their harmonisation.
15. With the object of promoting a universal language for Bioethics, an effort should be made to harmonise and unify the concepts which at present have different terminologies. Respect for socio-cultural identities is essential in this domain.

24 June 2000 in Gijon, Spain

Praga 2000 Natura Megapolis

August 27 - September 1

"The current concept of a Megapolis is threatening the continuity of bios - life - on our planet. Global warming, loss of safe water resources, diseases caused by pollution and natural resource contamination are problems jeopardising the future of humanity. To reverse these negative trends and to exit the resultant crisis in values, new models are needed in society.

Technology and the arts can contribute to the continuous assessment of progress and expand the potential of a global city. The power of modern technology, with the proper evaluation, can be channelled in order to protect the rights of bios.

The unravelling of the microcosmos and macrocosmos provide new dimensions in architectural models and city planning. Nature is a source of bio-materials, as well as an inspirational model providing the means to break away from stagnant patterns and to realise the expanded possibilities offered by technology and biocentric thinking. These are the concepts promoted by a Biopolis."

The B.I.O. President presented the above views at the Praga 2000 Natura Megapolis International Conference, sponsored by the Czech IUCN in Prague, August 27-September 1. This initiative was placed under the auspices of **President Vaclav Havel** and chaired by Professor **Jan Jenik** from the Faculty of Sciences of Charles University. It was attended by many eminent personalities, including the **Mayor of Prague, Jan Kasl**, and the **Minister of Environment of the Czech Republic, Dr.**

Milos Kuzvart. During the opening ceremony, Minister Kuzvart hailed the B.I.O. presence at the conference and later expressed his support of the Nobel nomination.

The organisers of this important gathering hope that the proceedings will help to solve at least some of the environmental problems in big cities by instilling natural values as an important part of human culture, as stated by Dr. **Jan Nemec**, Secretary General of the Conference. Participants included scientists and specialists from most European countries, Turkey, Japan and the USA, who exchanged viewpoints on many issues concerning the long-term interaction between man and nature as a consequence of urbanisation.

As pointed out by **Holger Tschense**, Vice-Mayor of Leipzig and Head of the Department of Environmental Protection, Public Order and Housing, Leipzig had been left with a hard legacy of destroyed and neglected landscapes due to the particularly destructive effects of open-cast lignite mining around the city. The radical

process of social transformation along with the changing legal and economic conditions have presented an opportunity to restore natural habitats. Therefore, since 1996, the "Leipzig Green Belt" Pro-gramme has been put into effect by the Leipzig City Council. The results are really encouraging, as districts with more and better green areas

experience a significantly higher level of prosperity. The positive change in Leipzig's green areas is visible and noticeable for residents and investors alike. Moreover, the development of urban landscapes is not only the concern of city



authorities; numerous citizens are actively involved, planting trees along streets and laying out gardens.

Professor **John Celecia**, Former Senior Scientist in UNESCO's Man and the Biosphere Programme, focused on the global phenomenon of burgeoning urban growth and the environmental and social consequences resulting from this unbridled phenomenon. To counter this problem, UNESCO's MAB Programme was conceived as the first international concerted venture to consider cities as ecological systems and to promote at the intergovernmental level, integrated environmental approaches to increase knowledge and understanding of urban systems and other human settlements, as a basis for planning, management and decision-making.

He proceeded to add that a sustainable city is an unselfish city, mindful of the relationships between the city and its near and far hinter-

lands and of the relationship of each individual and group towards each other. A city working towards sustainability is resourceful, resilient, efficient, self-sufficient, liveable and intensely human.

The new ethics in urban planning concern a self-sufficient, aesthetically pleasing urban environment with minimal waste generation and with an active participation of every member of society in the protection of bios.

Finally, Professor **David Goode**, Head of Environmental Strategies of the Greater London Authority, suggested that raising public awareness is a crucial element in the success of any programme dealing with the integration of nature within the

urban environment. It is also necessary to put in place a framework for effective integration between official agencies, such as local government, and the voluntary sector, which may include a wide range of local interest groups. Biodiversity partnerships, which have developed extensively in the UK, provide a model for such a framework. Ecological parks or nature gardens and a range of small-scale habitats on and around buildings are examples of major new habitat creation schemes such as the Wetland Centre in London.



5th Annual Youth Bios Olympiad



- Study of the crayfish population in the Misa river
- Population and settlement of Laserta real lizards in the surroundings of Riga

The Youth Bios Olympiads, launched by B.I.O. in 1996, give children and young adults the opportunity to develop their skills and creative thinking in relation to the bio-environment. They are challenged to identify and discuss environmental problems, and to propose solutions based on education and training. They also learn about the role and limitations of international environmental organisations and institutions, and study the development of environmental awareness in society.

Within the framework of the Youth Bios Olympiads, participants study environmental concerns, as well as guidelines and criteria for the bio-assessment and bio-control of production processes, cultural and social development and education. Participants also focus on environmental research, as well as on the exchange of environmental information and know-how. The Youth Bios Olympiads also promote bio-culture and bio-athletics.

The four-day schedule of events of the Fifth Youth Bios Olympiad was full of exciting and constructive activities, including a scientific



youth conference on Biopolitics and the bio-environment themed "Youth and Democracy." The schedule also included a poster contest, athletic competitions, visits to St. Petersburg's cultural sites, concerts and theatrical performances. The Bios Olympiad concluded with an awards ceremony for excellence in:

- ♦ suggesting the most innovative solution for environmental protection
- ♦ proposing the best practical environmental applications

- ♦ contributing to the promotion of democracy and Biopolitics
- ♦ contributing to the promotion of bio-culture
- ♦ bio-athletics

In addition to the Youth Bios Olympiads, Bios Schools also take place annually in St. Petersburg. This year, the XXIIth International Youth Bios School is scheduled for November 1-12, 2000.

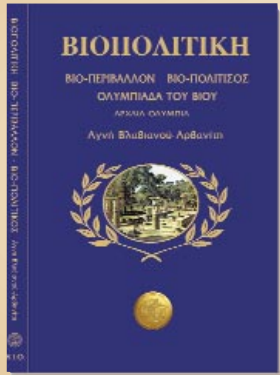
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- Physical-chemical water quality indexes for the lakes of Varvarino settlement
- Gulf of Finland coastal ecological problems research
- Air pollution research in the Molodezhnoye village area of the St. Petersburg Kurotny district
- Common air pollution with lichenoidication methods in the town of Sosnovy Bor
- UV action influence in sewage disinfecting
- Analysis of the productivity of different meadows in the Kholper river valley
- Gatchina town park. Research on water reservoirs
- Imitation modelling for the prediction of water quality tasks using new generation mathematics programmes



Two new books in publication:

Bios Olympiads

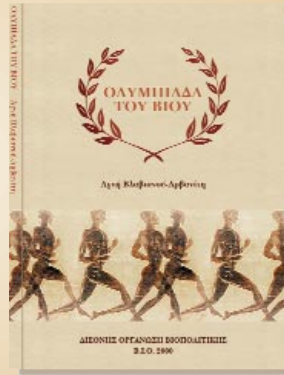


BIOPOLITICS
BIO-ENVIRONMENT – BIO-CULTURE
BIOS OLYMPIAD

Proceedings from the B.I.O. Conference in Ancient Olympia, August 1999 (Greek, in press)

BIOS OLYMPIAD

A monograph and proposals for Cultural Olympiads and the role of Greece in the promotion of new values for the millennium (Greek, 2000)



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- ▶ **BIOS IN THE NEXT MILLENNIUM**, Lecture by the Right Honourable Lord Ennals sponsored by the British Council and BIO, May 1988
- ▶ **BIOPOLITICS - PROTECTING THE BIO-ENVIRONMENT**, Lecture by His Excellency The Ambassador of Israel, Mr. Moshe Gilboa, at the Third BIO International Conference, June 1989
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- ▶ **BIOPOLITICS - METHODS OF IMPLEMENTATION**, A. Vlavianos-Arvanitis (Greek, English) 1985
- ▶ **BIOPOLITICS - BIO-SYLLABUS OUTLINE**, A. Vlavianos-Arvanitis (Greek, English) 1989, 1990
- ▶ **BIOPOLITICS - THE BIOS THEORY**, A. Vlavianos-Arvanitis (Greek, English) 1990, 1991
- ▶ **THE INTERNATIONAL UNIVERSITY FOR THE BIO-ENVIRONMENT**, A. Vlavianos-Arvanitis (English 1991-1993, Greek 1991-1992)
- ▶ **BIOPOLITICS - THE BIO-ENVIRONMENT: BIO-SYLLABUS**, A. Vlavianos-Arvanitis and A. Oleskin (English 1992, Russian 1993)
- ▶ **BIOPOLITICS - THE BIO-ENVIRONMENT- BIO-CULTURE**, A. Vlavianos-Arvanitis (Greek, 192 pp.) 1994
- ▶ **BIOPOLITIQUE - LE BIOENVIRONNEMENT**, A. Vlavianos-Arvanitis (French, 48 pp.) 1998
- ▶ **BIOPOLITICA - EL BIO-AMBIENTE**, A. Vlavianos-Arvanitis (Spanish, 48 pp.) 1998

PERIODICALS

- ▶ **BIONEWS** Newspaper, English and Greek (1987, 1994 - 2000)

CD-ROMS

- ▶ **BIOPOLITICS – THE BIO-ENVIRONMENT** (English) 1999
- ▶ **BIO-SYLLABUS FOR EUROPEAN ENVIRONMENTAL EDUCATION** (English, in prep.)

VIDEOS

- ▶ **ENVIRONMENTAL OLYMPICS – BIOS PRIZES**, St. Petersburg, Russia, September 1999 (English, Greek) 1999
- ▶ **ENVIRONMENTAL OLYMPICS – BIOS PRIZE**, The Kogi, Santa Marta, Colombia, October 1999 (English, Greek) 1999



Biopolitics International Organisation
World Referendum

Cast your vote in the B.I.O.'s World Referendum and join numerous others all over the world who are voting together at the start of the new millennium for a brighter future for our planet.

World Referendum for saving Bios on our Planet
 The Biopolitics International Organisation calls upon every citizen of the world to affirm their willingness to save the environment and life on our planet.

- Disturbed* by the present rate of environmental deterioration
- Affirming* the interdependence of all forms of life on our planet
- Wishing* to save the bio-environment, preserve biodiversity, and protect bios (life) for future generations
- Averse* to repeating the mistakes of the past
- Declaring* the importance of a millennium approach to decision-making and considering the year 2000 as a landmark
- Desiring* to bring all cultures and nations together in a common cause
- Noting* that humanity has never before cast a vote simultaneously

We make an urgent appeal to all World Leaders, Heads of State, Governments and every concerned citizen to join forces and implement a simultaneous World Referendum to safeguard bios on our planet for the generations to come.

World Referendum Participation Form

Name	<input type="text"/>
Surname	<input type="text"/>
Title	<input type="text"/>
Organisation	<input type="text"/>
Address	<input type="text"/>
Country	<input type="text"/>
E-mail	<input type="text"/>
Comments	<input type="text"/>

To cast your vote, either send in this participation form by mail or fax to the address listed below, or go on line to the referendum on our web site at www.hol.gr/bio

The Biopolitics International Organisation is a global organisation affirming the importance of life on our planet.

Contact us at

Biopolitics International Organisation 10 Tim. Vassou, Athens 11521, Greece
 Tel: (301) 643 2419 Fax: (301) 643 4093 E-mail: bio@hol.gr
 Visit our web site at www.hol.gr/bio

World Referendum