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Towards international instruments for sustainable
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H.L.M. Kox

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TOWARDS INTERNATIONAL INSTRUMENTS FOR SUSTAINABLE DEVELOPMENT

Henk L.M. Kox *

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Summary

This paper deals with five issues: (a) the implications of the concept of sustainable development; (b) current bleak prospects of international adoption of sustainable development as a guideline for international negotiations on production, trade, finance and environment; (c) the imminent threat of green protectionism as a reaction on widening international gaps in environmental regulation regimes; (d) a possible way-out by adoption of an international Ecocharter in which development priorities and ecological priorities are reconciled. Finally, (e) a particular instrument that deals with an area where ecological and developmental priorities often collide, namely developing countries' production of primary export commodities, is treated in some more detail.

* The author thanks Hans Linnemann for useful comments on an earlier version of this paper. Any comment will be welcomed. Address: Free University, Faculty of Economics and Econometrics, Section Agrarian and Development Economics. Address: De Boelelaan 1105, 1081 HV Amsterdam, Netherlands, telephone (0)20.548.46.30, telefax (0)20.646.26.45.



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I. THE IMPLICATIONS OF THE PRINCIPLE OF SUSTAINABLE DEVELOPMENT

Sustainable development has become a fashionable catchword in the development jargon in a way which has not always contributed to its clarity (cf. Lélé 1991). One of the briefest and most unequivocal definitions of sustainable development is the one adopted by the Brundtland commission according to which it is "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED 1987:43).

The key element in this definition is the issue of inter-generational equity. It focuses on the trade-off between the needs of the current generation and those of future generations. The trade-off concerns two aspects. Firstly, the depletion of non-renewable natural resources¹⁾ for current consumption diminishes opportunities for next generations. The second aspect concerns the possibility to shift forward (to the future) the costs associated with current consumption. Many kinds of pollutive behaviour reflect an attitude of 'enjoy now - pay later'. This is for instance the case with gradual poisoning of subsoil and ground water by dumping toxic chemical and nuclear waste. To stop mortgaging the future requires a different pattern of growth in which the costs of current consumption are no longer passed forward to future generations. A long-term dimension is introduced. In the literature relatively broad agreement exists that four types of adjustments are required for sustainable patterns of development:²⁾

- a) introduction of production techniques and policy instruments that reduce pollution output;
- b) introduction of techniques oriented at recycling of waste products and non-renewable resources;

1) The division between renewable and non-renewable is somewhat elusive. Many so-called 'free gifts of nature' are in principle renewable, though sometimes only at a limited scale and in the long term, if enough productive and resource efforts are spent to their reproduction. Non-renewability therefore is not always an absolute criterion, but one that relates to the necessary investment of time and resources, to the current technological frontier, and to the scale of reproduction possibilities. By these criteria mineral deposits, fossil fuel deposits, clean oceans, tropical rainforest, natural wetland areas, ozone layer, biological diversity, etc. can all be considered as non-renewable natural assets. To some extent this is illustrated by the fact that some authors regard tropical timber and rainforests as a renewable resource (Serafy 1989:11), while others regard it as a non-renewable resource. According to Gillis et al. (1987:522) it is not yet certain that tropical timber can be regarded as a renewable resource, like for instance is true in the case of most coniferous timber varieties. This uncertainty stems from the long growth cycle (40-150 years) for many popular tropical hardwood varieties, the vulnerable ecology of tropical rain forests, and widespread lack of success - except in case of teak - of attempts to regenerate the logged varieties.

2) Cf. Turner (1988); UNCTAD (1990); ECE (1990); WCED (1987:49); Van den Bergh (1991:123). A diverging view is expressed by Ascher & Healy (1990:10) who want to include as elements: distributional equity, and participation of all sectors in society in decisionmaking.

- c) substituting non-renewable resources by renewable resources;
- d) reduction of pollutive and natural resource-intensive consumption patterns.

It is debatable whether the third type of adjustment is sufficient to deal with the problem of depletable resources. Of course, the substitution process should be shaped such that the regenerative capacity of renewable resources will not be lost. According to traditional neoclassical analysis depletion of nonrenewable resources could be adequately compensated for by investing part of the proceeds in (any type of) projects that generate a future income flow of comparable magnitude as the proceeds from foregone nonrenewables. The part of current proceeds that should be invested depends on the long-term rate of return (discount rate) of alternative investment opportunities (McKendry 1991; Goodland & Ledec 1987:19-46; Serafy 1989). The proper rate of exploitation of non-renewable resources would then be related to the availability of alternative investment opportunities in substitution projects. Biophysical economists, like for instance Georgescu-Roegen, Costanza, Daly, and Cleveland, consider this approach to depletion of non-renewable resources as too optimistic and partial, since it does not present a solution for increasing entropy levels.¹⁾

In designing the proper instruments to attain the above mentioned four categories of adjustment it is important to know *why* current growth patterns diverge from the desired growth path. One group of causes is usually described by economists with the term 'market failure'. This means that individual producers, governments and consumers fail to make ecologically correct economic decisions because they receive wrong or insufficient price and market signals. The market, when left to itself, does not bring about the most desired and efficient allocation of resources. For this to take place, it is necessary that prices of products and resources reflect preferences of current and future consumers. Often this condition is not met, because future consumers have no vote at all. Moreover, for many products (including pollutants) no market and market prices exist. Partly this is caused by the problem how to properly value envi-

1) Increasing entropy means that materials and energy in a closed system decay into ever more 'unstructured' or chaotic forms. The term refers to the second law of thermodynamics (Cleveland 1987; Daly 1989; Ayres & Kneese 1989).

ronmental externalities.¹⁾ Finally, efficient market allocation also requires a developed system of private property relations, which is lacking in the case of common or public goods.

Policy instruments based on market failure. Most instruments of environmental policy focus on environmental destruction caused by market failure, and try to improve the functioning of the market. In this respect reference can be made to the Polluter Pays Principle and the User Pays Principle. Both principles have to secure that current producers and final consumers pay the full cost price in their production and consumption activities.²⁾ Internalization of environmental costs should lead consumers away from their pollutive consumption patterns, while producers are induced to apply material-saving and less pollutive production methods. Market failure is also dealt with by expanding the scope of private property relations. The latter are extended by distributing common or public properties, and also by creating private property of tradable pollution rights.

All these instruments for remedying market failure are important and deserve to be strengthened. Correspondingly, national and international data gathering on environmental functions, pollution and natural resource depletion have to be strengthened.³⁾ However, the instruments based on market failure still fall short in creating a sufficiently long time horizon for decisions that affect the environment and the use of depletable natural resources. Future generations and their interests remain under-represented. Therefore, non-market instruments are indispensable for attaining long-term sustainable development. Political decisions at local, national and international level have to determine the

1) The valuation problem has three aspects. Firstly, ecological effects have no natural unity of measure. This specially applies to the subjective appraisal of the natural environment. Secondly, environmental effects have the character of externalities as well as of public goods: they represent no private property, are not sold in markets and their value cannot be assessed in a direct way. The third and perhaps most important aspect is that ecological effects, due to their complexity, uncertainty, and to the far from complete knowledge about the complex ecosystems, can hardly be forecasted (Turner 1988). Many ecological relations have a non-linear character, which means that sudden vehement reactions can occur after many years of small, gradual changes in some ecological variable. Incomplete knowledge means that pivotal change factors may be undervalued. To avoid this, broad safety margins are required in ecological norms and standards. A host of literature has come into existence on environmental valuation questions (cf. Pearce et al. 1990; Cleveland (1987); Nash & Bowers (1988); Van den Bergh 1991; Hufschmid & Hyman 1982).

2) Cf. Opschoor & Vos (1989); Unctad (1991); Pezzey (1988).

3) There is an ongoing debate on how these data should be coupled to or integrated in the system of national account statistics, given the fact that arbitrary prices have to be used (cf. Ahmad, El Serafy & Lutz 1989). It goes largely unquestioned that a statistical system of physical indicators should be further developed, e.g. in the form of material balances in which material flows and energy fluxes are registered.

norms and standards which correspond to an acceptable state of the environment. These norms and standards have to account for broad safety margins due to uncertainty about complex, long-term environmental relationships.

Other causes than market failure. Government intervention is also necessary because market failure is not the only reason for environmental degradation. Other reasons include the lack of income alternatives, short-term survival strategies (e.g. in the case of fuelwood gathering by the poor), local overpopulation, short-term interests of pressure groups in unstable political systems, cultural patterns, disintegration of entitlements systems to common property, and finally, also ignorance and irrational behaviour. All these reasons - separately or in combination - give rise to low priority rankings for environmental targets and to a short-term orientation in the exploitation of natural resources. Socio-ecological systems analysis can help to identify the prevailing causes of environmental degradation in specific situations. Such analysis will be helpful for policy selection, since each cause may require a different policy tool. In agriculture, for instance, land reforms and appropriate long-term tenure systems often appear to be important conditions for lengthening the time horizon of production decisions by farmers. The likelihood of producers being inclined to take a long-term view will increase when ecological consciousness is raised by extension programmes, mass-medium campaigns and education.

Summing up, it can be assessed that in the discussion on sustainable development the basic principle that it should be a mode of development in which intergenerational equity is secured, is gaining wide acceptance. More weight should be given to the interests of the next generations, and appropriate instruments have to be designed to achieve this goal. A number of these instruments and working principles have gained wide international support. But this is where the agreement ends in the international negotiation arena. Actual application of the principle of sustainable development in an international context is still far away.

II. THE PROSPECTS OF INTERNATIONAL ADOPTION OF SUSTAINABLE DEVELOPMENT

The disagreement starts with the definition of the needs of current and future generations. The Brundtland report uses a rather global concept of 'needs'. It may be doubted whether everything that is produced at present also reflects the real needs of the present generation. Furthermore, and more importantly, before considering a trade-off of needs *between* generations one cannot disregard large inequities *within* the current generation with regard to possibilities to fulfill current needs.¹⁾ A very skewed international distribution of income prevents large sections of the current generation from fulfilling even their basic needs. So there is a problem of intra-generational equity. In this context, it cannot be overlooked that the current and past generations in the wealthier countries took a more than proportional share of the world's stock of depletable resources. And, also, these countries contributed more than proportionally to international pollution problems.

Several of the adjustments which are necessary to achieve sustainable growth tend to be frustrated by *intra-generational* inequity. Due to this inequity developing countries do not have the same priority ranking as industrialized countries. For the former, the most important social-economic policy target is to raise the level of per capita income and economic growth. Pressures to curb consumption -other than for foreign exchange constraints and as forced savings for capital formation- form a non-item in developing countries. To attain this goal further industrialization will be necessary, as there is a well-established link between economic growth and industrialization (Chenery 1988; Chenery et al. 1986). Present levels of industrialization in many developing countries are still below those in developed countries, especially in the lower middle income countries and the low income countries (excl. China). Table 1 this is indicated by the share of industry in GDP and the share of manufactures in merchandise exports for some country groups. Roughly 40 per cent of world population lives in countries where industrialization levels are below those in the developed market economies and upper middle-income countries. Future economic growth in the former countries will most probably require further industrialization. Even with current state-of-the-art technology, the concomitant contribution to worldwide pollution emissions of this process will be substantial.

1) It must be acknowledged that the Brundtland report unambiguously states that sustainable development includes both 'reviving economic growth' and meeting basic needs in developing countries (WCED 1987:49-55).

Table 1 Degree of industrialization in selected country groups

Country groups	Share of industry in GDP (%)		Share of manufactures in merchandise exports (%)		Share in world population (1986)
	1965	1986	1965	1986	
Developed (industrialized)	40	35	69	79	15 %
Upper middle-income	37	40	22	57	12 %
Lower middle-income	25	30	8	27	14 %
Low-income a)	18	20	12	29	13 %
India	22	29	49	62	16 %
China	38	46	46	64	22 %

Note: a) excluding India and China which are also classified as low income countries.

Source: World Bank, World Development Report 1988.

Export opportunities for primary commodities and manufactures - even if these export products contribute heavily to pollution problems and natural resource depletion - are vital to developing countries. For their economic growth they need foreign exchange with which they can import investment equipment, technology and intermediates. So all type of environmentally-inspired proposals that effect in reducing their export earnings will not be received enthusiastically. In the case of the EC proposal to ban imports of tropical timber, reactions from producing countries were even hostile (Hpay 1991).

Similar disagreement arises with regard to proposals to use alternative, environment-friendly methods in export production of primary commodities or manufactures. When those methods increase the cost price of production, this will reduce income for exporters in developing countries. Since the world market price for a given product is mostly determined by market forces which are beyond control of a given developing country, this price will remain inflexible as to cost increases in such a country. So each form of cost increase for environmental purposes diminishes their current export earnings.

As long as a wide international income gap persists, a call for restraint with regard to resource use to fulfill current needs -especially when such a call stems from the wealthier countries- will hardly be taken seriously in many developing

countries.¹⁾ A skewed historic and geographical distribution of the consumption of depletable natural resources and of contributions to worldwide pollution further complicates the discussion. The polluter cannot pay and will not be prepared to pay since he lacks sufficient income alternatives. A situation of stalemate is imminent and worldwide application of policies derived from the concept of sustainable development seems far away.

International measurement problems in relation to the environment. Strict adherence to the Polluter Pays Principle with regard to developing countries is also complicated by international environmental measurement problems. If the polluter is to pay the proper prices, environmental functions and natural resources will have to be valued. This is far from easy in an international context.

Subjective environmental valuation methods, like those based on the willingness-to-pay and the willingness-to-be-compensated,²⁾ seem less appropriate with regard to intercountry and transborder environmental decisions. Even if "the polluter pays", the permission to dump heavily polluted chemical waste in a poor African country is probably more a function of income and knowledge than a function of 'autonomous' preferences. Using these methods assumes a large degree of discretionary consumer choice, which is scarcely available at the low absolute income levels prevailing in most developing nations. Preferences are influenced by income, knowledge levels and culture, not only between individuals, but also between nations. Subjective valuation methods are not appropriate in situations where large differences in income and knowledge about long-term effects prevail.³⁾ For environmental valuation in an international context it is preferable to stay as close as possible to observable commer-

1) This is illustrated most radically by a statement of Razali Ismail, Malaysian ambassador at a preparatory UNCED conference: "If you want this planet to survive, then we should first talk about development. Why should we bother about environment when we are dying from hunger anyway. [...] During 45 years we tried to talk about development with you. We knocked at your door again and again, but it remained closed. With seven or ten rich countries you ruled the world. You formed your own institutions to organise your own business in the world according to your own interests. Now we finally got you. If you don't respond to our development demands, we don't talk about environment. If we must go to hell, then we will go all." The Ghanaian ambassador at the Third preparatory UNCED meeting in Geneva (August 1991), Edward O.Kofour, stated: "Those here who had in mind to have a free ride at the back of the developing countries, will have to reconsider their positions. We do not accept that resources at the territory of developing countries will be considered as the so-called common patrimony of humanity. This is only a hardly concealed method of the rich countries to acquire an interest in these resources, so that they can prescribe us how to use our resources." (Quotations in *Onze Wereld / Our world*, Amsterdam, October 1991, p.27).

2) These contingent valuation methods are based on the use of artificial markets. Other subjective valuation methods use implicit markets like those exemplified by acceptable travel costs, or by valuating land and property (cf. Nash & Bowers 1988; Boj6 et al. 1990: 76-81).

3) Cf. Hueting (1989:34-35) who mentions also other drawbacks of subjective methods for environmental valuation.

cial costs in existing markets. The reference base can be a different country, industry or situational context. In each case conventional market prices are used to calculate replacement costs, prevention costs, or direct cost of lost production.¹⁾ Even the use of objective valuation methods does not completely rule out the problem of intertemporal and interspatial differences in market valuation. By adopting international conventions on the use of reference markets or by adopting international minimum standards such problems can be minimized.

What basis for international environmental standards? One approach to environmental valuation is based on calculating the costs of complying with internationally-agreed environmental norms and standards. Such a set of standards for environmental quality could be formulated by UNEP or other relevant UN bodies. Corresponding to the necessary adjustments that have been distinguished in Section 1 of this paper, the standards can be formulated as upper limits in allowable pollution emission and/or net use of depletable resources for a given period. But what should be the reference unit for such pollution and depletion quotas? In principle the standards can be linked to specific production processes or to countries (areas). It will be shown that each approach has its pros and cons from the point of view of sustainable development. Using the international environmental standards as a benchmark calculations on its international consequences will reveal the existence of comparative ecological (cost) advantages between countries. For a given production sector one country will have to use a larger part of gross output for offsetting negative ecological side-effects of this production than will be needed in another country.

In the case that international environmental standards are linked to pollution quotas per countries, areas with an environmental carrying capacity that is only lightly strained up to then, clearly have an advantage over heavily polluted areas. To comply with environmental minimum standards the producers in the already polluted area have to invest more heavily in pollution control, while a similar investment in a country with low industrialization and pollution levels would require much lower pollution control expenditures. Environmental minimum standards that are linked to the carrying capacity of production areas,

1) Cf. Ahmad (1981); Hufschmidt & Hyman (1982); Boj6 et al. (1990). A major representative of this approach is the minimum environmental standards method formulated by Huetting (1987). It counts the costs of environmental preservation that would have been incurred if the same production would have been undertaken in the reference country (countries). This method has been used in assessing the environmental costs of export production of developing countries in comparison to producing these products in OECD countries, e.g. in Walter & Loudon (1986).

will therefore tend to generate international relocation of pollution-intensive economic activities, the so-called 'pollution haven' effect. Though there is so far few evidence of such 'pollution haven' relocations into developing countries, such investment (e.g. for non-ferrous metals, paper & pulp, bulk chemicals, iron production) could become more important when cost differentials become larger due to stern environmental regulations.¹⁾ Such a movement would tend to equalize the pollution burden among countries. Countries with comparative advantages as to ecological production costs in specific pollutive industries, may not be particularly charmed with relocation of such industries into their borders. However, if they have few other options for inflow of long-term capital, they may well accept this type of direct investment, or even be prepared to undertake joint ventures in this field. From the perspective of sustainable international development this effect is not desirable. Country-based environmental should only be used as an intermediary method to 'buy time' for more appropriate approaches.

The alternative to country-based environmental quotas is to fix such quotas to specific production processes (industries, sectors). From a strict ecological viewpoint this approach should be preferred. It will not induce a tendency to international equalization of pollution levels. Instead, it creates an incentive for all new investment to use ecologically sound technology, at least technology that complies with the process-based environmental quotas. An overall lowering of pollution emission and resource depletion will be the result. It is, however, to be expected that developing countries will dispute the fairness of this approach with two arguments. The first argument is that OECD countries in their past development and industrialization process have enjoyed unlimited opportunities to produce and consume in the cheapest ways, without minding about the future effects of pollution and resource-squandering. This historical disregard created many current transborder pollution problems, while it also accounts for a part of their accumulation of economic assets. It is evident that OECD countries will have to pay a price to clear their historical account. The second argument refers to the availability of the technology that is required to comply with process-based environmental standards. This type of standards puts developing countries at a disadvantage vis-à-vis industrialized countries. In the latter countries it is more easy to employ the latest technologies, because

1) For an individual country - be it developed or developing - the existence of comparative ecological production cost disadvantages does not necessarily mean that its government will be prepared to adjust its production structure. Governments consider it part of a trade-off between environmental and other objectives, like protection of domestic employment and investment, strategies oriented at maintaining an integrated domestic industry structure, and short-term electionist interests of politicians.

the required embodied ecological innovations, expertise and infrastructure often are readily available. In developing countries these conditions do not apply generally. Domestic skill levels and technology standards must be upgraded. Many embodied technologies (intermediates, machines) have to be imported, which requires additional foreign exchange sources. The adoption of process-based environmental quotas is only feasible if solutions are found to these complementary problems.

III. AN IMMINENT TENDENCY TOWARDS ECO-PROTECTIONISM

Let us consider the case that in the near future no international agreement is reached on the basic issues of sustainable development. The case is not at all unrealistic. It will bring us in the situation that large international disparities in environmental regulation regimes come into existence. Within industrialized countries ecological issues get more and more attention, due to an increasing number of facts that indicate profound environmental degradation: contamination of ground and surface waters, soil contamination with toxic waste, acidification of rain, smog problems. On basis of these facts many governments by now have adopted environmental objectives as part of their policy goals, though often not wholeheartedly and only partially. Environmental measures are being developed in several policy areas, especially regarding pollution emission and toxic waste disposal. In some industrialized countries more integrated environmental regulation regimes - consisting of laws, institutions, monitoring, public conscientisation programmes, enforcement measures - are coming into existence. In developing countries regulatory regimes for environmental issues are generally less comprehensive and elaborated. Often ecological preservation is a side-objective to their main policy goal of increasing income per capita and abolishing poverty. Even if, in nominal terms, environmental standards of LDC governments are as high or even higher than in many industrialized countries, enforcement of these standards requires a well-developed state apparatus and high education rates of the population, both of which conditions are often lacking. Consequently, up to now, environmental regulation is most developed in a number of OECD countries.¹⁾

1) Even though their per capita contribution to worldwide pollution emission and natural resource depletion is probably still well above the world average.

This disparity in environmental regulation regimes will undoubtedly induce a sharp increase in eco-protectionism or 'green protectionism'. Three types of eco-protectionism can be distinguished: (A) competitive cost-oriented measures; (B) eco-political retaliation measures; and finally, (C) pseudo-environmental protectionism. Each category will be treated in some more detail.

(A) To comply with environmental regulations in OECD countries producers often have to incur additional costs for production technology and adjoining measures to limit pollution emission and resource depletion in the production phase. If all producers have to comply with the same regulations, the regulatory framework will not interfere with existing competitive relations. Eventually, consumers will pay the burden of environmental preservation. However, when competing imports originate from countries where less strict environmental regulations apply, and where consequently producers do not have to incur additional costs for environmental preservation, competitive relations will effectively change. Imports from the latter countries enjoy a competitive advantage. The non-existing or less strict environmental standards for export production allegedly create an artificial cost advantage, sometimes described as environmental dumping.¹⁾ The tendency to use countervailing instruments like tariffs or non-tariff measures is imminent. The main justification for such methods will be that they protect domestic economic branches against foreign 'environmental dumping'. However, such allegations cannot be substantiated as long as no reference can be made to a common international set of environmental standards. A second justification could be that they protect domestic industries that are involved in a process of 'environmental conversion' to comply with new environmental standards. In fact this is a variant of the infant industry argument for protection, since an industry that adopts more environmentally sound production methods is regarded as a completely new branch of industry. The tendency towards this type of eco-protectionism becomes more and more clear. The pressure is so urgent that the GATT recently has reactivated a working group in this area.²⁾

(B) The situation is complicated by the existence of transborder ecological

1) Cf. Ford Runge & Nolan (1990). Even with non-existing or less strict environmental standards an exporting country could very well have a comparable ecological cost advantage due to its natural endowments or production conditions.

2) The GATT Council created a Working Group on Environmental Measures and International Trade in 1971, but it was never convened. Due to increasing international debate on this issue the Council decided to revive this Working Group by the end of 1991. From 1992 onwards it will meet on a regular basis (Mensink 1991).

problems, e.g. pollutions of rivers, seas and oceans, depletion of ozone layer by CFC-gasses, global warming by carbon dioxide emission, depletion of species, acidification of rain, reduction of the 'green lung' capacity of rainforests. Problems like these cannot be tackled on a national level. Consequently, they require international regulation. In the optimal case all countries would perceive the objective need for such regulation (and the gains from it). A positive sum game would then exist. Countries will then be inclined to co-operate in international negotiations to bring about the required regulatory framework. However, as long as an important group of countries considers the issue as a negotiation game in which they may either lose or win (a zero sum game, or at least as a variable sum game) a co-operative behaviour in international negotiations cannot be expected. Non-co-operation of some countries hampers, however, the effectiveness of efforts in countries that do try to reduce such effects.

In the absence of a compromise, ongoing natural resource depletion or pollution emission with considerable transborder effects will provoke retaliatory action. A chaotic situation of unilateral steps by some larger developed countries may arise. The tuna fish boycott measure of the US was only a first case in point. Other import bans by EC and OECD-countries have been proposed for tropical hardwood and ivory. Financial policy, trade policy, and aid policy will be the most important instruments with which large countries will try to get extra-territorial leverage. As far as trade measures are used such retaliatory measures form a second type of eco-protectionism.

(C) It will be difficult to distinguish between 'real' environment-related protection and measures that are in fact mainly motivated by other motives such as protection of local industries, employment or export products. The case of pseudo-environmental protection is exemplified by the campaign of the United States' soya lobby against alleged health hazards of (cheaper) palm oil from Malaysia and the Philippines, a case in which no sound evidence for the allegations could be provided. This third category of measures can be described as ecologically-disguised 'ordinary' protectionism.

The discussion on trade liberalism versus eco-protectionism must be put in perspective somewhat. First it should be stressed that pleas for completely free trade are not appropriate with regard to many serious environmental problems. Fundamentally, such pleas are based on the view that free trade will bring about the optimal and efficient international allocation of all productive resources, with gains for all. But this can only occur, if the prices of products and

resources reflect their current and future environmental scarcities and the negative environmental externalities associated with their production. Since this is not the case, a basic argument for a completely liberal trade is no longer valid.

The opposite position is chosen by the narrow environmentalists' point of view that welcomes all eco-protectionist measures as favourable steps, especially when non-tariff trade barriers are formulated in terms of environmental or health requirements for certain imports. This view is short-sighted as well. Taking into account the many interrelations between development and ecological pressure, such trade-reducing measures are not conducive to the advent of long-term solutions. They hamper income-generating activities in developing countries and may even lead to further environmental degradation due to lacking income alternatives. Developing countries have much to gain from freer export possibilities.

It is not unrealistic to expect that there will be growing pressure from the side of larger developed countries to link fairness in trade to environmental policies. Increases in trade barriers or actual trade retaliatory measures will be used to enforce compliance with their environmental goals. Without a comprehensive international agreement on basic issues of sustainable international development, it is difficult to believe that current GATT rules will prevent this scenario from becoming true. An additional international regulatory framework is indispensable to avoid a chaotic situation of increasing eco-protectionism and unilateral steps by OECD countries.

IV. AVOIDING ECO-PROTECTIONISM BY AN INTERNATIONAL ECOCHARTER

To get out of the aforementioned dead-end street a realistic international agenda for negotiating issues related to environment and resource use is required. It is not sufficient to simply adopt general ethical principles concerning the "Value of Nature" and "Man's responsibility towards his Natural Inheritance", like was done in the Declaration on the Human Environment.¹⁾ To arrive at an effective international agenda compromises are required on the relation between development targets, environmental objectives and financial

1) Adopted at the UN Conference in Stockholm in June 1972 (cf. Fouéré 1990).

responsibility for additional costs caused by environment-preserving measures. Such basic compromises can be laid down in an international charter, to which national environmental legislation and international environmental disputes could refer. Such a charter could contain the following five principles:

- 1) *Income levels and consumption per capita in developing countries must grow, for which further industrialization is necessary.*

This target will induce a further burden for the international ecosystem, in the form of more pollution and in the form of more resource depletion. Nevertheless, it follows from the demand for intra-generational equity. It further leaves the question open whether this income growth is to come from new, additional industrialization and growth, or from international redistribution of income, wealth and industries. Relocation of labour-intensive industries from OECD countries to developing countries could well be an important instrument to implement this first principle. Labourintensive industries offer new income-earning opportunities for surplus labour population. Moreover, they are relatively clean from an ecological point of view.

- 2) *The environmental burden created by further industrialization and consumption growth in developing countries represents a collective international problem. International co-operation will be intensified to alleviate the concomitant environmental burden. The ecological disturbances in the developed countries are to be redressed by and within these countries themselves. Governments of developing countries avoid any form of unnecessary environmental degradation.*

Adoption of this principle is crucial to the advent of sustainable international development. OECD countries contributed overwhelmingly to existing international pollution and natural resource depletion. It is their own responsibility to diminish these problems and bear the full costs of this operation. Moreover, due to their higher income levels, they will also have to bear a large part of the environmental burden created by Third World industrialization. Developing countries from their side, take the responsibility to limit these new environmental problems by avoiding policy-induced environmental externalities, by creating appropriate incentive systems, and by education and extension programmes. OECD countries will undertake great efforts to ensure an unrestricted international transfer of environment-preserving and material-saving technology to

developing countries.¹⁾ Foreign exchange constraints and skill-building constraints that hinder developing countries from getting on a ecologically clean growth track, must be alleviated by OECD countries. The latter point is elaborated in the third principle for the Ecocharter.

- 3) *For an agreed set of products and production processes Third World producers will be financially compensated for adoption of technology and policies that inflict less damage to the local and international ecological system.*

This principle represents the 'non-polluter gets paid' principle. It has already been accepted in the intergovernmental Montreal Agreement on reducing chlorofluorocarbons (CFCs) emissions that are harmful for the ozone layer. The 'non-polluter gets paid' principle is not only valid for exports of commodities and manufactured products, but also for non-traditional services. If the world community wishes to save certain natural biotopes, like tropical rainforests, it will have to pay the countries concerned for delivering such a service to the world community.²⁾ To the extent that retrenchment of natural resource use leads to severe reduction of Third World commodity exports, the latter countries will be monetarily compensated for lost export earnings and for the costs of diversifying their export base.

Of course, implementation of the compensation principle should be shaped in such a form that it doesn't destroy the incentive for the country (its producers and government) to change their export base in an environmentally sound direction.

- 4) *Monetary compensation for foregone exports, for diversification, and for introduction of ecologically closer-to-optimal production techniques will be tied to a transition period. The length of the transition period may vary according to the achievement of income alternatives, and according to policy consistency in the countries involved.*

Given the income inequality among countries, the transitional period could be fairly long for some countries, especially those with mono-export products or

1) Technology transfer cannot not be a one-way street, however. Developing countries have adopted or preserved production and consumption practices which often use less depletable natural resources, create less waste, and emit less pollution than comparable practices in OECD countries. Even though these patterns may have been developed or preserved due to income constraints, many of them deserve careful reconsideration.

2) Recently this idea has also been adopted by the GATT, in a report which states that rainforest states are now in fact effectively exporting, free of charge, carbon absorption services to the rest of the world (GATT 1992:28-29).

poor natural endowments.

- 5) *All forms of eco-protection in international trade will be completely ruled out in the framework of the coming Multilateral Trade Organisation (GATT).*

This fifth principle will facilitate adoption of the other five principles. It offers an incentive for Third World producers to enter international agreements, since they are most affected by current and imminent threats of environment-related protection measures. Though issues of eco-protectionism have not been a hot discussion item during the 1986-1992 Uruguay Round of the GATT, they will very likely become so in the next round (e.g. Arden-Clarke 1991). Other forms of systematic trade restrictions for products from developing countries, and certainly when they stem from clean, labour-intensive industries, are to be abolished on short notice. It goes beyond saying that a trade-restricting measure like the Multi Fiber Arrangement, will be among the first victims.

When these five principles are included in an international Ecocharter, a large step forward will be made in international application of the principle of sustainable development. Several already existing international environmental facilities and organisations, like UNEP, the Global Environmental Facility, and the CFC-Fund of the Montreal Protocol, could all easily fit into a concerted implementation of this Ecocharter.

The second and third principle are rational both from an ecological and from an economic point of view. The economic rationality has to do with the efficiency of environmental investments. Such investments are subject to decreasing returns to scale. The marginal yield of additional investments will vary per region. An additional dollar spent on environmental preservation will be more effective in terms of decreasing negative ecological externalities when it is spent in areas, like many LDCs and Eastern Europe, where such investments were scarce up to then, compared to its investment in OECD countries where many of such investments already took place. Given the border-crossing nature of many negative environmental externalities international reallocation of investment funds for environmental preservation will be a wise step.

V. INTERNATIONAL COMMODITY-RELATED ENVIRONMENTAL AGREEMENTS AS INSTRUMENTS FOR ATTAINING SUSTAINABLE PRODUCTION OF PRIMARY COMMODITIES

The implications of the 'non-polluter gets paid' principle will now be discussed for primary commodity exports from developing countries to OECD countries. Export earnings on basis of primary commodities often are not neutral as to the environment. In conventional macroeconomic accounting export earnings are considered as a contribution to national income, regardless of their composition. Export earnings from depletable natural resources like oil, minerals, tropical timber, or erosion intensive agricultural products are considered as regular contributions to national income. From a perspective of sustainable development a Hicksian income concept is more appropriate.¹⁾ Using this approach, exports of depletable natural resources would be considered as capital consumption rather than income. This is an illustration of how false price signals promote the incorrect idea that faster exploitation of non-renewable natural resources creates a proportionally higher rate of economic growth. Ample evidence exists that ecological costs of primary commodity exports are often substantial.²⁾ Their repercussions are often of a transborder nature.

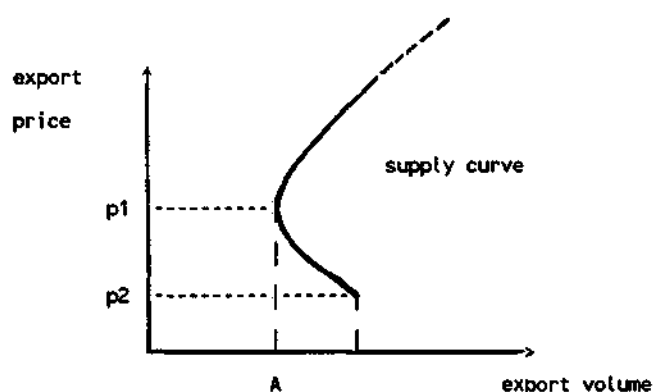
Though powerful ecology movements hardly exist in most Third World countries, their governments have become more and more aware of the need to minimize damage to the environmental resource base that supports their commodity exports. Non-governmental organisations (often from OECD countries) also played an important role in raising international awareness on large-scale processes of environmental degradation, e.g. in the case of tropical rainforests. The knowledge on these processes is available, but how can the necessary adjustments be set in motion ?

First it has to be established that earnings from primary commodity exports are crucial to economies of many developing countries. In the low-income countries (excl. India and China) and the lower-middle income countries primary commodity exports accounted for approximately 73 per cent, respectively 61 per cent of total merchandise exports in 1989. For the twenty severely indebted middle income countries primary commodities represented 58 per cent

1) According to Hicks (1946:172) income is the maximum amount that can be consumed in a given period without reducing the amount of possible consumption in the future.

2) Some evidence is summarised in Ascher & Healy (1990); Barbier (1990); Hpay (1991); Kaczynski (1991); Kox (1991); Kox & Stellinga (1992); McKendry (1991).

of total merchandise exports (World Bank 1991: 234-235). Without these exports they would severely be restricted in their import capacities and debt servicing capacities. This sensitivity has already become manifest by the very low commodity prices of the period since 1980. According to an all-item commodity-price index calculated by The Economist magazine, commodity prices in real terms have never been so low since the magazine started this time series in 1845.¹⁾ Many countries with strong dependence on commodity-exports (especially mono-exporters) did not react by cutting back their export volumes, as ordinary price theory would expect them to do. They rather increased their export volumes, due to the foreign exchange earnings constraint to which they were subjected as a result of import requirements, debt servicing obligations and IMF/World Bank adjustment programmes. This type of behaviour of mono-exporters with a lack of short-term alternatives for foreign



exchange earnings, can be described by a kinked supply curve like in Chart 1. Above a point (A) the supply increases with an increasing world market price; this is the orthodox case. When prices falling below p_1 , however, the supply quantity will also increase, but now with falling prices; this could be labelled the perverse supply case. The point (A) reflects the level at which the constraint of lacking foreign exchange alternatives becomes operative.²⁾ The effect of this type of behaviour is a fierce competition in many already overcrowded commodity markets, so that a constant pressure on commodity prices exists.

1) 'Incommodious commodities', The Economist, January 11th 1992, p. 62.

2) Such an export reaction does not go on infinitely. When prices fall below p_2 , the export producers will completely turn their back to the market: mines will be closed, farmers may concentrate on domestic food crops, or change to subsistence agriculture. Commodity-importing countries and/or commodity traders are evidently the beneficiaries of this type of producer's behaviour.

In this situation, commodity exporting countries will not be prepared to voluntarily adopt measures that further diminish their foreign exchange earnings from primary commodities. Therefore, a demand arises for instruments that induce ecological readjustment in commodity production but do not lower their foreign currency earnings. Import bans in the OECD, like those proposed for tropical hardwood and ivory, clearly do not comply with this constraint.

In most cases possibilities are available for making continued exports of the commodities more sustainable by using alternative production techniques, like integrated pest management as alternative to the use of chemical pesticides. In many cases alternative production methods for commodities exist with which production could be made more sustainable. Feasibility of alternative techniques must be established on a commodity-by-commodity basis, often with necessary region-specific modifications. Government extension programmes could distribute the necessary knowledge among producers and international knowledge-sharing could be helpful.

What will trigger the actual adoption of these alternative technologies ? Massive adoption of environment-preserving technologies in commodity production will stagger when they lower the producer's income levels. This will be the case when alternative technologies increase the production costs without compensation in the form of a higher commodity price. Many, though not all alternative production methods increase the cost price of production. A different technology increases the costs of initial investment and operating costs, relative to current techniques, when additional cost elements are introduced which are not matched by simultaneous productivity gains and cost savings. Extra costs will undoubtedly result from cases where current production methods have to be supplemented by additional production to neutralise harmful effects, like e.g. sewerage systems, water cleaning, other forms of waste clearance, and sedimentation techniques, reforestation, conservation of top soil layers in the case of open pit mining.

On the price side not much improvement can be expected when ecologically-sound production methods are used. Most commodities do not easily lend themselves for product differentiation. Consequently no higher price will be fetched as a result of being sustainably produced. For many commodities some grades or quality categories exist. These are based on the quality of the product itself, not on the way it is produced. So, fetching a higher prices for sustainably produced commodities will only be possible in cases where the production method leads to tangible product qualities. Given a sufficient demand for this

type of products, existing commercial networks will in this case have no problem in paying the necessary price markup. In the case that a sustainable production method does not produce observably-better product qualities, it would require a complex system of international certification to induce the commercial channels to pay a price markup.¹⁾

Since neither product differentiation nor an overall price increase are very likely under given market conditions, there is little hope that an environmental markup can be fetched when a single country would start producing the commodity in a more sustainable way. So, with a given world market price, introduction of these methods will undoubtedly lower producers' incomes. The free market solution offers meagre prospects for a higher price to enable more sustainable forms of commodity production. Though there may be long-run gains for them as well, producers in developing countries will not voluntarily adopt these alternative production methods. Their participation could be improved by granting subsidies for covering additional investment requirements and cost increases. The scope for such subsidies is severely limited by the fact that many Third World governments already run serious fiscal deficits and are in the process of diminishing all kind of subsidy schemes due to IMF- and World Bank-inspired adjustment programmes.

Within the national context, possibilities for improving the ecological production conditions for primary commodity exports are limited, therefore. International market regulation forms a prerequisite for internalisation of the additional costs of producing export commodities in an environmentally closer-to-optimal way. It is possible to create an international economic instrument to promote environmental production conditions in the commodity export sector of developing countries, which will hardly affect current export earning levels. Treaties regulating international trade in primary commodities do not have to start from scratch. A tradition exists of toughly negotiated international commodity agreements between consuming and producing nations. New international agreements to promote sustainable forms of commodity production can build upon the remnants of 'traditional' commodity agreements. But, unlike the latter, it is not concerned with price stabilisation. It aims primarily at integration of environmental externalities in the commodity prices paid by OECD countries. To stress the different function of this type of agreements, and to partly avoid the negative image of prior international commodity agreements, a

1) For agricultural products, such a certification initiative is promoted by the International Federation of Organic Agriculture Movements (IFOAM).

new name is supposed: **International Commodity-Related Environmental Agreement (ICREA).**¹⁾ It entails that importing countries will have to pay the full price of sustainable production methods for these commodities. At present this is not the case, since international commodity markets function in such a way that OECD consumers gratuitously reap a part of producing countries' welfare. Moreover, in importing countries such unsustainable prices for imported commodities continue to emit false price signals to technological and organisational innovation, and to consumers. The magnitude of the hidden environmental subsidy transferred to OECD countries by *not* levying the environmental premium, is far from trivial (e.g. Walter & Loudon 1986). An integration of environmental externalities in the OECD²⁾ import price of commodities would, therefore, be justified both on ecological and on economical grounds.

The relation between sustainability of production methods and the international market price is complex. A higher price for export products does in no way guarantee that production methods will become more sustainable. A price increase is a necessary, but not a sufficient condition to bring about environmentally-sound production methods. A very complex relation exists between agricultural export prices and the nature of applied agricultural methods. For instance: If a low input type of agriculture, using few chemicals and fossil energy, was the result of a preceding income restraint that prevented the use of much external inputs, a price increase will induce a higher rate of use of external inputs, with often polluting consequences (cf. Kox & Stellinga 1992). The conclusion may be that a higher price can enable more sustainable forms of production, but to guarantee that this actually happens, it has to be coupled with forms of international regulation and monitoring.

Integration of environmental externalities in the OECD import price of commodities can most easily be accomplished by levying a tax on imported commodities in OECD countries. The tax would be collected in the form of a

1) In earlier publications on this item also the name of International Commodity and Environment Agreement (IECA) or New International Commodity Agreement (NICA) have been used (cf. Kox 1991a, 1991b). In discussing the idea most references to the traditional international commodity agreements appeared to evoke unnecessary negative associations. To avoid such negative 'externalities' of a name it is proposed to adopt the present name of International Commodity-Related Environmental Agreement (ICREA). It properly puts the main accent on environmental aspects.

2) 'OECD countries' refers here in fact to a wider group of countries which can afford to pay the full price of their imports. This group probably will include some 'graduating' developing countries, like Singapore, Hong Kong and South Korea, and also the rich oil countries.

fixed surcharge per imported quantity. Taxes thus collected are periodically remitted to the Environment Fund, managed by the Secretariat of a newly created ICREA. Governments from producing countries can make drawings - proportional to their export share - from this fund. Fund allotments should only be granted for the purpose of financing *specific* projects and programmes which are set up to make the production of this commodity more sustainable. A system of periodically monitoring by the ICREA Secretariat can ensure that countries used the funds for the agreed purposes. Future allotments will be made dependent on past performance. An International Commodity-Related Environmental Agreement of this type would introduce the principle of the non-polluter gets paid ex post. In the start-up phase it is conceivable that environmental tax is already collected to form a Fund of some required proportions before the environmental preservation programmes in the export countries have come in full swing.¹⁾

Before an institution of this kind is created a number of preliminary steps have to be taken. These preparatory steps can be ordered in two phases, a research phase and a negotiation phase. Both phases are further specified in an appendix to this paper. An important ingredient of the study phase concerns the probable reaction of all relevant economic agents, and especially the substitution effects which may occur. From the point of view of consumers the price markup, in whichever form it is levied, functions as a turnover tax on the international price of the commodity. The likelihood of substitution by consumers decreases with the share of the commodity's import price in the price which the consumer pays for the final product. Most substitution effects may be expected from manufacturing agents and large importers. How price elasticity affects their demand for the commodity has to be estimated by considering cross elasticities for viable substitutes. If large substitution effects, and consequently demand-shrinking, are probable, the ICREA may not be the most appropriate solution for internalizing environmental externalities. Unless, of course, it is supplemented by a compensatory scheme for foregone export earnings of the commodity involved.

The negotiation process draws heavily on a well-understood long-term self interest of nations. The most important divergences of opinion will probably spring from other short-term interests and regional or country-group egoism.

1) Also existing facilities like the Common Fund for Commodities or the Global Environmental Facility could contribute or guarantee a start capital for the ICREA Fund.

An essential negotiation element will be how to cope with *free riders*. If countries systematically share the benefits of an ICREA without carrying part of its burden, this forms a time bomb under the agreement. Free-ridership can occur both between countries and within countries. Handling this problem will be an important determinant in the choice of the eventual institutional form of the ICREA.

VI. Conclusion

The environmental implications of the principle of sustainable development become increasingly clear, but adoption of this principle as a guideline for international negotiations seems still far away. The problems are associated with the very heart of the concept of sustainable development, that is its definition of needs. In a situation where large international income disparities continue to exist, considerable effort will have to be spent on overcoming this barrier to sustainable international development.

The UNCED conference in June 1992, even if it will look like a Babylonian confusion of tongues, is a first and necessary step to attain this goal. Broad ratification of the pre-cooked Climate Treaty is in itself an important achievement. Adoption of an international Ecocharter (or Earth Charter) that incorporates the aforementioned principles would, like the Human Rights Charter, form an expression of principles of civilization. Therefore it will have to acknowledge the economic preconditions for sustainable development. It also has to acknowledge the responsibility of the richest countries for temporarily offsetting the additional costs that LDCs have to incur for reaching sustainable patterns of development. Without these elements the Earth Charter will be worth only the paper on which it is written. The preparatory UNCED-meetings have clearly shown that many developing countries will not even consider to give up opportunities for income growth, let alone national sovereignty. In their opinion the Northern countries try to solve self-created environmental problems at the cost of Southern countries. Due to the overwhelming historical share of Northern countries in international pollution and resource depletion this standpoint is not completely mistaken. But it is simplistic, as shown by the seriousness of many transborder problems. For instance that Southern Chile, though itself being one of the cleanest regions on earth, is located under a hole in the ozone layer. A report in the *Financial Times* of November 1991¹⁾ mentioned a considerable increase in various negative biological effects of sharply increased ultraviolet-B radiation on man, animals and plants. Maybe such effects are still not alarming enough, and effective action may be delayed until holes in the ozone layer are situated above large urban areas in major OECD countries as well. But at some point in time it will become clear that border-crossing ecological problems make it unavoidable to create international institutions and instruments for attaining sustainable patterns of development.

1) L.Crawford, Rabbits blinded by ozone hole, *Financial Times* November 6th 1991.

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ANNEX

PRELIMINARY STEPS FOR INTERNATIONAL COMMODITY-RELATED ENVIRONMENTAL AGREEMENTS (ICREAs)¹⁾

During the research phase rather detailed technical and economic studies are required relating to ecology, production and functioning of markets for a specific commodity. Five sub-themes can be specified. For the four first sub-themes it may be necessary to differentiate between the main producing countries.

- a) Inventarisation and quantification of ecological effects of its export production. Effects will be formulated in terms of several relevant indicators and measures (continuous or discrete) that are relevant for this commodity.
- b) Assessment of relevant alternative production techniques and additional measures that would limit the most important negative environmental effects, with an indication (on purely technical criteria) of a time path for implementation.
- c) Appraisal of economic effects of alternative production techniques and additional measures, with regard to production costs and production volumes. This has to include a tentative assessment of effects on import requirements, employment and production regions. For the best alternative techniques the incremental cost price relative to costs under current techniques has to be established, thus indicating the magnitude of the gross price markup that will be necessary. Incremental cost effects in some important export countries must be estimated.
- d) Investigation of probable substitution effects that may occur in consuming countries and industries as a consequences of the estimated gross price markup.
- e) Assessment of the optimal form in which the environmental premium is to be institutionalized, and formulation of proposals for procedures, checks, monitoring agencies, and fund management.

On basis of reports on ecological effects (a), technical-economic studies (b,c) and expected market reactions (d) proposals have to be put forward with regard to implementation priorities of alternative techniques and the associated level of the environmental premium. In the fifth sub-study it should be considered if and how international organisations, such as the Common Fund for Commodities, Unctad's IPC programme and UNEP, could facilitate introduction of an International Commodity-Related Environmental Agreement.

The *negotiation phase* builds upon the results and proposals of the first phase. Most probably, the studies will contain a number of variants rather than clear-cut, unambiguous conclusions on the issues involved. Across various diverging interests - between producing and consuming nations,

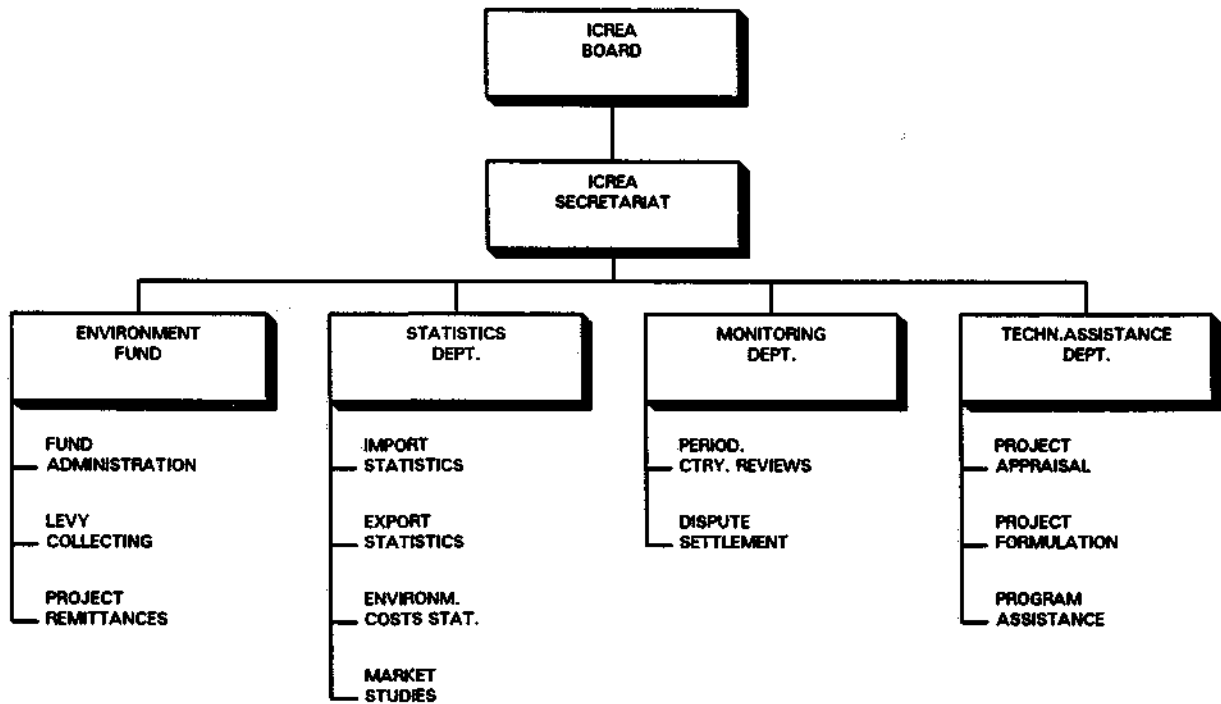
1) This annex draws heavily upon previously published articles (Kox 1991a, 1992b). The feasibility of ICREAs and their optimal structure form the object of a larger research project at the Faculty of Economics and Econometrics of the Free University (Amsterdam).

between producing countries with different production conditions, between ecological action groups, governments, and established interests in commodity chains (like transnational companies) - agreement has to be reached on a number of issues. The most important of them are:

- * Decision criterion for determining the magnitude of the environmental premium. If a generic premium level is preferred, it has to be decided which reference countries will be used for determining the increase in average units costs due to alternative techniques. For instance, it should be considered whether the premium level should be such that marginal producers are kept in the market, or that 'average' producers are taken as benchmark.
- * Levels of unacceptable ecological damage. Which types and levels (for all relevant criteria) of negative environmental externalities should be abated? Discussion can be expected on policy-induced versus 'average technology'-induced ecological damage. If a generic premium level is used, it will not be necessary to cover the costs of a complete ecological 'overhaul' of production methods in all export countries. In some countries it will require additional financial efforts - of the national government or by country-specific environmental aid programmes - to cover the surplus costs above the threshold level which is financed by the ICREA funds.
- * Magnitude of the environmental premium. Having established the reference countries, the ecological effects that have to be neutralised, the incremental costs (given known technologies), it is possible to fix the level of the environmental premium. Some other considerations may enter the discussion, however. For producing nations a trade-off exists between ecological damage and the potential loss of export earnings which is likely given a certain price elasticity of commodity demand. Their attitude depends among other things on the availability export diversification alternatives. For consuming nations a trade-off exists between current cheap commodity supply versus tolerating further ecological damage in producing countries that bolsters future threats to the global ecosystem.
- * Finally, governments must achieve an agreement on a number of questions relating to the institutional form in which the price markup will be introduced. Associated with this conclusion are decisions on monitoring system, government representation, and sanction procedures to guarantee that the price premium will be paid and that resulting extra earnings will be allocated to expenses for environmental reconstruction and conservation as agreed upon in the agreement. Finally, some dynamic procedures regarding the level of the environmental premium over time must be endorsed.

The environmental premium can be levied in several forms, each having its own advantages and disadvantages. The most obvious way seems to charge the levy the moment at which the commodities pass a border. This may be the border of the exporting country or that of the (ultimate) importing country. In the first case it has the form of an export tax, in the latter case it is an import duty. On several grounds export taxes are less appropriate. None of these problems arise with the import levy variant (cf. Kox 1991a). Charging the environmental premium at the border of importing countries makes it possible to charge only OECD countries, and perhaps some NICs and OPEC countries. The import surcharge should be commodity-specific and will have to be paid by importers in commodity-importing developed countries. They pay a fixed amount per

TENTATIVE STRUCTURE ICREA ORGANIZATION



quantity imported to the fiscal authorities of their national government.¹⁾ By levying it on a generic basis on all imported quantities, the need to check for origins (due to re-export) is eliminated. It also thwarts the incentive for free-ridership on the side of exporting countries.

Governments of importing countries periodically transfer the revenues from the surcharge to a special Environment Fund, administered by the ICREA board.²⁾ Free riding by importing countries will be difficult. Governments of producing countries can make drawings from the ICREA environment fund, with maximal drawing rights proportional to their export volume. Definitive remittance of allotted funds is dependent upon the content and soundness of the proposals put forward by governments. The financing proposals formulated by governments (perhaps on behalf of exporting companies in their country) concern specific projects for additional investments in ecology-friendly production methods, subsidy programmes for use of alternative production methods or inputs,³⁾ and local environmental preservation projects in commodity-producing areas. The ICREA could offer technical, organisational and economic assistance to governments to help them formulating feasible proposals for funding. Evaluation of project proposals by the ICREA could be based on expected ecological effect, technical and organisational feasibility, effectiveness of earlier fund disbursements to the country. The chart on next page pictures how the organizational structure of an ICREA could look like.

1) Customs clearance in the port of entry should be the determining criterion. It avoids troubles with differences between physical and non-physical (futures) trade.

2) Exporting countries and a statistical department of the ICREA secretariat together assess annual total export volume and its country destinations. On basis of this, with a correction for re-exports, the gross payable amount for each importing country is easily assessed.

3) In case of commodities where production is dominated by small-scale producers, governments need programmes that offer subsidies for implementation for specific production methods and inputs. In the implementation of such programmes extension services or local authorities can play a role. To the extent that production methods and or input use during production can be diagnosed in the product itself (e.g. chemical residues) commercial channels in the country (purchasing companies, exporters) can play a useful role in distributing the premium to producers that apply the beneficial production techniques. The ecological properties of the product, possibly in the form of a hall-mark, become a regular quality attribute along with other quality characteristics.

