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Deliberations on the conservation of natural resources and environmental protection

Study of the Group of Experts
"World Economy and Social Ethics"

Presented by Franz Furger and
Joachim Wiemeyer

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German Bishops' Conference
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A note on the publisher and the authors

The publisher

The **Research Group on the Universal Tasks of the Church** was formed by the Commission for the Universal Tasks of the Church of the German Bishops' Conference. It consists of scholars from various disciplines who study problems related to the worldwide responsibilities of the Church.

The authors

The **Group of Experts "World Economy and Social Ethics"** is a specialized offshoot of the Research Group. It was formed in 1989 to advise institutions of the Catholic Church on questions of global economic development. The members were therefore chosen with a view to securing an appropriate blend of economic and socio-ethical expertise.

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Introduction

The outstanding feature of this age is the "global revolution", a term first used by the Club of Rome as early as 1972 to describe a phenomenon to which the following facts and aspects are particularly relevant:

- Rapid changes in production methods, technologies, social and political organization, culture, human values and the "natural environment" have taken place.

- These changes are experienced in different ways by individuals and social groups depending on the level of development of the community in which they live. Frequently the transformation process affects only some aspects of social systems, especially when it is induced from outside. True, major social upheavals have always been preceded by philosophical-moral ideas, but during the evolution of the industrial societies technical innovations have clearly generated some momentum of their own which the human awareness, our mores and our political and institutional systems have difficulty keeping up with. Empirical evidence can be furnished to show that such a discrepancy becomes especially problematical when technology is transferred, usually only partially to other social systems. This "simultaneousness of things not genuinely simultaneous" in a world becoming increasingly networked in the technical sense leads to an overall situation that is highly sensitive to irrational actions and could spell the system's total collapse. The very real danger of ecological disaster is a palpable example of this (K. Mannheim).

The present-day critical and ever lamented situations time and again are clearly not the result of economic crises in the traditional sense of the term but a global "crisis of values" and flaws in the whole social system and corresponding defects in the control mechanisms. The demand for natural resources which poses a threat to the whole of mankind is chiefly the result of three interdependent processes, viz

- a horrendous waste of non-renewable resources in the industrialized societies,

- the still largely unbridled population growth, for the most part in the agricultural regions of the Third World, which is exacerbating the already delicate balance between man and resources in those regions, and

- the dramatic, excessive burden on the environment's capacity to absorb pollution which is causing manifest damage to the ecological balance on a global scale.

The problems arise primarily from the fact that traditional value concepts and notions of living standards and consumer behaviour are no longer consistent with the strategies of a "civilization permeated with science", that technologies, forms of social organization and inter-human relations seem no longer to "function" in systems. Thus the main objective of a crisis management strategy must be to minimize such "incompatibilities" by enhancing the awareness of individuals and groups and by correcting deficiencies of system control on an international scale. Such adjustments should, where possible, be consistent with market requirements.

The present ecological crisis has two main sources:

- One is the still prevalent view that man can exploit nature without restraint and that all things technically feasible should be put into practice. From the scientific, political and socio-ethical point of view these arguments have long been challenged but without this change of attitude having yet had sufficient impact on economic and social policy.

- The other is the survival of structures and modes of conduct that were considered quite rational in one context but have lost their meaning as a result of endogenous or exogenous changes in other parts of the system. This applies, for instance, to efforts to maximize production at any price, which is understandable in a deficient society. The desire to have large numbers of children, too, was rational before the revolutionary advances in the field of hygiene and medicine. But if people still cherish that desire when circumstances have changed, continuing population growth represents a direct ecological threat. Adequate control of the system must primarily serve to reduce the contradictions between the rationality of the individual and that of society as a whole.

Wrong signals in the form of positive and negative sanctions produce partial rationalities which thicken into an overall system of irrationality with effects that are irreconcilable with the aim of establishing a just system. We can therefore draw from the above the following general conclusions with regard to a development policy for the global community.

During their "post-industrial phase" the industrialized societies must critically examine their own "paths of development". Do their evolutionary

patterns really fit into a strategy of sustainable development? In this context they should also reconsider such terms as "social progress" and "growth". And they must certainly abandon the idea of transferring their own standards to the Third World, for that would be to preprogramme an ecological cataclysm. But we can only get indigenous communities to understand and accept the need for adequate paths of development in and for the Third World if we too are prepared to bring about a change in the division of labour involving drastic structural adjustments.

In principle there cannot in the long term be a contradiction between ecology and economy. If mankind does not use its resources economically it will destroy the basic of its existence. On the other hand, introducing ecological aspects to the process of industrial and technological development may quite easily lead to friction and conflict in the short term. Such conflicts over the use of resources are not only unavoidable but apt to intensify the pressure for appropriate solutions.

Economic and ecological cycles must be so interlocked that they remain permanently compatible. This calls for the decoupling of economic development from wasteful use of the environment but without reducing incentives and hence measures which make it worthwhile to satisfy the demand for natural resources and include the cost of environmental consumption at national and international level in the price, together with the incentives necessary to ensure that the utilization of resources reflects their scarcity. This presupposes the specification and redistribution of ownership which takes account of the growing shortage of resources, which in turn demands a qualitative restructuring and refunctioning of industry.

Two misconceptions have emerged in this connection. Using environment-friendly production methods by no means implies abandoning technology. On the contrary, the use of technical means is necessary in order to protect the environment. Efficient technical processes are already available for the solution of quite a number of problems, but their application is being held up because of social and political reservations, and also because of wrong economic and social policy signals. The first requirement in the Third World is to establish market-related institutions and introduce social techniques with which to reduce mass pauperization, for this is one of the reasons for the growing demand for resources there.

Nor can environmentally sound production methods mean "freezing" Creation in a state we have just become aware of. They can only mean

carrying on living creatively in it without any self-destroying activity. Thus all appeals for a return to nature are utopian and equally dangerous.

The global character of environmental problems makes international strategies imperative. The Conference on Environment and Development can be regarded as a first step in this direction. A lot depends on whether the Rio Declaration, Agenda 21, the Statement on Forest Principles and the climate and protection of species conventions grind to a halt in the undergrowth of conflicting national interests or whether they are implemented through follow-up action. The successful application of such strategies presupposes, apart from moral exhortations, that all in positions of responsibility increasingly realize that a laissez-faire attitude towards environmental problems will ultimately rebound on all countries and all sections of the population.

Notwithstanding the importance of intergovernmental cooperation on environmental issues, it is essential to bring parties, business organizations, nature conservation bodies and self-help groups into the political dialogue and into the process of deepening the nation's awareness. Hardly any of the world's other problems depend so essentially on the conduct of the individual and the different groups in the community. No adequate environmental policy can be implemented without the participation of the people. It is at the same time tremendously important, however, that government should send the right signals by commending environmentally sound and punishing and denouncing environmentally harmful conduct. The Churches have a dual role in this respect. They must try to influence this awareness-forming process, not by projecting apocalyptic "horror visions" but by trying to make people conscious of the extremely complex nature of the problem and to impress upon them that they bear some of the responsibility. In so doing they should reject simplistic, superficial proposals. It is a legitimate task of the Churches to keep governments and other groups aware of their obligation to treat the environment with care as the basis for sustainable development.

Thus it is not the purpose of this study to analyze specific ecological problems in depth and to propose detailed solutions but rather to illustrate the fundamental nature of the ecological issues. Since, however, human encroachments upon the natural environment are largely the result of industrial production and consumption and ecological problems will, therefore, mainly have to be solved by adjusting the control mechanisms and institutions, political and economic deliberations feature prominently in the study (I). On the other hand, ecological problems always raise the

question as to the equitable sharing of the earth's natural resources among different generations, societies and population groups, hence the socio-ethical deliberations and the attempt to develop moral guidelines (II). Finally, the group consider the changes and institutional modifications that would need to be implemented at the various levels of government (III) and explain the role of the Church in protecting the environment (IV).

I. An economic analysis of ecological problems

Man's economic activity always involves encroachments with varying degrees of severity upon the natural environment. Untouched nature has long been a thing of the past. Anthropogenic environmental damage (for instance, forest depletion in the Mediterranean area) was known long before the process of industrialization, and in some cases before the spread of Christianity as well, so it cannot be a "merciless consequence" (C. Amery) of those developments. Even before the "modern era" man was confronted with the question of how to maintain the balance between himself and nature's assets. Often that balance was forced upon the community by starvation, epidemics or natural disasters. These inflictions were compounded by war, which in many cases stemmed from disputes over natural resources. The history of mankind is replete with "Malthusian crises", that is to say, times when nature has kept the size of human population within ecological bounds. This applies basically to all continents and marks the limits of human influence.

But the new feature of today's environmental problems is their globality. Unlike in previous centuries, their consequences are no longer local or regional but international. Some of the threats to the environment, such as ozone depletion and CO_2 emissions, have a global impact and hence the instruments for their control must be global too.

The soil of the earth is the place for man's economic activity; it is also the depository of the world's material resources and energies. Those materials and energies, which are exploited through organic primary production (agriculture, forestry and fishery) and anorganic primary production (mining), are, together with the rest of the environment, the last, elementary and always finite source of supply for the human race. Thus all forms of human existence are competing for scarce goods of the earth. This competition has long been a challenge to economists to find ways of overcoming shortages, especially where they are most acute.

Even the linguistic affinity of economy and ecology may suggest a fundamental compatibility of economic and ecological aims, though they may very quickly clash with one another. For instance, where non-renewable resources such as oil, gas and water are exploited too rapidly or wastefully the long-term economic prospects are always curtailed, which translates

into a shortage for future generations. This consumption of resources may be justified if it means that their use will produce something new to cover the same requirements. From this point of view "the consumption of irreplaceable natural deposits represents an act of trust in the creative abilities of man" (v. Hayek). This trust manifests itself in the expectation that, as consumption increases and the shortage of certain goods gets larger, it becomes worthwhile to ponder how to overcome that shortage – by substitution, by searching for new resources, and by cutting back production of the kinds of goods to which the commodity that is getting scarcer is complementary and cannot, or cannot yet, be replaced. Such confidence is not blind but is based on actual experience. Who in 1973 would have thought that it would be possible to reduce the amount of energy needed to produce a ton of steel by two thirds within 20 years?

But that is only one aspect of the ecological problem. Much more pressing today but far more difficult to achieve is the correction of the kind of human behaviour which causes huge amounts of pollutants (e.g. CO_2, CFCs) to be injected into the environment, whose capacity to absorb such harmful substances is exceeded, the long-term result perhaps being irreversible damage to the biosphere, without it being possible to accurately quantify that damage, and without it being very probable that the harm could be redressed or balanced by some kind of compensatory technical means.

To trust in the future creative ability of mankind in such a situation would be tantamount to negligence because even if future generations proved to have such a large inventive capacity it might not be sufficient to counteract the damage. It is therefore of crucial importance on the one hand to increase our knowledge of new compensatory resources and the incentives for their use, and on the other to anticipate future irreversible damage and act responsibly now to prevent it.

Where resources (for instance raw materials) are in short supply a well-functioning market mechanism can overcome the problem by stimulating through competition the systematic quest for new knowledge about alternative resources, conservation and substitution possibilities. Thus in a market economy people are normally influenced where scarce goods are concerned by cost-benefit ratios, and by their income. Low prices are an indication that the commodity is plentiful, whereas rising prices point to a shortage. But the price mechanism only works to the extent that the ownership, use and disposal of scarce goods have been clearly defined and the beneficiary cannot create any external costs when such goods are sold or

consumed. In other words, the definiton of property rights[1] must be such that any costs arising in connection with the use of the goods or materials in question must be borne fully by the owner, that they are therefore "privatized" and cannot be passed on to others, that is to say, "nationalized".

External costs are still insufficiently internalized. Motorists, for instance, pass such costs on to others because the forest owner has no legal means of taking them to court for causing damage to his forest and demanding compensation. Forest owners, on the other hand, produce positive effects (oxygen) for the community as a whole, but they are available free of charge. If no recompense can be sought for positive contributions of this kind, the production of such assets remains systematically inadequate.

In the case of many ecological resources, however, such as air and water, it is not possible to adequately define property rights, or it can only be done by further adapting international legal systems. On account of these legal difficulties there are in many instances no property rights, or fictive institutions function as "owners", for instance the state, mankind, etc. In other cases property rights are so imprecisely defined that they cannot be exercised or protected. Even Thomas Aquinas, in his justification of private ownership, drew attention to a fundamental truth which is also characteristic of present-day ecological problems. He said that where property is collectively owned no one feels responsible for its care and protection (S. Th. II-II, Q 66, 1,2).

Without suggesting that Thomas foresaw our current environmental problems, one can nevertheless deduce from his proposition that collective public ownership of rivers, seas, the atmosphere, etc. is in a sorry state because many people believe that everything they do not acquire ownership of will be taken by others. Since in the case of such collectively owned resources, which are actually in short supply, the price for their use can only be fixed by means of special measures which reflect that scarcity (taxes or charges for use), the result if such levies are not charged is overexploitation and ecological disturbance. Hence such prices have to be fixed, unless the use of resources were regulated by law and controlled by public authorities.

[1] The term property rights (also "owner") is used in the generally accepted sense of right of use and disposal and not in the German legal sense which makes a distinction between "owner" and "holder".

But overexploitation may also result from the fact that property rights are ill-defined and not protected in the long term. Those who, for instance, have a forest area at their disposal which they expect to be able to bequeath to their children will not fell more timber than they can grow in order to be sure that the property can be used by successive generations. Thus it is only when people own the small piece of land they need for their home and do not have to live in fear of being constantly persecuted and forced to move that they have an interest in maintaining and developing simple building methods. This interest can largely be nurtured through self-help and ecological incentives. Pilot projects involving the poor and their self-help organizations, for instance those concerned with water management in rural areas, have proved that the poor do use scarce vital resources sparingly if they are given long-term rights of use and the corresponding responsibility. Because of their closer personal attachment to their land and their greater dependence on its natural yield, smallholders are likely to take more care than large property owners.

But if ownership is not adequately defined (because of the lack of land registers), and if it is not permanently protected from arbitrary acquisition by third parties by an independent judicial system and a public administration free from corruption, and if there is no right of inheritance, the obvious solution for owners in such a precarious situation is to exploit their rights of ownership as quickly as possible and transfer what they have gained to better protected kinds of ownership (investments in industrial countries). This applies especially in those developing countries where the use of ecologically relevant resources is in the hands of the countries political rulers or groups associated with them and every change in the political situation also means changes of ownership.

In such constellations forests are depleted regardless of the consequences because they are given over to private use subject to conditions which do not offer the beneficiaries an incentive to preserve them. Another reason is that sections of the population who overexploit such resources in order to survive are in many instances not given the right of ownership and therefore constantly live under the threat of being driven from their land or home, so that this situation, too, is hardly conducive to the long-term conservation of natural resources.

Although the leasing of agricultural land can be useful in developing countries, the system is in many instances flawed. This applies particularly where the lease (which has not been drawn up in writing and may be cancelled at short notice) offers no incentive to the tenant to try and improve

the quality of the soil and take care of the land to ensure its sustainable use. And the lessor either has no means of exercising control to ensure that environmental requirements are met, or covers himself against overexploitation of the land by charging a high price for the lease, which again practically forces the leaseholder to exhaust the soil.

The same mechanism also applies to the ownership of deposits of fossil fuels and minerals. In theory a private owner would calculate the annual amount extracted in such a way as to maximize over time the current value of the yield. Since prices are likely to increase, due partly to population growth and heavy demand and partly to the depletion of known resources, it seems rational to hold back production and speculate on higher returns when price increases can be expected to be above long-term interest rates on capital markets. However, the owner of raw materials must reckon that alternative technologies and substitute materials will be developed, with the result that he will not be able to maximize the profit on his stocks. It was these risks which induced the OPEC countries at the Rio Conference to oppose any drastic reduction in the consumption of fossil energies, which would be the outcome of, say, a tax on carbon dioxide emissions.

In reality, however, the problem lies in the fact that property rights are not adequately protected, or they are not in the hands of people who conserve resources. Raw material sources are often controlled by politicians who, sometimes arguing that they are acting in the interest of the community as a whole, merely want to further their own political aims (for instance to catch as many votes as possible prior to an election). Short-term personal ambition has priority over the long-term interests of the nation. As a result, limited resources are quickly depleted.

Natural resources are also wasted through the fixing of maximum or minimum prices on political grounds, irrespective of the market situation. In Europe, for instance, the maximum price policy encourages farmers to produce surpluses – at the cost of massive overexploitation of natural resources (excessive fertilization with nitrates which pollute drinking water) and wasted energy. Instead of making available "net" phytogenic energy through the conversion of solar energy, present farming methods (not only in Europe but also in developing countries) require the use of fossil sources of energy (fertilizers, pesticides, diesel oil), methods which, in the European Union, are subsidized to boot!

In many countries (not only in the Third World) energy is hugely subsidized (for instance by selling electricity cheaply in capitals and charging low prices for mineral oil). Hence prices are artificially kept down, which in turn induces more wastage. The situation was much the same in the Soviet bloc countries up to 1989, where the CO_2 emission per head of the population was distinctly higher than that of the United States despite the much lower standard of living.

Thus the problem underlying all these questions about resources and the environment is as follows. The individual increases his own advantage and from a subjective point of view behaves rationally by not making adequate provision to conserve his sources of income. Unwittingly and unintentionally he is thus undermining his own long-term prospects. The individual fisherman, for instance, who catches a greater amount than is compatible with the natural regenerative capacity of the fish stocks will increase his profits in the short term but ruin himself in the long run. This backlash effect also occurs when, as a result of the influence of international power, natural resources are overexploited or irreversibly damaged (rainforest destruction, ozone depletion).

There are also constellations in which everyone thinks his own contribution to nature conservation is minimal and that it is therefore not worthwhile taking protective action unless everyone else is prepared to do the same. Such constellations where subjective rational conduct has harmful consequences for all can be attributed to the following deficiencies.

First, there is the *problem of information.* No one knows the exact amount of resources available, for instance. The experts have time and time again proved to be wrong when assessing the facts. If their advice had been followed we would have forfeited many of the conditions necessary for progress (the industrial development of the last century, for instance). Moreover, it is difficult to determine the rate of natural regeneration and thus establish maximum annual amounts of exploitable raw material deposits so as to ensure their sustained use. Thus realistic economic analyses of the present use of resources that are likely to prove scarce (fuels and raw materials) are based on the knowledge that producers anticipate price increases and already try to allow for possible future discounted profit (scarcity yield) in their current prices.

When price increases occur and scarcity yields can be achieved depend on the size of the estimated reserves. The increase, however, is always controlled by the cost of alternative resources. Consequently, adjustments

have to be constantly made because the *expectations* with regard to those estimated reserves and with regard to demand may change, partly for cyclical reasons. Either way, on account of the *many* factors on the supply and demand side which affect the shortage situation, there is no better indicator of changing relative shortages for entrepreneurs than the market price resulting from competition. If this price mechanism works under the kinds of ownership conditions described above it will show where shortages are particularly severe and where there are likely to be bottlenecks.

Second, there is the *problem of coordination and incentive*. It is a matter of adapting producer and consumer conduct to new ecological situations and requirements in the light of price indicators. In this process the general conditions have to be such as to provide *incentives* for manufacturing processes and decisions by consumers which prevent damage to the environment. Since lasting improvements in production technology need not necessarily cause ecological deterioration, there arises the question whether the incentives emanating from the market system or the state would not be sufficient to solve the problem of environmental pollution.

In the case of environmental resources where it is not possible simply to install a price signal, however, additional coordination mechanisms are required, for instance collective agreements on the use of resources. This presupposes that all potential users are known. Only if someone seizes the initiative can they be summoned together in order that proprietary rights may be distributed among them. Thus it is necessary to find someone to develop a recognized system for the distribution of, say, maximum CO_2 emissions among individual countries or the auctioning of fishing licences.

This means, therefore, and this is the third point, that procedures for the management of scarce resources always create *distribution problems*. Although the willingness to purchase is normally assumed to be the criterion for the distribution of scarce resources in market economies, it becomes problematical in the case of vital goods (i.e. those on which survival depends), and also where purchasing power is unequally distributed in the extreme. For without any regulatory interventions the rich would always win at the expense of the poor if everything were left to market demand (for instance competition for timber, which poor people in developing countries need for firewood in order to cook their food, but which is also sought after by wealthy consumers in industrial countries for their furniture). Only if the general political conditions are such that a market sys-

tem, for instance, is tempered by social justice is it possible to find solutions for such problems of distribution.

But even if negotiations succeed, there remains *the fourth problem of finding ways and means of implementing the agreements and verifying their observance*. For it is always tempting to assume the role of outsider and free rider, the one who doesn't adhere to agreements, who, for instance, catches more fish than the quota allows, emits more pollutants into the air and effluent into seas and rivers than is permissible, etc. Thus without effective monitoring and sanctions for violations of the agreements they will be slowly eroded.

In the case of a number of global environmental problems the danger is particularly great because regulatory systems and institutions will have to be found to coordinate the behaviour of literally billions of people. This task requires complex monitoring systems, such as international agreements, incorporated in national law and thus binding for all companies and consumers. But any country can invoke the international principle of national sovereignty and obstruct agreements of this kind from the start by refusing to accede to them or thwarting negotiations with its objections. It can also acquire for itself, but also organizations and individuals within its own sphere of jurisdiction, the role of outsider and in this way subsequently circumvent accords. Up to now the international community has found no effective means of ensuring compliance with such agreements.

II. Socio-ethical deliberations

The ethical aspects of global environmental issues give rise to a number of specific problems in comparison to the ethics of relations among small groups of people which are the focal point of traditional moral theology. In such groups it is often possible to fall back on the obligations that have been passed on from generation to generation and on ethical institutions which guide the individual to the proper moral conduct. But where environmental issues are concerned, and especially those of a global nature, we are not directly confronted with a moral decision because the problems do not touch us directly. We do not intuitively perceive any causality, even when the effects of those problems are felt. We depend rather on the scientific information we receive through the media (about ozone depletion, for instance).

The individual then has to ask himself when taking decisions which affect his own person or the community as a whole how far he can trust the facts provided by the media, parties, environmental groups, scientists and so on and the solutions they propose. For they, too, are exposed to ethical temptations: portraying on the one hand apocalyptic scenarios or, on the other, playing down the seriousness of the situation depending on the interests they represent. The institutions of a democratic society which respects the rule of law, which guarantees freedom of expression and freedom of research, are most likely to ensure that ideological distortions are minimized through the interplay of criticism and counter-criticism. The following deliberations are intended as a contribution to this process.

One of the fundamental precepts of modern economic science is that people normally act "economically", in other words they weigh up the negative consequences and side-effects ("costs") and the positive results ("benefits") in order to optimize their actions. However, economics only acquire their ethical quality through the application of the fundamental rule of justice or the common good which is part of that weighing up process and extends beyond the principle of mere individual benefit. This kind of "consequentialist" judgment resulting from a fair assessment of the consequences of a particular action also features prominently in classical theological ethics as a "weighing up of values". For "justice" implies that the results for others or the community at large must not in principle be any less significant than the consequences for me personally. Indeed, even

when I am prepared to accept certain "costs" for myself I cannot simply go ahead and accept them on behalf of others. Hence all affected must be consulted because they may perceive and judge the possible consequences for themselves differently.

Seen from this perspective, doubt attaches to all economic actions which, through the exploitation of resources and the emission of pollutants, bring advantages for one party but sooner or later cause damage to the environment which in turn causes suffering on a massive scale to others, indeed in many cases to the whole of mankind. Thus some kinds of production and consumption would today, if only for reasons of national economy, no longer be "economical" if all the actual damage caused could be taken into consideration as costs. This is demonstrated time and again by, for instance, the extremely high cost of redeveloping contaminated industrial sites. The worst example of this in Germany is the area around Wismut in the former German Democratic Republic where uranium was produced. The major causes of these problems are insufficient scientific knowledge, the insufficient application of existing knowledge to change the political framework, and the insufficient application of rules and regulations.

And of course the weighing up of benefits and costs becomes immediately problematical from an ethical point of view where present generations draw benefit from the situation to the detriment of later generations. Although people still unborn cannot yet take care of their own interests as people who will one day be affected, there is no sensible reason for not applying the basic rule of universal justice to later generations as well. People will appreciate this directly where their own children are concerned, and those children in relation to their children, and so forth, but in the long-term perspective which this approach calls for there is usually a considerable uncertainty factor in assessing the very long term effects and it is doubtful whether future generations would apply the same standards.

Because of these uncertainties we ought to take care with the way we use resources and with our demands on the environment. Decisions should always be based on the best available knowledge. The uncertainties must be reflected in our ethical judgments through our choosing the kinds of action which will have the smallest possible impact by virtue of the fact, for instance, that they can be reversed at not too great expense.

It then becomes possible to deduce a number of fundamental criteria from this ethical line of argument which probably everyone can appreciate. Those criteria form the basis for the development of political and eco-

nomic institutions at both international and national level, and for the conduct of individuals. They can be defined as follows:

(a) Within each generation[2] the possibilities for using natural resources must be such that all members of the community can benefit from them. The fact that not all people have equal access to such opportunities, and that they are not equally affected by the negative consequences of environmental destruction, is only acceptable if the poorest members of society thereby have better opportunities in life than they would if conditions were less unequal. In the course of mankind's evolution many different kinds of ownership have arisen through the exploitation of nature and through the formation of material and human capital assets. To that extent, therefore, man's opportunities in life are no longer merely dependent on the possession of land as a close-to-nature form of property. All the same, every individual needs, directly or indirectly, certain opportunities and rights of views in order to secure his livelihood.

(b) Every generation should exploit renewable resources (seas, forests, land, basically all ecosystems) only to the extent that they are able to regenerate themselves by natural means or through human action, thus ensuring their sustainable use. The assessment of the degree of exploitation naturally presupposes the best possible knowledge of the ecosystems affected. That knowledge must be promoted to the maximum extent and made public. Where there is justified cause for doubt, the possible damage through high risk acquires greater significance than the loss sustained through waiving any short-term benefit.

(c) The consumption of non-renewable resources (e.g. fossil fuels) by the present generation is only permissible if future generations are bequeathed compensatory contributions (e.g. technologies) which guarantee that they (according to their assessment which we have to anticipate) do not have to inherit "worse" living conditions. If such compensatory contributions were not permitted, non-renewable resources ought hardly to be touched at all in view of the very many generations probably still to come.

It is no doubt true both for material and human as well as for "ecological" resources that they do not always retain the same form but are constantly being renewed and modernized by technical innovation. Thus it may be

[2] In any community there are always several generations. The ethical problems, reduced to their simple state for argumentative reasons, are developed in the light of generations.

possible to sustain, even increase, consumption possibilities if non-renewable resources have diminished but the material and human resources have increased, which makes for more effective use. On the other hand, no generation should take the liberty of consuming an ecological resource which, such as fossil fuels, has evolved over millions of years and constitutes an asset which in principle has to remain available to the whole human race, without a corresponding quid pro quo. The earth and its resources are in this sense only left to each generation on trust.

(d) With regard to the problem of population growth that is frequently discussed in this connection, one can deduce that each generation has a responsibility to ensure that subsequent generations are not, on account of their size, subject to constraints which make it difficult if not impossible for them to abide by the above principles.

It has become evident, particularly since the surveys carried out by the Club of Rome, that there are ecological limits to world population growth. There appears to be no justification for the hope that the development of new technologies and the achievement of a fairer distribution of the goods of the earth would make possible a much greater population growth without threatening the foundations of human existence. There is no disputing the fact that the population of the industrial nations is responsible for much of the global environmental pollution.

It is equally true, however, that the increase in especially the "poor" population of the Third World puts direct pressure on the earth's already limited resources, in particular the land, which causes further degradation of those very resources. If poverty is one of the main reason for population growth and hence for the continuing overexploitation of natural resources, then policies to protect the environment must also include strategies for reducing poverty. Although there are signs in some Asian and Latin American countries of a "demographic transformation" (that is to say, slower rates of population growth) the population trend is one of mankind's biggest challenges, also in terms of the environment.

The continuing damage to the environment reveals phenomena of global pauperization owing to the growing interdependence in this "one world". One manifestation of this is the increase in "poverty migration" from the Third World to the industrial countries. In the long term even the "well off" will not remain unaffected by these phenomena unless ecological problems are reassessed and the "world system" and the problem-awareness of the world's populations are drastically changed. This also includes modifica-

tions of our conceptions of development and progress. The traditional industrial societies cannot go on wasting natural resources in the name of "progress", nor may the developing countries follow in their footsteps since that would inevitably lead to ecological disaster. This is particularly true if the world's population continues to grow unchecked.

Arguments so far have focused exclusively on the "costs" or "benefits" of certain actions for the individual or for mankind as a whole. This "anthropocentric" approach is now often criticized. Many of those concerned with the ethical aspects of the environment demand greater consideration for the interests and rights of animals capable of suffering. Holistic conceptions are put forward of nature, animate and inanimate, having a value of its own. The maxim "I am life that wants to live amidst life that wants to live", which was Albert Schweitzer's idea of the comprehensive respect for life that is necessary to be able to assess the value of things in relation to one another, is an example of this attitude.

According to the Christian perception of Creation, God made human and non-human nature and saw that it was "good". He entrusted that Creation to man as a guardian that he may "dress it and keep it" (cf. Gen 1-2). Man is authorized to use non-human nature but not to destroy it. God's Creation requires man to show respect for things which are not of direct benefit to him. A Christian who sees nature as God's Creation will take at least the four principles mentioned above very seriously and in many respects advocate greater restraint and care where parts of Creation are at risk. The latter does not, of course, rule out the possibility of "consequentialistic" arguments, too, being advanced in support of such caution – just as, vice-versa, the respect for Creation which Christians insist upon cannot mean "conserving" it just as it is at present.

We cannot go into detail here on the various ideologically motivated ethical conceptions of the environment. But despite all the differences it is quite clear that in the present global situation environmentally acceptable economic activity, if at all, can only be achieved if as many people as possible are able to transcend their cultural origins, religious convictions and political views and agree on a lowest common denominator of ethical values. Thus it cannot be the aim of Christians during the present ecological crisis to assert their view of nature, which is rooted in the theology of Creation, over the views of all other humans. They must content themselves with being motivated by their faith in the God of Creation to advocate observance of those basic ethical norms which can be applied universally to prevent our planet from being destroyed or irreversibly damaged. Such a

"minimum ethical standard", which is feasible and would also be sufficient initially, is offered by the "consequentialism" described above. It will therefore be taken as the basis for the conclusions outlined below.

III. Conclusions

It is necessary to draw from our analysis of the problem and our socio-ethical deliberations conclusions for the different levels of responsibility in the community. In doing so the general approach is not characterized by a radical rejection of technology and economic growth as variously called for. Without the many achievements in the field of engineering and without the development of a productive market economy it would not have been possible for many people today to live without fear of the deformities of nature that pose an immediate threat to their existence. Without technological advancement and economic growth it would not have been possible for humankind to multiply and benefit from their biological life instead of dying prematurely of starvation or diseases which can be combated. The following conclusions favouring the further development of economic and social institutions as well as technology leading to a community life that is more compatible with the environment are based on these ethical deliberations.

It cannot be assumed, however, that agreement on new global institutions and the introduction of necessary structural changes in the industrial and developing countries are possible without conflict. Conflicts over short-term versus long-term economic advantages, conflicts over who bears the cost of basing the economy on ecologically sound principles, are unavoidable. This also applies to conflicts ensuing from the necessary dismantling of the political and economic monopolies of privileged groups in developing countries. What is required are procedures for the rational settlement of conflicts within the framework of the democratic institutions of a country which respects the rule of law.

Ecological problems, too, cannot be mastered with the police-state methods of an "eco-dictatorship", quite apart from such other considerable ethical misgivings as human rights, because it is essential that the majority of the population voluntarily appreciate the necessity of changing the general conditions and systems of incentives and that they are willing to carry out such changes in their own lives. The social teaching of the Church can help by, on the one hand, making people aware of the problem and, on the other, urging that conflicts be settled by peaceful means.

1. International level

(a) In the case of some resources ("goods common to mankind") which might be jeopardized through unrestrained economic activity (extinction of certain animal and plant species, climate stability), international agreements are necessary to impose constraints on their use. Existing agreements must be implemented at a faster rate, verification of their observance approved, and they must be extended to new areas.

(b) In the case of resources which up to now have been used without restriction but which in fact are scarce and thus likely to be overexploited (e.g. fish stocks), international agreements (on catch quotas for instance) are needed to limit their exploitation. At the same time monitoring systems will have to be created to thwart attempts by certain countries to circumvent such agreements (whale hunting, ostensibly for research purposes only).

(c) Transboundary pollutants (for instance, CO_2 emissions, CFCs) must be made the subject of global agreements which commit the countries causing the pollution to keep their emissions within prescribed limits.

(d) Up to now the General Agreement on Tariffs and Trade (GATT) has contained no reference to "the environment", which shows how little people were aware of such problems when the agreement was signed in 1947. But since a member of GATT may resort to environment-friendly measures that affect international trade only when the ecological impact is felt in its own country (e.g. a ban on imports of toxic waste), and since choosing trading partners according to their environmental protection standards (for instance, exploitation without reforestation) is inconsistent with GATT, new international rules are needed to tackle these problems. These could include agreements to ensure observance of minimum ecological standards during production. It would then be less attractive to companies in industrial countries merely to switch production abroad on account of the lower environmental protection costs.

Since the aim of "sustainable development" has been incorporated in the preamble of the treaty establishing the World Trade Organization (WTO) following the conclusion of the Uruguay Round of GATT negotiations, the WTO is now called upon to adopt binding directives for "trade and environment". It will have to take account of the risk of industrial nations using such ecological standards as yet another excuse for protectionist measures

to the detriment of developing countries. This danger must be counteracted by means of impartial procedures for interpreting the rules.

2. *Industrial countries*

Owing to the extent to which natural resources are currently being consumed and the ensuing ecological burden, but also in view of the technological capabilities of the modern industrial countries and the economic options available to them, these countries must be required to adopt production methods that are more in keeping with ecological requirements, and they must lead the way by restructuring their industries along these lines.

(a) In this process it is necessary to eliminate the kind of market activity which places a heavy burden on the environment (for instance, incentives to European or American farmers to produce more irrespective of the scarcity of resources, or the subsidizing of energy production which is conducive to waste). Since there is a demand for environmental preservation measures in industrial countries, there is also some support for the idea of paying farmers to engage in activities which protect the landscape. For some of them this may be compensation for loss of earnings resulting from a reorientation of farm policy, but it will also give them the feeling that they are actually providing services for which there is a demand, which is an important factor for their integration into the community.

(b) In many areas external costs have not yet been sufficiently internalized. In the case of air and water pollution as well as waste disposal, attempts must be made to offset the costs in a way which will gradually reduce the degree of pollution and damage.

(c) Owing to the expected impact of CO_2 emissions on the climate, further increases in this substance in the industrial countries must first be stopped as quickly as possible and then reduced. Technical requirements, certificates allowing CO_2 to be emitted in annually declining quantities, as well as a charge for CO_2 emissions (a "CO_2 tax") would be useful instruments for this purpose.

A CO_2 tax would only have an impact on the environment if fossil fuels were taxed according to the actual CO_2 burden caused and thus made considerably more expensive, but without unjustified exemptions (for in-

stance, to save miners' jobs) or additional burdens resulting from the use of non-CO_2 sources of energy (wind, water, solar and nuclear energy). In order to avoid distortions in the use of energy steps will have to be taken to ensure that in the case of non-CO_2 sources, too, the external costs are internalized. All the big industrial nations (EU countries, Japan, United States) must be involved in such measures. This is the only way to prevent distortions of competition and keep the global effects actually measurable.

(d) In the field of energy, all possibilities of using regenerative sources (i.e. those which do not cause CO_2 pollution) must be resorted to and every feasible economy made. This may require us to accept drastic changes to some of our habits in the long term (i.e. as regards production methods, housing, work, transport). The question of retaining nuclear power or phasing it out must also largely be assessed in terms not only of reactor safety and the disposal of nuclear fuel but of the possible consequences of larger CO_2 emissions. One also has to take into account the effects of CO_2 emissions and of the waste heat generated through the installation and operation of nuclear power stations.

(e) Transport, especially individual transport, is a major environmental problem in the highly industrialized countries. The cost of petrol (measured in working minutes) is today lower than it was prior to the first oil price explosion in 1973. For this but also for other reasons (the growing number of families with second and third cars) the number of cars (per thousand inhabitants) and the degree of motorization have increased in recent years. On ecological grounds, this trend cannot be continued. The following steps will have to be taken to restrict it.

Public transport systems are usually too ponderous to be able to operate economically and offer customer-friendly services. They will therefore have to be made more attractive economically. This is essential if they are to become more acceptable ecologically and energy-saving. These improvements cannot be achieved without further deregulation and privatization. Furthermore, various measures (e.g. technical conditions together with a pollution-related car tax, an increase in mineral oil tax, speed limits, and proof that garage space is available) will have to be introduced to make individual transport less attractive. These would be good incentives for resorting faster and to a greater extent to known technologies that are less of a burden on the environment and developing them further.

(f) Industrial countries should not pass on their ecological problems to other nations (e.g. by exporting [toxic] waste) who agree to take such pro-

ducts because of their ignorance of the possible long-term consequences or because of their dire economic circumstances. International agreements such as the Lomé IV convention, under which the EU countries have undertaken not to export toxic waste to ACP countries, should be extended and effectively implemented.

(g) To the extent that industrial countries, for instance as a result of positive external effects, profit from tropical rainforests, they are under obligation to pay compensation to developing countries to preserve them. The countries receiving such payments would for their part have to promise to allow controls to be carried out by external agencies. The payments would be made in instalments and adjusted from time to time depending on the extent to which the countries concerned have met their obligations.

(h) The industrial nations should assist the developing countries in the following areas of environmental protection, within the framework of economic cooperation:
- introducing environmentally acceptable technologies, particularly alternative sources of energy that are easy to operate and service (solar energy stations and wind farms, small hydroelectric power stations);
- providing know-how in the establishment of environmental protection agencies, drafting environmental legislation and ensuring its effective implementation; and
- setting up ecological research establishments to promote, for instance, environmentally acceptable farming methods and forest management.

In these areas the bilateral would be preferable to the multilateral approach because decentralization is conducive to broader experimentation and thus the testing of more options. There could be an exchange of experience at a later date.

Ecologically acceptable economic activity can be expected to develop to the extent that it proves possible to pass on the cost of environmental protection. Thus, for instance, the use of cars for leisure (about 50 % of all car journeys) can become dearer, which suggests that people should use their leisure time differently. By internalizing external costs to a greater extent it is possible to dispense with jobs in branches of the economy that are a particular burden on the environment while allowing new ones to be created in environmentally acceptable areas of production (e.g. the service sector).

But such consideration for the environment presupposes that the necessary adjustments are tolerated. Where the social impact is considerable it will

be necessary to provide assistance for such adjustments. It is still necessary for nations to agree to waiver some of their national sovereignty within the framework of international agreements. It is the task of the associations, the political parties, and above all the Christian Churches on account of their universal structure stemming from their faith, to promote public awareness of this necessity.

3. Developing countries

Owing to the systemic links between different problems areas (ecology, poverty, population trends) it is necessary to reform the social institutions in the developing countries, to create new ones, and to foster the culture, value-concepts and so on that are a prerequisite for both reform and the proper functioning of new institutions. In this connection it has to be remembered that there existed in the traditional culture of many peoples both elements of respect for nature and rules for political leaders to apply for the benefit of the community as a whole. It is therefore essential to draw on such value-concepts and to use them creatively in establishing the new cultural, political and economic conditions for a global society.

The fundamental problem of many developing societies lies in the fact that their social order is not a system of cooperation for the mutual benefit of all, that is to say, there are no rules, institutions and values that serve the common weal. On the contrary, the uncoordinated pursuit of short-term selfish aims eventually causes damage to the community as a whole. Thus if only in order to protect their long-term collective interests developing countries ought themselves to be the first to take an interest in safeguarding and preserving their ecological assets, for overexploitation reduces the sustainability of those assets or, in extreme cases, destroys them altogether. Their aim should be, through cooperation with others and the restructuring of their own social institutions, to ensure that uncoordinated individual behaviour on the one hand and short-term selfish interests of minorities on the other do not prejudice their common interests in the long term. The following aspects would seem to have considerable bearing on efforts to cope with the interdependence of the problems of poverty, population and environment.

(a) Only if there exists a constitutional state with a democratically elected parliament, an independent judiciary and an administration that is commit-

ted to the public good (that is to say one that is not arbitrary but free from corruption) is it possible to stipulate exact individual and group property rights (e.g. by means of a land survey office, agricultural reforms), to ensure that they are reliably upheld, but also to bind society to effective rules (e.g. laws which provide for reforestation) and the protection of nature parks, etc. For only owners whose property rights are secured in the long term will take care of their natural resources, will preserve them and try to sustain their use. Moreover, the installation of such democratic institutions meets the wishes of large sections of the population in developing countries who, after all, have a feeling for fair administration of justice and government action.

Conditions of democracy benefit the poorest section of the population most of all since they are then no longer exposed to the dictatorial attitudes of officials or those wielding physical, social, political and economic power. Only where the rule of law prevails do poor people have the chance to enjoy the fruits of their labour themselves and are no longer open to the danger of their property being acquired by outsiders.

Democratic conditions are also prerequisites for reducing population growth, however, because in such a society and given monetary stability it is possible to make provision for old age by forming monetary and material assets instead of relying solely on one's descendants. And again, it is only in a democratic society that confidence in collective forms of old age provision, i.e. social security, can develop.

(b) But democratic stability is only sustainable if the social system is accepted by the community as a whole. Rights of ownership protected by the rule of law will not be accepted by the majority if the distribution of, say, landed property is extremely unequal, that is, there is a small group of large landowners and a large group of landless people who, apart from having no land, also have no access to other forms of ownership (human capital, means of production, housing etc.). Social acceptance of democratic institutions has to be promoted by government redistribution policies (land reform, education for all, social housing programme, etc). In the conditions prevailing in many developing countries, capital-formation schemes serve to increase efficiency in broad sections of the community, especially where non-performance-related pensions are absorbed by increased competition, factor quality is improved (education) and factor use increased through larger sections of the population having better access to land (redistribution of land, improved leasing arrangements).

(c) Democracy is, furthermore, an essential basis on which poor sections of the population can form various social oganizations and self-help groups without fear of reprisal or coercion. This enables them to make collective contributions (e.g. local infrastructure), to organize social and economic self-help activities, and to make their interests known and respected within the community. The formation of such groupings can strengthen society's democratic elements and help ensure that incomes and property ownership relate to merit and performance. Freedom of association also makes it possible to establish environmental protection organizations.

The merging of municipal budgets, especially in slum areas, may be conducive to the development of ecological and economic cycles. The formation of waste cooperatives, principally among the poorest sections of the population who have contracts with the local authority to collect and sort refuse, can create jobs and at the same time serve ecological purposes. Water cooperatives and organizations which look after the interests of the local poor by taking care of the public water supply, waste management, the public cyclical economy, are effective interventions and projects that are conducive to social and ecological development.

(d) Democracy and social redistribution are particularly suited to the task of easing demographic pressures if the legal status of women in developing societies is improved and women especially receive the benefit of public welfare and institutions (e.g. education, health care), thus reducing the existing deficiencies (e.g. lowering the much higher level of illiteracy among women). In addition, improving the situation of women and providing them with more education helps to slow down the birth-rate.

(e) The market mechanism must be given greater prominence in many developing countries. It is also necessary to remedy existing price distortions by means of government interventions in the market. This applies initially where the state artificially reduces the price of ecologically relevant goods (e.g. oil products, electricity, water), thus causing overexploitation and wastage of resources. The distribution-oriented arguments for such a price policy are mostly misleading because the benefits largely or even exclusively go to the middle and upper classes, whereas the poorest members of the community gain very little or nothing at all because they are neither connected up to the electricity or water mains nor own cars which run on petrol.

The discontinuance of the low-price policies pursued by monopolistic (in many cases simultaneously state-owned) agricultural trading companies in many developing countries contrary to market requirements helps to improve the situation of the poor rural population and thus ease the pressure of migration to the urban centres. However, if urbanization takes place too quickly and uncontrolled it can also lead to negative ecological trends that are likewise difficult to control (for instance, owing to the problems of water supply and waste disposal, or the depletion of woodland in suburban areas). But as soon as the producers of foodstuffs set up their own sales cooperatives they can increase their share of the income from their products and start a self-sustaining trend.

In this process the ecological system using living nature (crop cultivation, animal husbandry, timber management, biotopes etc.) can in rural areas be linked with the household (energy, water, drainage, waste, building materials) by establishing cycles which economize on resources and conserve energy. Biogas installations, the cultivation of regenerative commodities, earthworks using methods which save cement and energy, and the re-use of water and biomass are examples of this.

The necessary external framework can promote this development through innovation and the preservation of good traditions in the use of home technology, but also by pricing raw materials, cement, energy etc. to cover all ecological costs and promote this cyclical economy from the outside.

IV. The environmental responsibility of the Church

The institutionalized Church should consider it part of its environmental responsibility to participate actively in international conferences and commissions, such as those established as a follow-up to the Rio Conference, and to exercise influence through its representative experts in the various fields. In addition, the social teaching of the local Churches will exhort national governments to observe their obligations under international agreements and take the measures necessary to preserve the environment.

But above all Church teaching will seek to promote ecological awareness in the global context in connection with North-South problems, first of all within the Church itself but then in the community as a whole. The people must be increasingly willing to accept the need for a restructuring of the economy on ecological grounds, a process which may place some jobs in danger. They must also be brought to realize that every individual should pay more attention to ecological aspects when deciding what to buy. This social teaching will also strengthen those groups and associations within the Church who strive in their local environment and on their own premises (e.g. church buildings, educational establishments) and in the community to launch initiatives designed to preserve the natural foundations of life. The Church needs to be open for prophetic commitment.

The development cooperation of the Church, and increasingly of the state and other non-governmental organizations, is these days understood as joint projects for intervening in the development process. This partnership between "North" and "South" is based on a largely mutual understanding of the various processes involved and of the manner in which they are to be influenced. Massive conflicts of interests between North and South, too, are overcome through the relationship with the other partner, by means of a development policy dialogue, solidarity, and cultivation of the principle of the "world's common good".

In this development cooperation, in the promotion and implementation of development projects as interventions which are themselves in the nature of a process, common approaches to the concept of development have emerged and mutual experience has been gained as to the effectiveness of inputs which can be applied to newly arising problems of ecological development as well. Accordingly, the Church and its partners will promote

local projects for the conservation of resources, the use of regenerative sources of energy, and environmentally acceptable methods of land management.

Publications of the German Bishops' Conference Research Group on the Universal Tasks of the Church

Booklets

in English

- Poverty and Demographic Trends in the Third World (1991)
- Christians and Muslims Facing the Challenge of Human Rights (1994)
- From Dependency to Interdependency. *Impulses and Limits of the Dependency Theory.* (1994)

in German

- Armut und Bevölkerungsentwicklung in der Dritten Welt (1990)
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- Pobreza y población en el Tercer Mundo (1991)
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Books

Since 1993, the Research Group on the Universal Tasks of the Church has published the series of books entitled "Forum Weltkirche: Entwicklung und Frieden" (Matthias-Grünewald-Verlag, Mainz). The following volumes have appeared:

1 Hünermann/Scannone (Hg.): Lateinamerika und die Katholische Soziallehre
Teil 1: *Wissenschaft, kulturelle Praxis, Evangelisierung*
Teil 2: *Armut*
Teil 3: *Demokratie*
2 Schwartländer: Freiheit der Religion. *Christentum und Islam unter dem Anspruch der Menschenrechte*
3 Hoppe (Hg.): Auf dem Weg zu einer Europäischen Friedensordnung. *Perspektiven und Probleme nach dem Ende des Kalten Krieges*