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Working Paper No. 52

REFLECTIONS ON FOREIGN INVESTMENT IN
NATURAL RESOURCES OF DEVELOPING COUNTRIES

by

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Reflections on Foreign Investment in Natural Resources of Developing Countries*

Both exploitation of Natural resources and activities of multinational corporations in developing countries have independently been subjects of vehement discussions surrounding the oil or in a wider sense raw material crisis emerging from the embargo of OPEC countries in 1973[1] and those on the "New International Economic Order".[2] This paper examines in this background the role of foreign private investments in the natural resources of developing countries in the light of their current policies.[3] But compared with traditional definition of natural resources, they are conceived here more broadly. They include besides (1) minerals, energy sources, forests, etc., also (2) air, rivers, oceans, sun energy, climate and other environmental constituents which determine nature's absorptive capacity for industrial growth and pollution. Natural resources of the

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* Thanks are due to J.B. Donges and R. Pomfret for their useful comments on an earlier draft of this paper.

1 See Weltrohstoffversorgung: Konflict oder Kooperation? Kiel Discussion Paper, No. 36, Institut für Weltwirtschaft, Kiel, December 1974.

2 See H.H. Glismann, P. Juhl and B. Stecher, Ökonomische Implikationen der "Neuen Weltwirtschaftsordnung". Kiel Discussion Paper, No. 46, Institut für Weltwirtschaft, Kiel, February 1976.

3 Developing countries differ from each other in respect of their resource endowments, efforts for industrialization and policies for foreign private investments. These differences are, however, considered to fall outside the scope of this paper. The generalizations on developing countries are based here more on the experience of countries which are relatively rich in mineral and/or oil deposits and have tried to use the proceeds of their natural resources for their economic development. Similarly, the existing subtle differences in the approaches and attitudes of developed countries towards the investments of their international companies in natural resources of developing countries are also not considered in this paper.

first group are called here non-renewable or exhaustive and those of the second group[1] environmental resources. The dividing line between the two groups may, however, be in some cases very thin because all natural resources are subject to exhaustion, albeit to different degrees, and all of them are parts of environment.[2] Nevertheless, a distinction between exhaustive and environmental resources is drawn in this paper in order to account for their varying importance for foreign private investments in developing countries and in this sense our definitions of the two groups of natural resources are purely subjective.

Need for Distinguishing between Exhaustive and Environmental Resources

Exhaustive and environmental resources of developing countries distinguish themselves from each other from the standpoint of private foreign investments in some major respects.

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[1] This group should also include tourist attractions such as beautiful landscapes, sandy beaches, good weather, mountains, water falls, etc. Considerable private foreign investments are flowing into these resources of developing countries, especially in South European and Carribean areas, and a general consensus exists that this trend will continue in the future depending on the growth of income in the developed countries and the policies and incentives of developing countries. From the point of view of our analysis, investments in tourist attractions require a different treatment than those in the remaining environmental resources needed by manufacturing industries and it is only these latter type of resources which are referred to when the term environmental resources is used in this paper.

[2] See Natural Resources of Developing Countries: Investigation, Development and Rational Utilization. Report of the Advisory Committee on the Application of Science and Technology to Development. United Nations, Department of Economic and Social Affairs, (E/4608/Rev.1,St/ECA/122), New York 1970, pp. 4-9.

The former have been objects of private foreign investments for more than a century and have provided strong incentives for economic and political ties as well as conflicts between developing and developed countries. Since the Second World War developing countries have increasingly realised the economic importance of these natural resources and many of these countries have already evolved policies for foreign investments in this field. Environmental resources are, contrastingly, available in every country and cannot be regarded as economic goods so long as manufacturers have to pay no or relatively negligible prices for using them either as inputs or as means of waste disposal, excessive heat emission, etc. However, user costs for environmental resources in developed countries are now increasing because of both the scarcity of suitable factory sites and the pollution control. This trend is very likely to continue in the foreseeable future making the evironmental resources of developing countries attractive for the manufacturers from developed countries.[1] Developing countries are slowly becoming conscious of such private foreign investments, but have no separate policy towards them as yet. They are likely to continue to treat these investments at par with other foreign investments in their manufacturing sector until industrial pollution begins to threaten their environmental balance.

Compared with exhaustive resources, environmental resources are more evenly distributed among countries. But the former have attracted private foreign capital on their own merits due to their relative scarcity whereas the latter may not be able to do so. The investors moving out of the industrialized countries because of relatively higher costs of environmental resources would tend to prefer developing countries able to offer, besides cheap environmental resources, also exhaustive resources and other advantages like cheap labour and a good

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[1] See I. Walter, "Environmental Control and Patterns of International Trade and Investment: An Emerging Policy Issue", Quarterly Review, Banca Nazionale del Lavoro, Rome, Vol. 25 (1972), No. 100, pp. 82-106.

infrastructure.[1]

Further, private investments in the exhaustive resources of developing countries have traditionally been supported by the governments as well as the trade unions of the developed countries from which these investments emanated. But the movement of capital from industrial countries into developing countries caused by the increasing environmental costs in the former is likely to be resisted at least by their trade unions because of the loss of employment and their bargaining power in the related industries.

Finally, foreign investments in exhaustive resources have so far tended to export their products more or less in their original form with a view to processing them in developed countries. This is true in the case of most of the metallic ores, energy sources and forest products. Foreign investments in plantation have also tended to export their products like cotton, coffee and cocoa as raw materials for further processing and manufacturing in industrialized countries. Contrary to this, environmental resources are not transportable and products of foreign investments in these resources of developing countries will either be intermediary or final manufactured goods to be absorbed in local and export markets. Foreign investments attracted by environmental resources will, in general, increase the developing countries' domestic absorption of local exhaustive resources.

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[1] If the costs of environmental resources are the same in all the developing countries and a particular investment by a foreign enterprise is undertaken in a developing country having also the needed supply of exhaustive resources, it will be very difficult to determine whether the investment is primarily because of the supply of exhaustive or of environmental resources as long as the motivation of the investment is sought only in the host country. In such a case, an analysis of the reasons for the movement of capital from the source country will be more useful for determining the relative importance of the two types of natural resources in attracting the foreign investment.

Thus exhaustive and environmental resources are complementary and not competitive from the point of view of foreign private investments.

Importance of Exhaustive Resources for Direct Investment

Historically, exhaustive resources constituted in developing countries the initial attraction for private foreign investments. They continued to be the main determinants of the inflow of foreign capital into these countries through the nineteenth to the early twentieth century. During this early phase, foreign investments concentrated in the developing countries having rich deposits of exhaustive natural resources and originated mostly from England, the Netherlands and France which depended on foreign supplies of tropical products and resources for their industries. With the spread of technological progress and industrial development to the other countries of Europe and North America, the number of both the receiving and the investing countries increased, especially because technological progress enabled the discovery of new exhaustive resources in developing countries. The predominant feature of the foreign resource investments in developing countries has been that they have concentrated in the hands of a relatively small number of larger multinational companies having their headquarters in the western industrialized nations. A greater part of the production and export of exhaustive resources of developing countries has constituted an integral part of the vertically integrated production process of these multinational corporations.[1]

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[1] See Raymond F. Mikesell, "The Contribution of Petroleum and Mineral Resources to Economic Development", in Raymond F. Mikesell et al., Foreign Investment in Petroleum and Mineral Industries: Case Studies of Investor-Host Country Relations (Resources for the Future, Inc.), Baltimore and London 1971, pp. 9-12.

Exhaustive resources of developing countries are, however, losing their dominant position in attracting foreign private investments. Their shares in total direct investments of the Federal Republic of Germany, Japan, the U.K. and the U.S.A. in developing countries have gone down (Table 1). The annual compound rate of growth of direct investment of Japan, the U.K. and the U.S.A. in exhaustive resources of developing countries has in the last five to ten years been lower than the growth rate of their total direct investment in these countries (Table 2). At the same time the share of manufacturing sector of developing countries in direct investments of Japan, the U.K. and the U.S.A. has been increasing (Table 1). Manufacturing investments have demonstrated a higher growth rate than the total direct investments of these three developed countries into developing countries (Table 2). But for a high rate of expansion of direct investments of developed countries in the oil sector of developing countries, their exhaustive resources on the whole would have further lost their importance for foreign private investments (Table A1 and A4).

There are several reasons for the declining importance of exhaustive resources of developing countries for private foreign investments. Two of them appear to have played the greatest role in the recent past. First, economic policies of developing countries are judged to be hostile towards foreign investments in their exhaustive resources. As a result, investors have been hesitant in investing risk capital in exploration and development of new resources of developing countries. Hostile policies are also responsible for the outflow of capital from these resources. Second, developing countries have shown greater willingness to import private capital for the development of their manufacturing sector and have granted various kinds of incentives for this purpose. At the same time, foreign investors have realised

Table 1 - Shares of Exhaustive Resources[1] and Manufacturing Sector in Accumulated Stock of Direct Investment of Selected Developed Countries in Developing Countries (Percentages)

	Exhaustive Resources	Manufacturing Sector
Federal Republic of Germany		
1967	7.6	84.8
1975	6.2	62.8
Japan		
1970	42.1	36.1
1975	30.8	48.7
United Kingdom		
1965	29.1	34.8
1971	25.3	41.1
U.S.A.		
1966	34.6	40.0
1974	30.6	43.0

[1] Federal Republic of Germany and United States of America: Mining and Petroleum; United Kingdom: Mining and Agriculture; Japan: only Mining.

Source: See Table A1 to A4.

Table 2 - Growth of Foreign Private Investment of Selected Developed Countries in the Developing Countries by Sector (Annual Compound Rates)

	Mining and Petroleum[1]	Manu-facturing	Total
Federal Republic of Germany (1967-1975)	9.5	8.4	12.5
Japan (1970-1975)	21.6	37.8	29.3
United Kingdom (1965-1971)	2.4	7.9	4.9
U.S.A. (1966-1974)	9.2	11.9	10.9

[1] United Kingdom: includes agriculture but not petroleum; Japan: without petroleum.

Source: See Table A1 to A4.

the necessity of installing their manufacturing plants in the developing countries in order to protect and/or enlarge their markets there in view of the protectionist policies of these countries. They have been moving their manufacturing investments into the developing countries also to avail themselves of the relatively cheaper labour and thereby to increase the competitive strength of their products on the international markets.

There exists no reliable evidence to prove that any considerable part of foreign investments in the manufacturing industries of developing countries could have already been motivated by the increasing costs of environmental control in the developed countries.[1] However, in view of the potential information gap it cannot be ruled out that some foresighted entrepreneurs in high-polluting industries have begun to pre-empt the future course of pollution control in developed countries by diverting their new plants to developing countries.[2]

Performance of Foreign Capital

Developing countries owe the exploration and development of the major part of their exhaustive resources to private foreign investors. Production and exports of oil and metallic ores like copper, bauxite, tin, lead and zinc are to a great

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[1] See I. Walter, "Environmental Management and Optimal Resource-Use: The International Dimension", in Das Umweltproblem in ökonomischer Sicht, Symposium 1973, ed. by Herbert Giersch (Institut für Weltwirtschaft, Kiel), Tübingen 1974, pp. 132-152. See also R. Jungnickel et al., Die Deutschen Multinationalen Unternehmen: Der Internationalisierungsprozeß der deutschen Industrie, Frankfurt/M. 1974, pp. 155-160.

[2] The authors of "Global Reach" are, however, of the opinion that the use of "pollution havens" by the multinational corporations is already well advanced. R.J. Barnet and R.E. Müller, Global Reach: The Power of the Multinational Corporations, New York 1974, p. 345.

extent in the hands of multinational corporations. Though foreign capital invested in exhaustive resources has contributed significantly to national income, employment and export earnings of developing countries, it has failed to initiate overall economic development of their economies. Resource investments of developed countries led to inflow of domestic as well as foreign capital into transport, banking, insurance and trade of developing countries, but this infra-structure was primarily oriented to facilitate exports of raw materials to developed countries and imports of manufactured goods from them. Foreign private investments in exhaustive resources of developing countries are partly responsible for the existing international division of labour which is believed, at least by the developing countries, to have hindered their industrialization.

It is debatable but actually impossible to determine in retrospect whether developing countries would have achieved a significantly faster industrialization of their economies in the absence of foreign resource investments. Nevertheless, it cannot be denied that the manufacturing sector of developing countries received hardly any impulse from foreign resource investments and the economic policy of the imperial governments, which were decisively influenced by the vested interests of their business communities, was directed against the growth of manufacturing industries in their colonies. An obvious evidence of this policy is that the colonial governments in the developing countries allowed relatively free entry to manufactured goods imported from their home countries and at the same time their home governments practised a system of import duties whose tax burden increased with the stage of manufacture of the goods imported. This structure of import duties has continued to exist in the industrial countries to date. In the absence of any protection from foreign competition, domestic entrepreneurs in the colonies usually did not undertake production of manufactured goods competing with imports which were

transported at comparatively low costs as they could be shipped in the vessels returning back from the industrial countries where they unloaded their cargo consisting of industrial raw materials and tropical goods from the colonies. Under such circumstances, domestic entrepreneurs became in many cases traders of imported industrial goods. This tariff policy also did not provide the foreign investors with any incentive to establish manufacturing plants in the developing countries.

Under the initial agreements of the foreign resource investors with the colonial governments, developing countries got only a small proportion of the profits earned by these investors on the exports of exhaustive resources.[1] Foreign exchange earned on these exports was mostly dissipated unproductively for importing goods and services which were required either by the colonial governments to maintain their military and civil administration or by a very small section of the population to which the benefits of foreign investments mainly accrued.

The continuation of the pattern of trade resulting from colonial resource investments is believed by the developing countries to be responsible also for the widening income gap between them and the richer countries. The prices of raw materials exported by the developing countries have a tendency to fluctuate more than those of the imported manufactured goods, and in the long-run they have fallen in terms of the prices of manufactured goods resulting in a net transfer of

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[1] Developing countries have increased their share of this profit since their independence by revising these agreements, raising taxes and posted prices, etc., see Raymond Vernon, Sovereignity at Bay: The Multinational Spread of U.S. Enterprises, New York, London 1971, pp. 53-54.

resources to the developed countries.[1] Further, there exists a reasonable doubt that the vertically integrated ownership and control of exhaustive resources of developing countries in the hands of industrialists of developed countries confronts the former with additional difficulties in their attempts to stabilize the prices of their exports, besides being the instrument of transfer pricing[2] through which multinational concerns seek to reduce their tax burden and avoid exchange controls and risks in the developing countries.

Monopoly of exhaustive resources in the hands of foreign firms is likely to be a source of discouragement to potential domestic investors in competing industries. It is quite natural that in case of scarcity a foreign firm would prefer to supply its own subsidiaries with raw materials than to take care of the needs of its competing firms. Domestic investors may also be apprehensive of being subjected to discriminatory prices by foreign owners of exhaustive resources in developing countries.

Current Policy of Developing Countries

Although there is no uniform set of policies currently followed by all the developing countries in respect of their natural resources, a careful analysis of the economic plans,

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[1] For terms-of-trade controversy see Charles P. Kindleberger, "Terms of Trade for Primary Products", in Natural Resources and International Development, ed. by Marion Clawson, (Resources for the Future, Inc.), Baltimore 1964, pp. 339-366.- See also T. Wilson, R.P. Sinha, J.R. Castree, "The Income Terms of Trade of Developed and Developing Countries", The Economic Journal, London, Vol. 79 (1969), No. 316, pp. 813-832.- UNCTAD, Long-Term Changes in the Terms of Trade, 1954-71, (TD/138), Geneva 1972.

[2] See Raymond Vernon, op.cit., pp. 42-45.

official statements and steps taken in the field of natural resources by the governments of those developing countries which are richly endowed with exhaustive resources shows that they are generally led by the following ideas:

- Demonstration of the right of sovereignity over their natural resources.
- Conservation of exhaustive resources to meet present and future demand of their national industries.
- Promotion of investments into exploration and development of new deposits of exhaustive resources.
- Promotion of industrial units to process exhaustive resources into manufactured goods for domestic as well as export demand with a view to replacing the exports of raw materials with manufactures.
- Export of exhaustive natural resources to earn foreign exchange required for industrial and agricultural inputs and for essential consumer goods.
- Maximization of foreign exchange earnings from resource exports through price stabilization at a level commensurate with the prices of industrial goods imported from the developed countries.
- Maximization of the social share in the rent earned by domestic as well as foreign investors in exhaustive resources.

Some of these ideas have sporadically been put into action, while others are either wishful thinking or have remained merely on paper in the economic plans of many developing countries. Nonetheless, they have exercised a determining influence on the attitudes and policies of developing countries towards foreign private resource

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investments. Since the Second World War these countries have endeavoured to increase their influence on production, distribution and pricing of their exhaustive resources owned and controlled by foreign firms. This is considered part and parcel of their ideology as well as a necessary instrument for maximizing the social welfare accruing from the exploitation of national natural resources. The actions of the individual developing countries for implementing this objective have been conditioned by, among many other factors, the technology required for the extraction of a particular exhaustive resource and its availability to that country independent of the foreign firms involved, barriers to entry into international markets, the domestic capital market, state finances, national foreign exchange reserves, negotiation strategies of the respective foreign firms, the form of the existing government and its potential administrative capability. Broadly speaking, these actions have consisted of nationalization of foreign ownership of domestic exhaustive resources, varying kinds of incentives and coercion to pressure the foreign subsidiaries to convert themselves into joint-ventures, nomination of government representatives to the board of directors of the foreign firms, restrictions on production and its allotment through licences issued by the state, price controls and revision of initial agreements with a view to raising taxes, royalties or restricting the duration of mineral rights.[1] On the whole, the developing countries have adopted from time to time those measures against the foreign private investments in

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[1] Examples are not given here in order to avoid an unnecessary lengthening of the paper. Interested readers are referred to the following studies: Chandler Morse, "Potentials and Hazards of Direct International Investment in Raw Materials", in Natural Resources and International Development, op.cit., pp. 367-414. Rayond F. Mikesell et al., Foreign Investment in Petroleum and Mineral Industries. Case Studies of Investor-Host Country Relations, op.cit.

their exhaustive resources which they thought to be able to implement efficiently. These measures are not confined to foreign resource investments in these countries. They have been applied to a wide variety of foreign investments. However, exhaustive resources have in the past attracted more than their proportionate share of these measures. Among exhaustive resources, at least nationalization of foreign investments in mining and agriculture have been given priority due to political and nationalist pressures, whereas those in oil production suffered less until 1972.[1] Since the oil crisis of 1973 the burden of regulatory measures and nationalization has increased also in the sphere of oil production because developing countries have realised that their strength has gone up by virtue of their ability of concerted action under the auspices of OPEC and of the scarcity of oil supply compared with the demand for it.

The Dilemma of Current Policy

The current policy of developing countries for foreign private investments in their exhaustive resources is facing a dilemma. On the one hand, they are badly in need of foreign direct investments for exploration and development of new reserves of particularly those resources which are highly capital and technology intensive. Often technology is tied with risk capital and cannot be acquired separately by way of consulting, licensing etc. On the other hand, developing

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[1] See M.L. Williams, "The Extent and Significance of the Nationalization of Foreign-Owned Assets in Developing Countries", Oxford Economic Papers, New Series, London, Vol. 27 (1975), No. 2, pp. 260-273.- J.P. Agarwal, "Bedeutung und Determinanten ausländischer Direktinvestitionen in Entwicklungsländern", Die Weltwirtschaft, Tübingen (1976), No. 1, pp. 174-190.

countries have subjected the foreign firms in the resource sector to an increasing burden of public control, nationalization and expropriatory measures. They have already taken over a major part of the foreign investment in plantation, forestry and other agricultural branches. This process is continuing in those extractive resources in which extraction and distribution technology is freely available and barriers to the international market can be overcome or the supply can be absorbed by the domestic manufacturing sector. In other exhaustive resources where market barriers and technology problems are still very strong, developing countries have hesitated in taking actions against foreign firms. But there can be hardly any doubt about their objective of bringing all the nation's exhaustive resources under domestic control. As a result, foreign investors have come to regard the risks attached to their investments in exhaustive resources of developing countries to be very high. This has been responsible for the slowing down of the flow of foreign resource investments in the recent past and this trend is very likely to continue as long as developing countries demonstrate a continuing commitment to the policy of enlarging and exercising control over their own resources. This policy is bound to retard the speed of progress in exploration and development of their exhaustive resources. Nevertheless, in view of the prevailing political conditions in these countries the chances of a reversal of this policy are meagre.

Developing countries would be, however, better advised to appreciate that exploration and development of new exhaustive resources involve relatively large amounts of capital expenditure and its gestation period can be very long. It is not rare that investments in this field do not result in profitable operations. Thus the economic risks accompanying the resource investments alone are relatively high and can be

accepted only by bigger international corporations. But they cannot be expected to take such risks if they are not sure that they will be able to recover their capital and make a profit after the "bonanza" is discovered. Therefore, if the developing countries are interested in foreign resource investments, they will have to grant mineral rights on attractive terms and convince the foreign investors that such agreements will also be honoured. Considering that the economic development of the majority of developing countries suffers under the shortage of capital, technology and foreign exchange, and that the development of their exhaustive resources can be a useful instrument for combatting these shortages by way of both import saving and export expansion, there can be no doubt that they should be interested in such investments. Nevertheless, they have apparently failed - probably because of their sad experience in the past - to create conditions and arouse foreign investors' confidence which could have brought a better flow of foreign private investments into their resource sector. However, investors from the developed countries will also have to realise that developing countries are now not prepared to grant long-term mineral rights or concessions on the terms popular in the colonial times when these rights once acquired could be operated without controls or interference. At present there is a need for reassessment of current requirements and policies of both the host developing countries and the foreign resource investors in the light of economic and political conditions which have undergone a considerable change since the Second World War.

Investment Prospects in Environmental Resources

Better prospects of the flow of foreign private capital into developing countries exist, however, in the field of their environmental resources. The discussion on the sharing of costs of developing pollution-free technologies

and anti-pollution devices has been continuing in the industrial countries now for over a decade. Corporate lobbies in most of these countries have so far demonstrated a remarkable dexterity in blocking anti-pollution laws which could have heavily raised their costs. The recent recession has also pushed the environmental conflict between corporate managers and the public in the background, but it is sure to flare up as soon as the economic recovery stabilizes. Environmental capacity to tolerate pollution (gases, sludge, noise, radioactive waste, excessive heat, etc.) however flexible, is limited in each country. Measures to extend these limits through anti-pollution devices or to avoid pollution through redesigning the technologies involve costs which have to be born by the producers or the exchequer or both depending on the resolution of the growing conflict between industrial producers and the public in this respect. It is more likely, however, that industrial corporations in the developed countries will not be able for very long in future to spend the nation's environmental resources (air, water, earth) and make the exchequer pay for them. At the same time, the likelihood of their making huge investments in research and development to invent and innovate relatively pollution-free technologies should not be estimated highly, especially when the possibility of continuing the production with the existing technologies in developing countries is available to them. Under the given oligopolistic world, one producer may fear that the other would steal a march on him and therefore would be willing to hasten in shifting his production to a developing country rather than to undertake massive open-ended investments in the discovery of new technologies and be afraid of pricing himself out of the market.

Considering that corporate managers in the industrial countries are able to manoeuvre public opinion in the short

run and that the legislative process is awfully lethargic, a sudden movement of capital from the industrial countries into the environmental resources of developing countries will possibly not occur. The process is more likely to follow the path of labour intensive and "product-cycle" goods where producers from the industrially advanced countries have slowly established in the last 10 to 15 years their "export platforms" in countries like Hong Kong, Singapore, South Korea and Taiwan. Depending on pollution controls, public resistance, attitude of trade unions, etc., pollution intensive industries (e.g. petroleum, chemical, metal processing, paper and pulp) will either shift their existing plants or let them wear out and invest in new plants in the so-called "pollution havens" in the developing countries.[1] The distribution of these "pollution havens" among these countries will be determined, as in the case of export platforms, not only by a single factor, viz. free or relatively free supply of environmental resources. Selection of developing countries for environmental resource investments by foreign investors will be influenced like any other investment by a host of factors, e.g. local supply of complementary inputs, wage level, political stability, capital market, attitude towards foreign investments, foreign exchange policy, monetary and fiscal incentives for investments and exports, domestic demand for the product, local banking, insurance and other infra-structure facilities, etc.

Developing countries have to date practically no anti-pollution policy. This does not, of course, mean that they do not have any environmental problems. These are, however,

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[1] See also John G. Welles, "Multinationals Need New Environmental Strategies", Colombia Journal of World Business, New York, Vol. 8 (1973), No. 2, p. 15.

not a product of industrial pollution or if they are, they are confined to relatively few industrial centres in some of the developing countries where industrialization has progressed well since the nineteen sixties.[1] Compared with the already existing anti-pollution legislation in the developed countries, pollution-control regulations in the developing countries are almost non-existent. Therefore, their environmental resources are sure to prove attractive for private foreign investments, if these countries are not led away by the anti-pollution agitation in the developed countries in the sense that they try to copy their anti-pollution measures. This does not suggest that developing countries should not evolve any anti-pollution policy or that they should not watch carefully the related developments in the developed countries. However, developing countries want to industrialize their economies, and pollution accompanies industrialization, although degrees of industrial pollution may differ with the type of technologies used. Therefore, it would be better for them to have an anti-pollution policy than not to have it at all or have it too late.[2] But they have to take care that their anti-pollution policy is compatible with their industrial policy and efforts. The discussion on pollution control in the developed countries is dominated by the impression that

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[1] Environmental problems of developing countries are predominantly problems of poverty and can be largely overcome by the process of industrial development, whereas in the developed countries the industrial development itself is the cause of their environmental problems. See Development and Environment: Report and Working Papers of a panel of Experts Convened by the Secretary General of the United Nations Conference on the Human Environment (Founex, Switzerland, June 4-12, 1971), United Nations, Geneva 1972, p. 6.

[2] Maurice F. Strong, "The Quality of Life", Columbia Journal of World Business, Vol. 7 (1972), No. 3, p. 9.

their industrialization has gone rather far and the concomitant pollution of the environment is likely to upset the natural balance, whereas in some of the developing countries industrialization is in its initial stage and in many others it has yet to begin. Moreover, the environment has an inherent power to absorb industrial pollution and regenerate itself within certain limits. Only beyond these natural limits the "trade off" between industrialization and environment poses a serious problem of pollution prevention and control. Developing countries are at present far from these natural limits, and should be willing to host foreign investments in their environmental resources because of their pressing need for industrial development.[1] They stand to gain from the flow of foreign capital into their environmental resources as long as the social costs of environmental degradation do not exceed the social benefits resulting from these investments and should be prepared to exploit nature's assimilative capacities for their economic progress.

Foreign environmental investments are likely to be export intensive and oriented towards processing of local exhaustive resources. Thus they are going to fit very well in the existing development strategy of developing countries. These investments will also contribute to employment, but high pollution industries are usually not labour intensive. Supply of low wage labour may encourage foreign environmental investors to substitute labour for capital in the ancillary

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[1] Mexico is already wooing foreign investors affected by pollution control in the developed countries. One of its advertisements for foreign investors says "if you are thinking of fleeing from the capital because the new laws for prevention and control of environmental pollution affect your plant, you can count on us". Quoted in R.J. Barnet and R.E. Müller, op.cit., p. 345.

operations, but the chances of their redesigning technologies to suit factor proportions of developing countries are very poor. However, developing countries have generally not shown much concern about this aspect of foreign investments, although employment creation is given a high priority on paper in their economic plans.[1] Private foreign investments in environmental resources will naturally also have a tendency to be accompanied with some of the drawbacks which have usually been associated with foreign investments in developing countries (transfer pricing, import intensiveness, etc.) and efforts will have to be continued to evolve suitable methods and policies to increase the net benefit accruing from foreign investments to the host countries.[2]

Movement of capital from developed countries into the environmental resources of developing countries is a new phenomenon and presents a hope that international trade and investment would lead to a relative equalization of factor prices and income levels between the nations. Protectionist policies and oligopolistic structures can resist the free market forces and have so far largely succeeded in hindering an industrial spill-over from the developed to developing countries, but they may not be able to cross the natural barriers set by environment to geographical concentration of industrial growth. The environment is likely to prove a major force in bringing about a broader distribution of industrial production between the developed and developing countries[3] evoking some fundamental structural adjustments in the former.

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1 See J.P. Agarwal, J.B. Donges, E.J. Horn, A.D. Neu, Übertragung von Technologien an Entwicklungsländer (Kieler Studien, No. 122), Tübingen 1975, p. 90.

2 UNCTAD, Guidelines for the Study of the Transfer of Technology to Developing Countries, United Nations (TD/B/AC. 11/9) New York 1972.

3 Maurice F. Strong, op.cit., p. 9.

Table A1 - Sectoral Distribution of Direct Investment of Federal Republic of Germany in Developing Countries, 1967, 1973-1975

	Mining		Petroleum & natural gas		Manu-facturing		Trade		Tourism		Other		Total[1]	
	Mill. DM	%	Mill. DM	%	Mill. DM	%	Mill. DM	%	Mill. DM	%	Mill. DM	%	Mill. DM	%
Stock at the end of:														
1967[2]	202.4	4.2	164.0	3.4	4066.8	84.8	166.4	3.5	16.8	0.4	176.8	3.9	4793.2	100
1973	111.3	1.2	292.0	3.0	6175.7	64.0	195.1	2.0	1163.2	12.1	1712.4	17.7	9649.7	100
1974	118.9	1.1	366.5	3.4	6816.4	63.1	211.1	1.9	1194.4	11.1	2093.0	19.4	10800.3	100
1975	135.2	1.1	621.3	5.1	7710.7	62.8	139.6	1.1	1260.3	10.3	2414.4	19.7	12281.5	100

[1] Figures do not add to totals because of rounding.

[2] Converted from US dollars at the then prevailing exchange rate.

Source: OECD, Stock of Private Direct Investments by D.A.C. Countries in Developing Countries, End 1967, Paris 1972. - Bundesministerium für Wirtschaft, "Vermögensanlagen Gebietsansässiger in fremden Wirtschaftsgebieten". Bundesanzeiger, Köln, various issues.

Table A2 - Sectoral Distribution of Japanese Direct Investment in Developing Countries,[1] 1970, 1972 and 1975[2]

	Mining		Manufacturing		Other		Total	
	Mill. US$	%	Mill. US$	%	Mill. US$	%	Mill. US$	%
1970	742.7	42.1	637.1	36.1	384.9	21.8	1764.7	100
1972	911.5	41.0	826.1	37.1	487.7	21.9	2225.3	100
1975	1972.0	30.8	3116.0	48.7	1316.0	20.5	6404.0	100

[1] Asia, Middle East, Africa and Latin America

[2] Accumulated stocks at the end of the financial year (April to March)

Source: M.Y. Yoshino, "Japanese Foreign Direct Investment", in Japanese Economy in International Perspective, edited by Isaiah Frank, Baltimore and London, 1975, pp. 248-272. - T. Shimizu, "Japanische Direktinvestitionen im Ausland", Marktinformationen, No. A/187, Bundesstelle für Außenhandelsinformationen, Köln, October 1973. - Nippon Facts, Japanische Handelszentrale, Hamburg, November 1975.

Table A3 - Sectoral Distribution of Accumulated Stock of Direct Investment of the United Kingdom in Developing Countries

	Agriculture		Mining		Manufacturing		Other		Total[1]	
	Mill. Pounds	%	Mill. Pounds	%	Mill. Pounds	%	Mill. Pounds	%	Mill. Pounds	%
1965	308.1	22.1	98.4	7.2	485.8	34.8	502.7	36.0	1395.0	100
1968	372.4	22.3	121.8	7.3	582.0	34.9	592.1	35.5	1668.3	100
1971	335.0	18.0	134.5	7.2	764.3	41.1	625.7	33.7	1859.4	100

[1] Figures do not add to totals because of rounding.

Source: Board of Trade Journal, London, various issues. Trade and Industry, London, various issues.

Table A4 - Sectoral Distribution of Accumulated Stock of U.S. Direct Investment in Developing Countries

	Mining		Petroleum		Manufacturing		Other		Total	
	Bill. US$	%	Bill. US$	%	Bill. US$	%	Bill. US$	%	Bill. US$	%
1929	1.2	16.0	1.1	14.7	1.8	24.0	3.4	45.3	7.5	100
1950	1.1	9.3	3.4	28.1	3.8	32.2	3.5	29.7	11.8	100
1960	3.0	9.4	10.8	33.9	11.1	34.8	7.0	21.9	31.9	100
1966	4.0	7.7	13.9	26.8	20.7	40.0	13.2	25.4	51.8	100
1970	5.4	7.2	19.7	26.1	31.0	41.1	19.3	25.6	75.4	100
1974	6.1	5.1	30.2	25.5	51.0	43.0	31.3	26.4	118.6	100

Source: U.S. Department of Commerce, Survey of Current Business, Washington, D.C., various issues.