

Nunnenkamp, Peter

Article — Digitized Version

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Intereconomics

Suggested Citation: Nunnenkamp, Peter (1993) : Financing the global environment, Intereconomics, ISSN 0020-5346, Nomos Verlagsgesellschaft, Baden-Baden, Vol. 28, Iss. 3, pp. 132-137, <https://doi.org/10.1007/BF02928117>

This Version is available at:

<https://hdl.handle.net/10419/1557>

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Peter Nunnenkamp*

Financing the Global Environment

The international coordination of environmental protection is particularly difficult with regard to developing countries. How can the industrialized countries be persuaded that financial compensation to the developing countries is economically justified? How can external support for the developing countries be organized so that the incentives for environmental protection are strengthened effectively?

Much of the current debate on worldwide environmental protection resembles the traditional North-South confrontation on poverty alleviation and economic development in the Third World. Again there is a wide consensus on the goals to be reached. However, when it comes to responsibilities and instruments by which to achieve the desired results, the well-known battle-array is reinstated. In the first instance, this refers to the questions of who has to pay for the preservation of the environment, by which financial means, and under which conditions. Industrialized countries are reluctant to accept that financial compensation is justified economically if developing countries are asked to implement policies that would help improve global environmental conditions, while developing countries tend to ignore past experience with concessionary transfers to the South. This paper offers a critical evaluation of the financing instruments currently discussed and makes suggestions as to how external support could be organized so that the incentives for environmental protection are strengthened effectively.

Financial Compensation

The reason for international agreements on environmental issues is that the production of the public good "environmental protection" remains below optimum in the case of cross-border externalities. The critical economic problem is to internalize external effects so that production and investment decisions are based on international social costs, and to prevent the breach of earlier commitments by sovereign states to contain environmental degradation. The international coordination of environmental protection is particularly

difficult with regard to developing countries. North-South conflicts are not surprising. Typically, citizens of highly developed economies assign a higher priority to worldwide environmental protection than citizens of poor countries whose major concern frequently is to survive in the short term.

Given that natural resources are typically underrated assets in developing countries and damages are largely external, Third World governments face strong disincentives to join and adhere to international agreements. Their reluctance may be overcome, however, by foreign transfers that are linked to environmental protection by the recipients. Such transfers represent a financial compensation by which countries with low time preference rates may induce countries with high time preference rates to surrender the option of an excessive exploitation of natural resources.

The concept of financial compensation raises various problems. Most evidently the overall amount of transfers, its distribution among the potential beneficiaries and the payment obligations of individual donor countries are difficult to determine unless the costs and benefits of protective measures are identified unambiguously. Moreover, it is not always possible to distinguish external from local effects. Principally, financial compensation is not required for the costs of protective measures that are matched by national welfare gains in terms of greater economic efficiency and local ecological improvements. Practically, the required information is incomplete so that transfers have to be negotiated on the basis of approximated costs and benefits. Strategic behaviour is to be expected during the bargaining process. From the negotiations on the agenda of the UN Conference on Environment and Development (UNCED) it is evident, for

* Institute of World Economics, Kiel, Germany.

example, that potential beneficiaries have an incentive to overstate the income losses and understate the local benefits resulting from environmental protection, in order to maximize transfer payments.

Furthermore, financial compensation requires that the global environmental obligations of the beneficiaries are clearly defined and enforceable. Irrespective of the overall amount of transfers, it cannot be taken for granted that ecological improvements will take place in the recipient countries. This is only to be expected if an effective linkage is established between environmental protection in and transfers to developing countries. Hence, the concept of financial compensation also requires a careful design of financing instruments. The critical issue of contract stability, i.e. the interplay between adequate financial transfers and ecological improvements, has not received appropriate attention in the current debate on international environmental agreements.

International Eco-taxes

Demands for additional international transfers to finance environmental protection in developing countries abound.¹ However, the "creative and innovative" financing mechanisms suggested so far² are largely inconsistent with the basic principles of financial compensation. This refers to both the funding and the distribution of compensation payments. The second common characteristic of recently proposed financial options is that previous experiences with similar instruments are largely ignored.

Taxation plays a major role in the current debate on global environmental protection. A first group of tax proposals aims at reducing the emission of hazardous wastes and toxic chemicals (e.g. CO₂). Specific eco-taxes may provide a suitable instrument for containing environmental degradation in industrialized countries, which are the major polluters. But they do not provide a

sustainable funding mechanism for the financial compensation of developing countries. The amount of tax revenues which may be transferred to the Third World declines as soon as the positive funding effect of increasing tax rates is overcompensated by a shrinking tax base. In the extreme case of the tax scheme succeeding in stopping emissions, tax revenues will be zero.³ Hence, developing countries cannot reasonably be expected to join an agreement on environmental protection when transfers are based on specific eco-taxes.

A second group of proposals focuses on identifying subjects for taxation which would provide a taxation base broad enough to raise substantial new funds. Similar suggestions figured prominently in various rounds of North-South negotiations over decades. The only difference is that the focus is now on environmental protection as the major purpose for which the mobilization of additional resources is required. The most frequently suggested subjects for taxation are: ocean fishing and transportation, seabed mining, the exploitation of Antarctic resources, trade surpluses, and international trade in general.⁴

Taxation of economic activities in the above fields is justified economically to the extent that natural resources are exploited excessively because of external costs. This may apply, for example, to overfishing and the pollution of international waters by seabed mining. However, the argument of external costs is not applicable to a general taxation of trading activities. The appealing property of trade taxes is, rather, that substantial public resources could be generated easily. Arguably, international welfare losses resulting from distortions in the international division of labour would remain negligible. The broad tax base ensures that sufficient funds could be raised at fairly low tax rates.⁵

Nevertheless, the funding of environmental protection through a general taxation of external trade is seriously flawed. It is open to question whether global environmental conditions will improve when international trade is taxed. Domestic producers favoured by trade taxes may even absorb more environmental inputs than discriminated exporters so that the quality of the environment would deteriorate. More importantly, the incidence of trade taxes may largely fall on economies

¹ According to Maurice Strong, secretary-general of the UN Conference on Environment and Development, developing countries will need as much as US\$ 125 billion per annum to introduce the measures discussed at the UNCED summit in June 1992; nearly 60 per cent of this sum must be new money, while the rest could come from existing aid programmes (Financial Times, February 14, 1992); cf. also United Nations Conference on Environment and Development (UNCED): Adoption of Agreements on Environment and Development, Draft Chapter 33 of Agenda 21 "Financial Resources and Mechanisms", A/CONF. 151/L. 6, Rio de Janeiro, June 13, 1992.

² Cf. for example UNCED, op. cit.; United Nations General Assembly: Preparations for the United Nations Conference on Environment and Development on the Basis of General Assembly Resolution 44/228 and Taking into Account Other Relevant General Assembly Resolutions, Cross-Sectoral Issues, China and Ghana (on behalf of the States Members of the UN that are members of the Group of 77): Draft Decision Financial Resources, A/CONF. 151/PC/L. 41, New York, August 28, 1991; Brundtland Commission: World Commission on Environment and Development, Our Common Future, Oxford University Press, Oxford, New York 1987.

³ This argument also applies to import taxes levied on specific goods such as tropical wood.

⁴ Cf. for example Jan-Olaf Willums, Ulrich Golücke: WICEMII, Second World Conference on Environmental Management, ICC Publication, No. 495, Paris 1991, pp. 661 f.; Brundtland Commission, op. cit.

⁵ Annual transfers to developing countries of US\$ 125 billion could be financed if world exports were taxed at a rate of 3-4 per cent.

which, according to the concept of financial compensation, should rather be financed by tax-related transfers. The share of funding provided by the developing countries themselves may significantly exceed their share of world exports of about 25 per cent. This applies especially to developing countries which heavily depend on imported intermediate and capital goods. The price elasticity of their import demand is probably fairly low. Hence, trade taxes would result in a higher import bill for these countries. Similarly, export-oriented economies in the Third World would have to shoulder a significant part of the funding of tax-related transfers if the demand for their export goods is highly price elastic.⁶

Unconditional Transfers

The conceptual flaws of the eco-tax proposals discussed so far call for funding mechanisms which ensure adequate financial compensation, while minimizing the distortionary impact of fund-raising. This might be achieved if industrialized countries mobilized additional aid payments by *general* tax increases or, preferably, compensating cuts in government spending.

The need to increase aid payments is frequently emphasized, while a new environment-related form of conditionality is sometimes explicitly rejected.⁷ The rationale for unconditional foreign aid rests on two debatable propositions: (i) more aid alleviates poverty, and (ii) poverty alleviation enhances environmental

protection. The second assumption is plausible to the extent that time preference rates decline with rising per capita income. However, environmental problems that are poverty related are typically of a local character. Financial compensation is not required in the absence of international spillovers. The income-environment nexus is less straightforward as concerns global environmental conditions. These may well deteriorate in the early stages of industrialization, notwithstanding that poverty is alleviated in this process.

Furthermore, previous experience with development aid justifies scepticism whether higher aid transfers will automatically result in poverty alleviation. Since the early 1980s, it has been increasingly disputed that the lack of capital constitutes the major bottleneck to economic progress in low-income countries. The correlation between the per capita amount of aid received and the growth of per capita income in the recipient countries remained insignificant, particularly where positive growth effects were most urgently needed.⁸ Unconditional and permanent aid may even reinforce misguided economic policies. The ruling elites in the recipient countries exert strict control over the use of aid inflows. This leverage allows them to block policy reforms (e.g. land reforms) that could help overcome economic backwardness and ecological degradation.

Aid flows of whatever magnitude cannot be a substitute for sound economic and ecological management and appropriate policy incentives in the recipient countries.⁹ External donors may play at best a catalytic role if aid recipients are committed to reducing poverty and containing environmental degradation.

⁶ Furthermore, tax-related public transfers offered to developing countries may only replace inflows of private capital. Considerable substitution effects are likely, in particular if taxes are levied on trade surpluses. To the extent that trade surpluses of developed with developing countries are curtailed by taxes, private financing of the corresponding deficits of developing countries becomes superfluous. Under such conditions, the incentive of the recipients of public transfers to protect the environment is reduced to the grant element of official capital inflows.

⁷ Cf. UNCED, op. cit.; South Commission: The Challenge to the South, Dar-es-Salaam 1990.

⁸ Wojciech Kostrzewa, Peter Nunnenkamp, Holger Schmieding: A Marshall Plan for Middle and Eastern Europe?, in: World Economy, Vol. 13, 1990, pp. 27-49, here p. 35 f.

⁹ Ulrich Hiemenz: Development Strategies and Foreign Aid Policies for Low Income Countries in the 1990s, Institute of World Economics, Discussion Papers No. 152, Kiel 1989.

Daniel Friedmann/Ernst-Joachim Mestmäcker (Eds.)
Rules for Free International Trade in Services
 Symposium in Tel Aviv

The purpose of the study is to look at the worldwide movement toward freer trade in services from the perspective of Israel, the EC and the United States. Israel is the only country party to a free trade agreement with both the European Economic Community and the United States of America. The free trade agreement with the United States was the first international treaty that contained a declaration on free trade in services. As representative of the issues involved in the development of rules for free trade in services, we selected the areas of telecommunications, banking and insurance. The Conference brought together policy makers, government officials and scholars from Israel, West Germany and the United States.

1990, 383 p., hardback, 98,- DM, ISBN 3-7890-1947-X
 (Wirtschaftsrecht und Wirtschaftspolitik, Bd. 107)



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Debt Reduction

It is widely believed that foreign debt relief would have such a catalytic effect by encouraging internal reforms. The underlying argument is that natural resources are exploited excessively by highly indebted countries which have to generate foreign exchange in order to remain current on their debt-service obligations. This has led to the appealing proposition that the solution of debt problems is a prerequisite for environmental improvement.¹⁰ This reasoning can be disputed on both theoretical and empirical grounds. The incentive of sovereign debtors to service the foreign debt at the expense of environmental conditions no longer dominates as soon as the benefits of default, in terms of retained debt-service payments, exceed the potential costs of default. Default costs depend critically on the severity of sanctions which may be imposed by the creditors on non-performing debtors. The credibility and time-consistency of sanctions is highly debatable.¹¹ Actually, debtor countries have anticipated time and again the willingness of creditors to agree to reschedulings after payment problems had emerged, rather than to impose sanctions.

Preliminary empirical evidence points to a weak and ambiguous relation between the degree of indebtedness and environmental degradation. A simple correlation analysis for various debt indicators on the one hand and the degree of deforestation in 21 countries with tropical rainforests on the other hand reveals no statistically significant relationship for the 1980s.¹² Consequently, the effects of unconditional debt-reduction schemes on the preservation of the environment are uncertain at best.

In order to strengthen the effects of debt relief on environmental protection, it has been proposed that relief operations be made conditional on conservation measures by the beneficiaries. Such a linkage is established in the context of debt-for-nature swaps.¹³ However, swap operations would offer foreign debt relief only under fairly restrictive assumptions:

the buyer of debt titles traded in secondary markets must realize a greater discount on the face value than could be obtained by the debtor country through a direct buyback; and

the higher discount must be passed on to the debtor country.

The debtor country does not benefit from secondary market discounts at all if the foreign debt title is converted at par into domestic currency. Of course, the debt burden in foreign currency is reduced by debt-for-nature swaps. Nevertheless, the swaps may lead to an additional fiscal burden in the debtor country. This will happen to the extent that the government issues domestic debt paper to redeem the foreign debt, and if domestic real interest rates exceed the international rate (adjusted for exchange rate changes).

The chances for financial compensation through debt-for-nature swaps will decline further if this instrument is used on a larger scale than in the past. An increased demand for debt titles would reduce the secondary market discounts, thereby diminishing the potential for debt relief.¹⁴ Given that financial compensation by means of debt-for-nature swaps remains limited at best, it will also be difficult to improve the environmental conditions in developing countries with this instrument. The incentives to conserve the environment are not strengthened effectively. Causes of environmental degradation which are not related to the foreign debt situation are not tackled by the swap concept. Even in highly indebted countries, the excessive exploitation of natural resources, e.g. in the context of deforestation, is largely due to internal factors such as local demand for energy, raw materials and agricultural products.¹⁵ Environmental degradation in countries without foreign debt problems remains unaffected.¹⁶ In other words, the distribution of compensatory transfers is not related effectively to the causes of environmental degradation.

¹³ The swaps involve three steps: (i) foreign debt titles of the country in question are purchased in the secondary market at a discount on their face value; (ii) the debt titles are presented to the debtor government and converted into domestic currency, whereby the total amount of outstanding foreign debt is reduced; and (iii) the domestic currency equivalent is used to finance environmental projects in the debtor country. Cf. Helmut Schreiber: Debt-for-Nature Swaps: An Instrument Against Debt and Environmental Destruction, in: *Journal of Environmental Law and Policy*, Vol. 12, 1989, pp. 331-352.

¹⁴ Even though debt-for-nature swap operations played a marginal role in the past, secondary market prices increased significantly as soon as market participants expected a swap to take place. Cf. Jens Rosebrock, Harald Sondhof: Debt-for-Nature Swaps: A Review of the First Experiences, in: *INTERECONOMICS*, Vol. 26, 1991, No. 2, pp. 82-87; Stein Hansen: Debt-for-Nature Swaps: Overview and Discussion of Key Issues, in: *Ecological Economics*, Vol. 1, 1989, pp. 77-93.

¹⁵ It has been estimated that forestry accounts for 10-15 per cent of deforestation in developing countries, of which only roughly one third can be attributed to exports of tropical wood. Cf. Torsten Amelung, Markus Diehl: Deforestation of Tropical Rain Forests: Economic Causes and Impact on Development, *Kiel Studies*, No. 241, Tübingen 1992.

¹⁶ Deforestation in countries such as Indonesia, Malaysia and Thailand may even accelerate to the extent that debt-for-nature swaps arranged in highly indebted countries with tropical rainforests result in higher world market prices of tropical wood.

¹⁰ Cf. for example Enquete-Kommission des 11. Deutschen Bundestages "Vorsorge zum Schutz der Erdatmosphäre": Schutz der tropischen Wälder, Eine internationale Schwerpunktaufgabe, Zweiter Bericht, Deutscher Bundestag, Referat Öffentlichkeitsarbeit, Bonn 1990, pp. 368 ff.

¹¹ Kenneth Froot, David Scharfstein, Jeremy Stein: LDC Debt: Forgiveness, Indexation, and Investment Incentives, NBER Working Papers, No. 2541, Cambridge 1988.

¹² Torsten Amelung: Debt-for-Nature Swaps als Instrument zum Umweltschutz und zur Entschuldigung der Dritten Welt: Zwei Fliegen mit einer Klappe?, *Institute of World Economics, Working Papers* No. 476, Kiel 1991.

Project Lending

The shortcomings of debt-for-nature swaps could be overcome if project lending for environmental purposes were adequately funded and not restricted to highly indebted countries. First steps in this direction have already been taken, the Global Environment Facility (GEF) representing the most notable example.¹⁷ It has to be clarified

- how a global facility can be financed on a stable and economically sound basis beyond the pilot phase of the GEF, and
- how the distribution of available funds can be decided on.

In both respects, the progress achieved at the UNCED summit in Rio de Janeiro in June 1992 remained limited at best.¹⁸

The financing of sustained project lending for environmental purposes may be based on annual contributions by all countries at a certain percentage share of their GDP. Contributions would increase with the size and per capita income of countries. Such a funding scheme is consistent with the concept of financial compensation. The size of a country reflects its share in the consumption of the public good "environmental protection". The level of per capita income provides a proxy for international differences in time preference rates. The degree of financial compensation achieved in this way hinges on the extent to which the contributions to the environmental facility are additional to traditional forms of aid.

The willingness of donor countries to mobilize *additional* resources is likely to depend on the institutional arrangements under which the distribution of project funds is decided upon. This is hardly realized by most developing countries. As in earlier North-South negotiations, the Group of 77 (G77) favoured the creation of new financial

¹⁷ The GEF is a pilot scheme which is jointly managed by the World Bank and the UN's Development and Environment Programmes. Cf. World Bank, United Nations Development Programme (UNDP), United Nations Environment Programme (UNEP): Global Environment Facility, Future Evolution of the Global Environment Facility: Issues and Options, Washington, January 24, 1992. Projects in four areas of global environmental concern are financed: reducing global warming, protecting international waters, preserving biological diversity, and preventing further depletion of the stratospheric ozone-layer.

¹⁸ The funding of the GEF will be enlarged, probably to about US\$ 7-8 billion (from US\$ 1.3 billion currently). Cf. Udo Ernst Simonis: Wendepunkt? Rio Konferenz ist eine Selbstverpflichtung von Nord und Süd, in: epd-Entwicklungspolitik, No. 15/16, August 1992, pp. 25-27. However, it remains uncertain whether this target will be achieved since the funding continues to be based on voluntary financial commitments by donor countries. The agreement on the decision process is rather vague. Decisions should be "democratic in nature ... by guaranteeing a balanced and equitable representation of the interests of developing countries" (UNCED, op. cit., p. 5); cf. also Andrew Steer: The Road from Rio, in: Finance and Development, Vol. 29, 1992, No. 3, p. 20.

institutions for which the preferred "one country, one vote" principle would apply.¹⁹ The compromise achieved in Rio de Janeiro, which envisages more equitable decision rules for the GEF, adds to the leverage of developing countries in deciding on the allocation of project funds.²⁰ The funding is seriously endangered if the major donors anticipate that the principles of financial compensation will be violated. Donors could no longer enforce the rule that concessional financing is only provided in the case of spillovers of national policies on global environmental conditions. Foreign financing of protective measures, the benefits of which accrue to the recipient country, may merely replace domestic financing.

The replacement of domestic by foreign financing is minimized if donors retain sovereignty with regard to the disbursement of project funds. A voting rule which mirrors the relative weight of donors in funding an environmental facility may considerably help the mobilization of sufficient resources. Nevertheless, replacement effects cannot be ruled out completely because of difficulties in drawing a clear dividing line between the internal and the external effects of environmental protection. Even under incentive-compatible institutional arrangements, the effectiveness of project lending remains limited unless the overall policy framework in the recipient countries ensures the efficient use of financial resources.

The Way Forward

Financial compensation of developing countries is a necessity to the extent that industrialized countries assign a relatively high priority to worldwide environmental protection and international spillovers of national policies prevail. In practice, transfers have to be determined in a bargaining process. The concept of financial compensation offers some basic guidelines which appear to be largely ignored in North-South negotiations. First, financial compensation is frequently confused with the overall costs of environmental conservation in the Third World. Concessional external financing is not required to the extent that welfare improvements accrue to the country itself. Secondly, an integrated concept has to be developed providing for incentive-compatible arrangements with respect to both the mobilization and the distribution of funds for environmental protection. Thirdly, the

¹⁹ Cf. UN General Assembly, op. cit. During the preparations for the UNCED summit, the G77 suggested establishing separate funds for each environmental UN convention and a general fund, the so-called Green Fund, to cover activities not included in separate conventions. Cf. Johannes Heister, Gernot Klepper, Frank Stähler: Strategien globaler Umweltpolitik, Die UNCED-Konferenz aus ökonomischer Sicht, Institute of World Economics, Working Papers No. 519, Kiel 1992, pp. 16 ff.

²⁰ Johannes Heister et al., op. cit., p. 18.

experience with concessionary transfers in the past has to be taken into account when designing international financing mechanisms. Most importantly, an effective linkage has to be established between compensation payments and protective measures by the recipients.

Fund Raising

Due to deficient information on costs and benefits, the international funding of global environmental protection must be related to a meaningful proxy variable. It is consistent with the concept of financial compensation to collect annual contributions as a percentage share of the donors' GDP. International differences in time preference rates and the countries' shares in the consumption of the public good "environmental protection" are captured in this way.

Eco-taxes have a role to play with respect to containing environmental degradation in a national context. But they are unsuited for funding financial compensation. A possible alternative would be to specify the total amount of admissible emissions or the admissible exploitation of natural resources and to issue a respective number of tradeable permits.²¹ A scheme of tradeable permits has some major advantages over eco-taxes:²²

International efficiency in containing global environmental degradation is relatively easy to achieve. The market exchange of emission permits provides an incentive to undertake abatement measures where they are most cost effective.

Financial compensation is an integral factor in a scheme of tradeable permits. This is most evident if permits are allocated on a per capita basis to countries. Developing countries in which per capita emissions are relatively low and the exploitation of natural resources remains limited would receive more permits than needed by them. They may then sell permits to countries which are short of permits because of environment-intensive production. Compensation increases with intensified efforts by developing countries to contain environmental degradation at home, since the number of permits that could be sold increases.

Administration and transaction costs are relatively low. The collection and transfer of compensation payments through a permit scheme does not require a large international bureaucracy, but at most a clearing agency.

Allocation of Funds

Experience with development aid in the past shows that unconditional budgetary transfers are unlikely to result in environmental improvements. Another debatable – though widely accepted – proposition is that

environmental protection in developing countries could easily be achieved by foreign debt reduction. External transfers of whatever type and magnitude cannot be a substitute for adequate policy incentives in the recipient countries.

In order to establish an effective linkage between external transfers and environmental protection, financial compensation should take place in the context of lending for specific projects with international spillovers. Project financing must be concentrated on developing countries the governments of which are committed to removing the internal impediments to environmental improvements. The catalytic role of external support may then be enhanced if project financing is not confined to narrowly defined environmental purposes. Institution-building and human resource development should also be supported. Deficiencies in these areas constitute major bottlenecks for the ecological and economic development of Third World economies.²³ Cases in point are, for example: the establishment of courts and independent executive bodies so that property rights could be defined, protected and enforced; as well as the transfer of managerial and technological know-how in order to contain environmental degradation in the process of industrialization.

Incentive-compatible institutional arrangements on the distribution and phasing of compensation payments will help the monitoring and enforcement of global environmental protection. Decisions on the distribution of project funds should be based on a voting rule which mirrors the relative shares of donors in funding an environmental facility. Such a rule minimizes the risk that domestic financing of environment-related projects is merely replaced by foreign financing. Hence, it helps the mobilization of sufficient funds on an international scale. The phasing of transfers may provide another safeguard for external donors. The temptation of recipients to renege on earlier commitments to environmental protection is particularly strong if financial compensation is granted as a once-and-for-all lump sum payment. This temptation may be contained if protective measures by the beneficiaries must precede the transfer of compensation payments. In the case of pro-rata payments, the option is maintained of sanctioning the breach of earlier commitments by a reduction of overall transfers.

²¹ For the case of CO₂ emissions, cf. Michael J. Grubb: *The Greenhouse Effect: Negotiating Targets*, The Royal Institute of International Affairs, London 1989; and Ernst Mohr: *Global Warming: Economic Policy in the Face of Positive and Negative Spillovers*, in: Horst Siebert (ed.): *Environmental Scarcity: The International Dimension*, Tübingen 1991, pp. 187-212.

²² Common problems of tradeable permits and eco-taxes relate to difficulties of monitoring and post-contractual instability.

²³ Ulrich Hiemenz, *op. cit.*