

BIOSOCIETY A SUSTAINABLE SOCIETY USING TECHNICAL BIOPROCESSING IN NATURAL CYCLES

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Due to the mechanistic and materialistic perception, a series of crises has made itself well-known in the environment, in society as a whole, in the economy and also in technology itself. The environment and natural resources have been treated as inexhaustible goods.

However, a new awareness of ecology is appearing where a fundamental interdependence of all phenomena and the embeddedness of individuals and societies in cyclical processes of nature is recognized. Biological principles governing the network in ecology are regarded as powerful guidelines for the development of an ecologically sustainable economy. Sustainability is understood to be the capacity to satisfy the current, natural needs of humankind without jeopardizing the prospects of future generation. The environment and the resources are not infinite and we have to accept equal human rights of living and the general laws of nature. The new term biosociety reflects the belief that we are a part of the biosphere, and thus beauty will be an intrinsic parameter.

Biological principles can hypothetically be described as the "integration of a multi-level decentralized networks with small and open subunits that interact in a closed cycle with feedback control" and are thought to include a number of paradoxes. The concept of environmentally as well as technically and economically sustainable global economy contains three necessities:

- the full solar option as a technology-mix to replace fossil fuel energy
- recycling technologies for non-renewable materials
- "clean technologies" using renewable materials from agriculture and forestry replacing "end of pipe" technologies and fossil raw materials.

Ideology is thereby shifting from restoring the sins of civilization in short time-efforts such as environmental protection to a long time-strategy of clean technology. Recently the need for such a new technology paradigm was emphasized by the OECD where technologies should not only be more efficient and improved by reduced costs but should also be socially, politically and environmentally acceptable. Behind this vision lies a change of values called the ecologic or holistic paradigm where quantitative growth is replaced by qualitative growth in a dynamic equilibrium.

All living systems obey the theory of self-organization and thus realize biological principles as a result of evolution. Emphasis should be given to the outcome of a recently installed task group of the European Federation of Biotechnology (EFB) which is busy elaborating in detail the approach to a mature concept which includes:

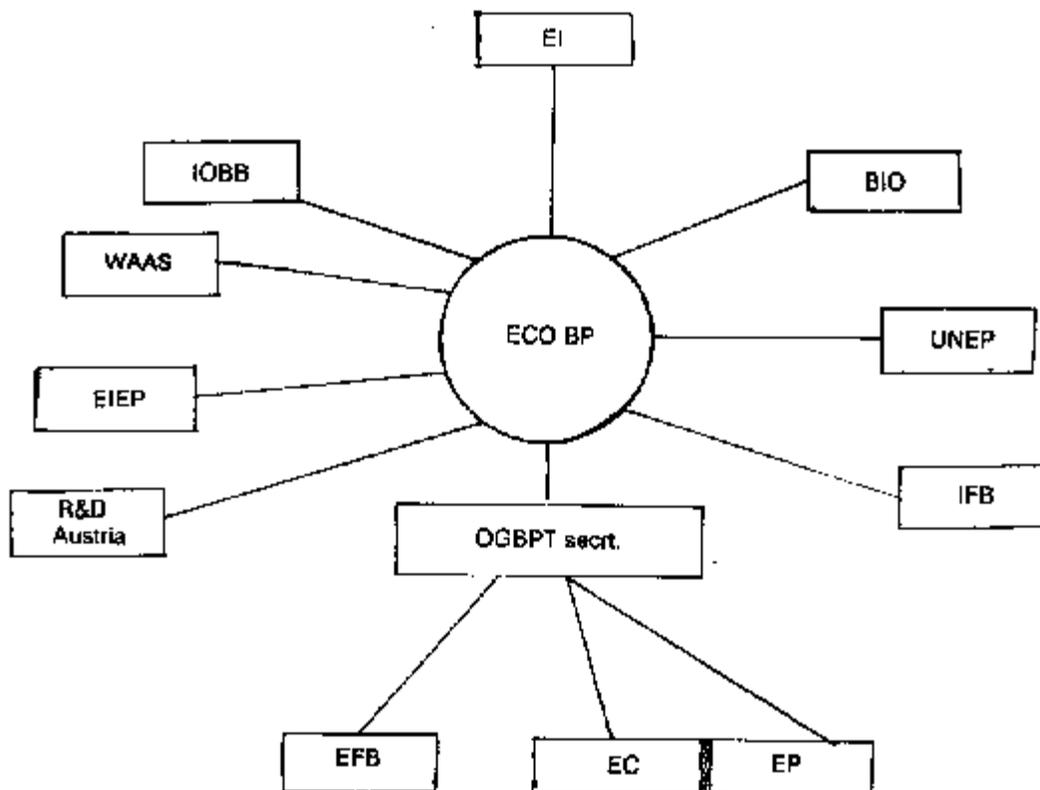
- the clarification of biological principles and the ideal case of closed cycle production system
- the question that biotechnical processes are not a priori ecologically sustainable
- the comparison of chemical and biological processing in case of renewable raw materials.

An international network is being created and support is still desired.

An outline of ecologic bioprocessing

The Situation: A series of crises in our system is evident: environmental pollution including air, water and soil is apparent in both capitalist and old communist regimes. There are social and cultural problems such as the discrepancy between East and West, North and South, as well as the gap between the First and Third Worlds. Finally, in terms of economy, the western, capitalistic system is characterized by an overflow-society, where materialistic goods are overproduced at the simultaneous expense of debt and waste.

The Problem: Because of global problems, the developed countries are forced to help the underdeveloped countries in the East and South. Thereby the "old" economic system is not able to address existing needs viz. the materialistic basis for life as well as environmental protection. The conventional technology approach proposed in environmental protection represents only an "end-of-pipe" concept. Thereby high costs are included and activities are stressed to be dependent on the growth of the economy.



OGBPT: Austrian Association of Bioprocess Technology, secr. Graz/A
 EFB: European Federation of Biotechnology, Dechema/Frankfurt/D
 EC,EP: European Commissions and Parliament, Brussels, Strasbourg
 IFB: International Forum for Biophilosophy, Leuven/B
 UNEP: group Biotechnology for cleaner production, Netherlands
 BIO: Biopolitics International Organisation, Athens/GR
 EI: Elmwood Institute, California/USA
 IOBB: International Organisation for Biotechnology and Bioengineering, Guatemala
 WAAS: World Academy of Art and Sciences, Stockholm
 R&D: project "sustainable economy", Austria
 EIEP: European Institute of Environmental Politics, Bonn/D

Figure 1: International Network of EFB - Task Group 'Ecological Bioprocessing'.

The Solution: An innovation is presented here, realizing the concept of "clean technology", whereby environmental protection is integrated in industrial production processes. Thus, the concept of prevention is obeyed. This new technology paradigm is called environmentally sustainable technology, where sustainability means the satisfaction of current (natural) needs of society without jeopardizing the prospects of future generations.

The Aim: Given to the European Parliament, this information has also been presented at the "Forum Science, Technology and Society" meeting in Strasbourg on November 8-10, 1990. Presently, a task force of the European Federation of Biotechnology (EFB) on "Ecologic Bioprocessing" is working out a fully matured concept for industrial application. Needless to say, all forms of assistance are welcome, specifically with respect to:

- the distribution of this information/activity.
- moral support in Europe for the development of this concept, which is thought to constitute a useful European development, exportable not only to greater Europe.
- help in recruiting active people willing to participate.
- support on the European level for the installation of a STOA-project and consideration in European projects of research and development.
- support for the enlisting of financial backing in European countries for the development of ecologically sustainable technology.

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