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To: Members of the Executive Board

From: The Secretary

Subject: The Fund and Environmental Issues

There is attached for consideration by the Executive Directors a paper on the Fund and environmental issues to be discussed on a date to be announced.

Mr. Gandhi (ext. 8536) or Mr. Shome (ext. 7319) is available to answer technical or factual questions relating to this paper.

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INTERNATIONAL MONETARY FUND

The Fund and Environmental Issues

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I. Introduction

In recent years, concern about environmental issues has been increasing in both developed and developing countries. This has led multilateral agencies, such as the United Nations (through the United Nations Environment Program (UNEP) and other activities), the Organization for Economic Cooperation and Development (OECD), and the World Bank, to include environmental issues explicitly in their work programs. Among the issues that have gained prominence are soil erosion and the expansion of deserts, acid rain, overexploitation of natural resources and the destruction of forests, the shrinking of the ozone layer, pollution of waterways and oceans, salification of underground water sources, air and water pollution in urban areas, and global warming, popularly termed the "greenhouse effect." The effects of certain forms of environmental degradation have spilled beyond national boundaries and have even spread globally.

Interest in the quality of the environment has led to an awareness of its linkages with economic activities and to calls for greater recognition of environmental issues in the design of public policies. The literature on environmental economics and environmental issues has been expanding rapidly. Many governmental and nongovernmental organizations as well as multilateral organizations have started to point out the need for the proper measurement of the consumption of environmental resources in economic activities and the sustainability of development and growth, given the limited availability of certain nonrenewable environmental resources. Thus, in pursuing a stable international payments and exchange system, and in helping member countries to strengthen the balance of payments and to achieve sustainable growth, the Fund is being called upon by governmental and nongovernmental organizations to recognize any possible environmental implications of its policy advice and to encourage member countries to pursue environmentally sound policies. 1/ The objective of this paper is to seek the guidance of the Executive Board on whether and how the Fund staff should respond to these concerns. 2/

1/ For example, Public Law 101-167, passed by the U.S. Congress in November 1989, calls on the U.S. Executive Director to pursuade the Fund to carry out a systematic review of the impact of its policies on the long-term sustainable management of natural resources and the environment. Public Law 101-240, passed by the U.S. Congress in May 1990, calls on the U.S. Executive Director to encourage the Fund to eliminate or reduce the potentially adverse impacts of Fund programs on the environment.

2/ It may be noted that, with the assistance of the World Bank, a few policy framework papers, Structural Adjustment Facility documents, and Extended Fund Facility arrangements have included structural measures needed for environmental protection.

Section II describes the nature and causes of environmental degradation and mentions a few considerations relevant to deciding on the Fund's involvement with environmental issues. Section III analyzes various implications of incorporating environmental concerns into Fund-supported operations and highlights the trade-offs that can arise between macroeconomic stability and environmental objectives in the short run. Section IV points out a few additional limitations that have to be borne in mind were the Fund to respond to environmental concerns. Section V suggests a limited but feasible approach for Fund involvement in environmental issues. Section VI lists major issues for Board discussion.

II. The Fund and the Environment

The quality of human life and the sustainability of economic growth and development are closely tied to the quality of the environment. Protecting the environment is, therefore, seen by many as an important objective of both macro- and microeconomic policies. Governmental and nongovernmental organizations calling for greater Fund involvement in environmental issues believe that Fund-supported policies can and do affect the environment and that the Fund should explicitly recognize these effects.

The Brundtland Commission Report (1987) of the United Nations has suggested a concept of "sustainable" development, that is, development that allows the present generation to meet its needs without compromising the ability of future generations to meet theirs. It has also recommended that international policymakers strike a balance between the economic growth objective of the present generations and the environmental needs of this and future generations.

1. Characteristics of environmental problems

Environmental problems have many facets. First, they may be confined to particular localities within a country or may extend to several countries or even to the whole world. 1/ Second, some effects are of short duration while others may be long lasting and even irreversible. Finally, many environmental issues are extremely complex requiring an interdisciplinary approach, including the physical and social sciences as well as the legal profession. In many instances, a complete economic calculus of costs and benefits of public policies for the environment can only be made after a considerable body of information has been assembled and analyzed. This is particularly likely to be the case where the channels of causation are diffuse, whether spatially or

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1/ For example, upland deforestation may lead to soil erosion, the silting-up of downstream water courses, and increased downstream flooding. Fossil fuel use and deforestation may lead to changes in the global climate and ocean levels.

temporally, or are for other reasons not well understood. 1/ In short, the conventional caveat, that economic agents and policymakers must have full information in order to make optimal decisions, is particularly important in relation to many environmental issues.

The task facing policymakers is, thus, to find an optimal balance between environmental preservation and enhancement, on the one hand, and other key economic objectives, including growth, employment, balance of payments viability, and social concerns, on the other.

2. Major causes of environmental degradation

In addition to poverty and growing population pressures, which have been identified as major causes of environmental degradation in the particular circumstances of many low-income developing countries, there seem to be at least two general causes of environmental degradation.

First, environmental degradation results from the existence of market failures or, more precisely, externalities which exist whenever the marginal social costs of an activity differ from its marginal private costs. Market failures have been identified as the primary reason for the undervaluation of environmental assets and natural resources, and their overuse. It is, therefore, argued by some that appropriately targeted government intervention is needed to help achieve a more appropriate rate of exploitation of natural and environmental resources in the interest of sustainable growth.

Second, government policies may themselves contribute to market failure through the subsidization of activities (at the input or output level) that are already characterized by negative externalities. Examples of these policy failures are subsidies to nonbiodegradable inputs used by the agricultural sector and the inadequate taxation of pollution-causing inputs or outputs, particularly of certain manufacturing industries. A correction of inappropriate government policies is, thus, indicated to achieve a socially optimal allocation of resources consistent with the objective of sustainable growth.

3. Considerations in deciding on the role of the Fund in environmental issues

There is no reason, a priori, to believe that Fund-supported policies should have had an environmental impact. This is because Fund-supported policies tend to be macroeconomic in nature and relate to macroeconomic aggregates while environmental degradation frequently is

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1/ The available information, and its interpretation by the relevant experts, may point to ambiguous conclusions. Compare, for example, the diversity of scientific opinions on the existence, scale, and causes of the "greenhouse effect," and the changes which such opinions have undergone over time.

the result of market and micro-policy failures, or inappropriate market prices. In addition, the behavior of macroeconomic aggregates conveys little or no information about the environmental impact without reference to changes in the composition of such aggregates which are relevant to the environmental outcome, if any.

Nevertheless, Fund-supported policies can have environmental consequences, though indirectly, depending upon the structural features of the economy in question and the effect of macroeconomic policies on the composition of macroeconomic aggregates. However, even in these cases, environmental consequences will not be systematic and no generalizations are possible. Some examples may illustrate the point.

The effects on the environment of an exchange rate adjustment, for example, will depend upon the pattern of foreign trade of the country and the incremental changes in trade volumes the policy change generates. A developing country that experienced an exchange rate change which gave rise to excessive exploitation of forestry products could suffer environmental damage from soil erosion, the silting-up of water courses, or the loss of wildlife habitats; this damage could then compound global "greenhouse effects." On the other hand, in another country, the higher returns available to primary-producing sectors, notably to agriculture, from exchange rate adjustment could provide the resources needed to finance environmentally sound cultural practices and help to reduce rural-urban migration and the incidence of environmental stress associated with urban congestion. Thus, there are only a few possible conclusions on the environmental impact of changes in external sector policies that are general enough to be valid for most countries or in most circumstances.

As another illustration, a public expenditure policy change involving a reduction in the level of budgetary expenditure may have a negative impact if it falls directly on the environmental protection services, while major reductions in subsidies to pollution-generating activities, on the other hand, may have a favorable impact on the environment.

Some environmentalists have argued that the use by the Fund of exchange rate policy to achieve macroeconomic adjustment has, in some cases, caused excessive depletion of natural resources to meet short-term needs; they have said that this depletion, in addition to being detrimental to the environment, has limited some countries' capacities to attain sustainable growth. As indicated above, this argument can be settled only after substantial empirical work; the present state of knowledge in this area does not permit an unequivocal answer. Furthermore, exchange rate policy is the most appropriate instrument for achieving macroeconomic and external objectives; if, as a by-product, this policy results in excessive depletion of certain natural resources, because of the failure of the market to price a particular resource at its true scarcity value, then the appropriate policy approach is not to tinker with exchange rate policy but rather to devise measures that are

specifically designed to correct that particular market failure, that is, property rights cum tax policy. Thus, it is more a question of the appropriate assignment of policy instruments to match policy objectives. In fact, to the extent the Fund-supported policies have often included increases in pollution taxes or reductions in fertilizer subsidies, on fiscal grounds they may have helped reduce environmental externalities and aided in the achievement of environmental objectives.

Some environmentalists have also argued that Fund-supported policies in many developing countries have worsened the conditions of the very poor in the short run, and thereby resulted in the cutting of trees and other damage to the environment. This argument is not quite valid for a number of reasons. First, there is ample evidence in the literature which shows that environmental damage is often a result of inadequate assignment of property rights and of inappropriate pricing of environmental assets rather than any short-run and temporary increase in the numbers of poor. Second, there is also some evidence that not all poor are equally affected by the Fund-supported adjustment policies; in fact, small holders in the rural areas who produce exportables often benefit from Fund-supported exchange rate changes. Third, it can be argued with some justification that Fund-supported policies may, indeed, have been the most effective way of achieving economic and financial stability and economic growth, and may have provided more resources to address all priority public concerns, including those of poverty and environment. Finally, the Fund staff often urges the program countries to adopt appropriate "social safety net" policies to protect the poorest.

Given that market failures and/or policy failures affecting the environment exist in most member countries, including many in the industrialized world, it can legitimately be argued that the Fund should be concerned with environmental issues, especially in those countries where these failures are so large as to raise questions about the sustainability of growth and development over the long run.

While this argument has validity, any role that the Fund might assume in relation to environmental issues should be within the legitimate purview of the Fund, in the sense of being in accordance with, or at least not in conflict with, its basic mandate and its Articles of Agreement.

The Fund's functions are prescribed by the Articles of Agreement. Two functions of special relevance are the provision of balance of payments assistance to members (under Article V, Section 3) and the surveillance of exchange rate policies (under Article IV). In the performance of these functions, the Fund is to be guided by the purposes stipulated in Article I, which, among other things, are to "facilitate the expansion and balanced growth of international trade and to contribute thereby...to the development of the productive resources" of all member countries (Article I (ii)); and to help countries with temporary balance of payments support "without resorting to measures destructive of national or international prosperity" (Article I(v)).

The provisions governing the functions and purposes of the Fund, thus, do not expressly mention environmental issues but, then, environmental issues were not in the focus at the time the Articles were drafted. However, given that economic policies can at times have environmental consequences, it would appear that the Fund can deal with such issues, especially if they are of direct relevance to the Fund's purposes. This is because both in the provision of financial assistance to member countries and in the exercise of its surveillance functions, the Fund is required to make sure that its members' policies will not undermine their adjustment efforts or result in future maladjustments; therefore, the Fund can include environmental concerns in its assessment of members' policies, if the Executive Board so decides.

However, in delineating the possible role of the Fund in dealing with environmental concerns, a distinction may need to be made between the Fund's surveillance functions as opposed to the conditionality for the use of Fund resources.

With respect to surveillance, the sense of the Executive Board during its last surveillance review was that while Article IV consultations should focus on the core issues of surveillance--notably macroeconomic and related structural policies conducive to the achievement of reasonable price stability, orderly economic growth, and sustainable external positions--the staff can exercise their judgment in expanding the scope beyond the core policy areas where the issues involved are judged to be of particular relevance to these objectives. Discussions of environmental concerns in select major cases, thus, could be envisaged under this approach.

In the context of Fund conditionality, however, the basis for Fund involvement in environmental issues may be more circumscribed. Financial assistance is extended by the Fund to help members correct maladjustments in their balance of payments. The conditionality attached to this assistance is intended to ensure adequate safeguards for Fund resources through appropriate policies to strengthen the members' external positions; hence, it might be difficult to suggest as a general principle that environmental policies are essential to strengthening the members' external positions and, therefore, be a part of Fund conditionality, that is, that Fund programs should require certain choices at the micro-level for environmental reasons. 1/

A less active role for the Fund may, therefore, be more appropriate in the conditionality context than in the context of surveillance and advice.

1/ By providing financing, the Fund helps its members to indirectly deal with their environmental problems by increasing the authorities' room to maneuver, and to limit the depletion of national resources at a pace that is in the long-term interest of each country.

The Fund's environmental role, if any, must, however, be modest, since a wider involvement of the Fund in environmental issues may have a number of implications. First, given major differences in the political commitments of governments to environmental issues, the Fund could be perceived as intruding into a country's internal microeconomic policies and in conflict with its own guidelines on conditionality. Second, the role of the Fund as the primary international monetary institution could be questioned if additional objectives were added to its agenda. Finally, in an era of rapidly changing international economic situations requiring the immediate attention of the Fund, the incorporation of environmental issues in its work program on a major scale would seriously strain the resources of the organization and potentially slow the Fund's response to balance of payments crises.

Therefore, should the Executive Board consider it necessary for the Fund staff to be concerned with environmental issues, the judicious option might be for the Fund to limit itself to the issues of relevance to the Fund and even there to rely on the knowledge and expertise of the World Bank and other institutions, when feasible. 1/ There would be little justification in all multilateral institutions simultaneously directing their limited resources to environmental issues.

III. Implications of Incorporating Environmental Concerns into Fund Operations

Should the Fund concern itself with the adoption of environmentally sound policies? As background for the consideration of this question, the first part of this section examines alternative policy instruments typically used to address environmental concerns (called environmental policies), 2/ focusing particularly on those which fall within the Fund's purview.

Incorporating environmental concerns explicitly into Fund operations will require the Fund to focus systematically on the efficiency of resource allocation and on the sustainability of growth. Specifically, such involvement will have at least three important implications.

First, it will require the development of a new national accounting framework and the use of revised national accounting data.

1/ The World Bank has recently announced that its 1992 World Development Report will focus on the issue of environment. It will analyze key linkages between the national environment and economic growth, population, and poverty, and will assess policy and program options for promoting sustainable development and good stewardship of national resources.

2/ A detailed discussion appears in Muzondo, et al. (1990).

Second, it will require the staff to be aware of the environmental concerns of individual member countries and consider the impact of pursuing environmental objectives on short-term macroeconomic balances, if any.

Third, should the domestic policies of a country have significant transnational or global environmental effects, Fund staff and management will need to become conscious of them and support national and international efforts to take them into account.

The three major implications described above are developed more fully in the second part of this section and the general conclusion seems to be that the staff is obviously not currently equipped to carry out any of them in a thorough manner. This part also highlights the policy conflicts and trade-offs that could possibly arise.

1. Alternative policy instruments to address environmental concerns

Various fiscal and nonfiscal measures have been devised for environmental protection. 1/ Fiscal measures are discussed at length below, since they naturally fall within the range of policies typically analyzed by Fund staff. On the other hand, nonfiscal measures, typically of a regulatory nature, are given considerable prominence in promoting environmental objectives but fall outside the scope of the analysis normally carried out by the Fund staff; they are, therefore, only mentioned briefly below.

a. Fiscal instruments

Three basic fiscal instruments to deal with the problems of environmental degradation include environmental taxes, environmental subsidies, and environment-related public expenditures.

(1) Environmental taxes

Taxes designed to "internalize" negative environmental externalities are often referred to as environmental taxes. Because computing such taxes and monitoring their compliance requires a great deal of information which is not ordinarily available, they are, in practice, set at fixed rates per unit of discharge or emission designed to attain minimum acceptable environmental quality standards. Examples of environmental taxes include charges on effluents or emissions that are levies on pollution-related outputs, such as leaded gasoline; inputs that are closely related to sources of pollution, such as sulphur and carbon; ownership of certain assets (such as cars), the use of which is a source of pollution; certain pollution-generating activities; and emissions by producers whose activities degrade environmental media (such as smoke into the air or effluent discharge into waters).

1/ Only a brief summary of the instruments is presented here. For a more detailed discussion, see Baumol (1988).

(2) Environmental subsidies

Subsidies designed to "internalize" the positive environmental externalities are often referred to as environmental subsidies. Such subsidies, which may be granted in the form of tax incentives, act as a positive incentive to reducing the amount of pollution generated by economic agents. Examples include subsidies for installing solar-generating capacity; for planting trees as windbreaks against soil erosion; and for taking marginal, highly erodible, soil out of production or converting such land into permanent grassland. In certain situations, environmental subsidies may be undertaken in lieu of environmental taxes, for example, to encourage the installation of pollution-abatement or emission-reducing equipment, when the polluting emission itself cannot be reduced.

(3) Environment-related expenditures

Certain types of operation and maintenance expenditures on public social and economic infrastructure are considered supportive of environmental and conservation objectives. For example, a well-maintained road network may improve transport vehicle fuel efficiency, thereby saving scarce resources and reducing the emission of harmful exhausts. 1/ Operation and maintenance expenditures which ensure efficiency of water use can help to reduce depletion of water resources and can play a critical role in the maintenance of natural ecosystems' balance.

Public investment in environmental protection such as water purification and sewage treatment plants can be justified when private investment is inefficient or when there are scale economies. Public investment in conservation projects, including watershed management, soil management through the planting of trees for windbreaks, energy conservation, wildlife protection, natural habitat projects that ensure biodiversity, and park and range land projects, can also have high rates of return in terms of environmental objectives.

b. Nonfiscal instruments

Assignment of property rights, use of pollution permits, and regulation are considered other important instruments for controlling environmental degradation, none of which really falls within the purview of Fund operations. They are, therefore, only briefly mentioned below for the sake of completeness.

1/ But, then, it may increase the dependence of the economy on road transportation.

(1) Assignment of property rights

When an environmental externality derives from the lack or proper assignment of property rights, it may be more efficient for the government to assign property rights and allow private economic agents to handle problems of environmental quality through negotiations among affected parties.

Such an option, however, is practicable only if the property rights are enforceable and the mechanisms to establish and enforce legal liability exist. Transactions costs associated with negotiations are also relevant in this regard.

(2) Pollution permits

Pollution permits, which can initially be allocated or auctioned, convey the right to economic agents to pollute an environmental medium up to a preset level. In this way, the total amount of pollution is controlled to socially acceptable levels.

A pollution permit scheme can result in the attainment of the desired environmental standard at minimum cost to society only if (a) the permits are freely marketable, and (b) the market for them is competitive.

(3) Regulations

The regulatory approach, which is widely used in environmental policy, seeks to reach a given environmental quality target by regulating the behavior of economic agents. The typical approach specifies pollution permits which are not negotiable. Another approach stipulates the state of technology to be applied in abatement or production. Then there is the product-norms approach, which specifies the quantity of pollutants that can be contained in goods.

c. Assessment of alternative instruments

The diversity and complexity of environmental problems in member countries of the Fund is such that no single approach to environmental degradation would be appropriate in all situations. The choice of an approach or solution will have to depend on a number of considerations, including practicability, efficiency, equity, ecological incidence, information requirements and availability, transitional problems, and administrative costs.

However, from an efficiency point of view, taxation is in many cases preferred to regulations for two reasons. First, environmental taxes are often the least-cost method of securing a given environmental standard. Second, taxation provides incentives for the polluter to seek less polluting technologies, which may reduce pollution even below the set standard. The tax and regulatory approaches, however, will differ

in their distributional consequences--primarily because the tax turns a free input into one with a price attached--as well as in their administrative and enforcement costs, and it is difficult to say, a priori, which approach will have lower costs.

Although appropriately calibrated environmental subsidies have some optimal properties, in many cases they may also be inferior to taxation. For goods that are traded internationally, subsidies violate the "polluter pays" principle. 1/ While taxes strengthen fiscal balance by providing additional government revenues, subsidies do the exact opposite. Finally, subsidies do not reduce demand for the pollution-generating product as taxes do.

Of the total array of instruments available to combat environmental problems, those that most naturally fall within the normal areas of interest to the Fund are taxes and subsidies, and the foregoing discussion suggests that taxes may normally be preferable to subsidies. However, some caution is needed concerning the extent to which the Fund staff should involve itself in assisting countries set environment-oriented taxes and subsidies, even in cases where these are the best instruments to use. First, the Fund does not typically concern itself with microeconomic decisions, which are normally considered to be the prerogative of national authorities. Second, in addition to the political and social considerations which may influence the setting of any tax or subsidy, there is an additional problem: the appropriate level of, for example, a pollution tax will depend on a determination of the effects of the pollution which the tax is intended to reduce. This may involve difficult judgments in the interpretation of scientific evidence in which the Fund completely lacks expertise.

2. Possible implications for the Fund

a. National accounting framework

The conventional national accounts, which form the basis of the Fund staff's assessment of macroeconomic performance as well as financial programming, are considered by environmentalists as poor indicators of the level of economic output or its uses, because any changes in the stock of environmental assets are ignored in the estimates. The accounts, it is argued, neglect the consumption of environmental resources, which gives an exaggerated view of the country's output and the sustainable consumption level. Consequently, the accounts may understate the scale and intensity of macroeconomic problems as well as the size of the adjustment efforts required.

1/ The "polluter pays" principle, which has been adopted by the OECD countries, calls for the polluter to bear the expenses of preventing or controlling pollution, so that the abatement costs are reflected in the costs of the goods and services that cause pollution. To avoid distortions in international trade and investment, such costs are not to be subsidized (see OECD (1975)).

The conventional national accounts have been faulted on at least three grounds by people who are concerned about the environment. First, the costs incurred in protecting the environment are treated as an addition to product when incurred by government, but as an intermediate expenditure when incurred by enterprises. Second, depletion of nonrenewable resources (fossil fuels and other minerals) is not charged against current income in ways that reflect diminished potential future production. As a result, measured growth can be illusory, and the prosperity it engenders transitory, while the apparent gain in income is simply a result of the permanent reduction in the society's stock of nonrenewable wealth. Finally, the degradation of renewable natural resources, through deforestation, over-fishing, or soil erosion--all of which reduce the environment's productive capacity--is also not charged against current income in conventional measures of national income. 1/

The United Nations and the World Bank have already initiated work on revising the System of National Accounts to take environmental factors into account and the Fund fully supports this effort; it appears, however, this task is not easy. 2/ At present, there are firm proposals for developing separate "satellite" accounts to reflect environmental factors which can supplement current measures of gross domestic product and national income. The preparation of such "satellite" accounts would, however, take time as the data are not readily available.

This suggests that, even if the Fund were to concern itself with the environment, pending the development of relevant "satellite" accounts and the creation of a relevant data base by the authorities of member countries, the Fund staff will have to continue using the readily available national accounts.

b. Impact of environmental policies on short-term macroeconomic balances

Despite the extensiveness of the literature on the merits and demerits of alternative policy instruments for environmental protection and other aspects of environmental economics, few attempts have been made to link environmental management policies to the broader area of macroeconomic management; in fact, an integrative macroeconomic approach has rarely been pursued. 3/

1/ For a more detailed discussion of accounting systems for sustainable growth and development, see Repetto, et al. (1989) and Ahmad, et al. (1989).

2/ See Levin (1990).

3/ The OECD (1989) contains a macroeconomic assessment of the costs of various environmental policies.

Clearly, the choice of policies adopted to address environmental concerns could have important macroeconomic implications. As certain environmental policies are adopted, at times improvements in macroeconomic balances may result. For example, a reduction in energy subsidies can improve the fiscal balance of a country, through reduced outlays, and be a spur to more efficient energy use in the real sector because of reduced domestic consumption of energy resources, resulting in a better balance of payments position. At other times, this may not be the case. For example, policies aimed at curtailing logging to sustainable levels may, in the short run at least, cause a loss in fiscal revenues and a deterioration of the balance of payments of certain countries, despite the fact that over the long term the policy may be optimal for such countries.

Illustrated below are the possible macroeconomic effects that environmental policies can have on output, prices and employment, fiscal balance, monetary accounts, and balance of payments. However, once again, there are few firm conclusions, partly because of the range of possible environmental policies, uncertainties as to their effects, and the widely diverse circumstances of countries in which they would be applied.

(1) Output, prices, and employment

If environmental concerns were to be reflected more fully in Fund operations, attention would have to be paid to the possible output, price level, and employment effects of environmental policies in the short run. To illustrate, the introduction of environmental taxes may have short-term and long-term effects on national output. Taxing an environmental externality caused by a given market activity will probably reduce the output of such an activity. At the same time, the output of some other market activities, which previously suffered because of the environmental externality, could increase, thereby partly offsetting the reduction in measured economic output. However, if no other market activity were suffering previously (say, only the natural scenery or the air quality was affected by the externality), then there might be no offset and measured national income might actually decline, even if welfare were to improve. The introduction of environmental taxes could lead to a once-and-for-all increase in the price level in the short run, as the "costs" contained in the taxes are passed through into the prices of final goods; 1/ however, fiscal revenues from environmental taxes could be used to finance offsetting reductions in other taxes. As far as employment is concerned, the taxed sector is likely to contract and, in so doing, release resources, including labor. In the short run, therefore, this may result in a temporary increase in the unemployment rate until other sectors of the economy absorb the labor.

1/ Assuming that monetary policy accommodates the price level pressures.

Subsidy reform can also have certain output effects. A reduction of energy subsidies, for example, will reduce the bias toward energy intensity in the industrial sector and will have important output implications, as previously energy-intensive sectors of the economy attempt to adjust to new energy prices. A contraction of these sectors will also result in temporary labor dislocation and, to the extent that firms must raise prices, result in once-and-for-all price-level effects.

Overall, the level and structure of output as well as employment and prices are likely to be altered by the adoption of environmental taxes and subsidies; however, the size and scope of these changes will depend upon a number of factors, including the structure of the economy and the mix of policies. Only a case-by-case analysis can help establish the possible outcome.

(2) Fiscal balance

The adoption of environmental policies by a member country would certainly have budgetary implications. Environmental taxes, and even pollution permits, will have important fiscal implications. Introduction of these taxes will obviously raise additional revenues; however, the tax rates may need to be set high enough to reduce emissions to optimal levels or levels consistent with internalizing the externality, whatever the revenue outcome. Environmental subsidies or tax expenditures to compensate those who voluntarily reduce the amount of pollution they generate would adversely affect the fiscal balance. In cases where deforestation is a major problem, some forms of energy subsidy, which could be justified as a second-best solution, may need to be retained on a targeted but transitional basis. Finally, the changes in the levels and structure of output, employment, and prices, as noted earlier, might also affect the revenues generated by the existing structure of taxation.

Overall, the implications of environmental taxes and subsidies for the fiscal balance will need to be worked out on a case-by-case basis.

(3) Monetary accounts

The integration of environmental concerns into Fund operations and the adoption of environmental policies will perhaps have the least direct impact on the monetary accounts; however, there might be some indirect impact. Thus, for example, to the extent that the reform of subsidy policy, the introduction of environmental taxes, and the sale of pollution permits improve the overall fiscal position, the extension of credit to the government sector may be curtailed. On the other hand, the grant of environmental subsidies, effected via the budget, may worsen the fiscal position, necessitating an expansion in credit to the government sector. Environmental subsidies, effected via the banking system, may, however, have a direct credit policy implication if a government decides to allocate a certain amount of credit to agents undertaking certain pre-specified forms of environment-improving activities at a preferential rate of interest.

Overall, the effect of environmental policies on the monetary accounts is, at best, indirect and could well be insignificant in most cases.

(4) Balance of payments

The balance of payment implications of environmental policies could be both direct and indirect. The introduction of environmental taxes, for example, might make exports and import-competing goods less competitive, especially if other countries choose not to impose similar taxes. Two cases, however, need to be distinguished in this context. In the case where an externality is national in nature (i.e., contained within the borders of a country), the deterioration of the balance of payments will be offset by an increase in the value of the country's natural environment. In such cases, other things (such as the exchange rate) remaining the same, the loss of external competitiveness may be explicitly accepted as the price of improved environmental quality. However, in the case where an externality is transnational (e.g., pollution into a river that passes through several countries) or has global implications (e.g., the use of highly polluting forms of energy such as brown coal), the incentive to implement environmental policies could be attenuated, because the country implementing such a policy would suffer a loss in external competitiveness, but would be unable to appropriate the increase in the value of natural capital, which accrues transnationally or globally. 1/

The reform of subsidies can have direct as well as indirect balance of payments implications. As to the direct implications, reductions in energy subsidies (on petroleum products for automobiles and trucks, kerosene for cooking and lighting, and electricity) can reduce import levels or, if the country is a producer, lead to higher exports. In the case of pesticides and chemical fertilizers, a reduction in subsidies can directly lead to lower import levels of the products themselves, or of imported inputs for their production. However, any short-run reduction in agricultural output resulting from a reduction of such subsidies may necessitate an increase in food imports. As to the indirect implications, any changes in the level and structure of production in the economy resulting from the adoption of environmental policies may also

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1/ The loss of competitiveness can, however, be reduced in certain situations: first, environmental taxes and pollution permits may not necessarily be implemented in the traded goods sector, and hence their external sector incidence may be reduced. Second, even if environmental policies directly affect a traded good, the loss in competitiveness in the market in which the tax is imposed may in part be offset by an improvement in the competitiveness of other traded goods which formerly suffered from the externality, thereby resulting in an altered structure of the balance of payments. In the extreme case, this latter effect could be greater than the former, and the balance of payments might actually improve.

have implications for the level and composition of imports, and these may be significant.

Overall, the effects of environmental policies on the balance of payments outcome in the short run may be both direct and indirect and only a detailed, country-specific exercise can highlight all the relevant implications.

(5) Policy conflicts and trade-offs

The foregoing discussion suggests that the explicit introduction of environmental concerns into Fund operations and the adoption of taxes and subsidies to protect the environment would have both partial and general equilibrium implications for key macroeconomic balances and no generalization is possible, a priori. In some cases, the overall macroeconomic balance implications could be supportive of the country's macroeconomic stabilization and adjustment efforts while in other cases the net outcome may be unclear. However, in many other cases, important policy trade-offs, especially with regard to growth, price level, employment, fiscal balance, and balance of payments objectives, are likely to occur.

In some cases, however, it may be possible to mitigate the adverse macroeconomic balance implications of environmental policies. For example, the negative balance of payments implications of resource sector taxes could be counteracted by the beneficial balance of payments effects of reforming subsidy and tax incentive policies in support of environmental objectives. In the fiscal sector, the worsening of the fiscal balance, as a result of providing environmental subsidies or the implementation of environmental conservation projects, could be counteracted by the use of revenues from appropriately designed environmental and resource sector taxes as well as general tax reform. Finally, while the adoption of environmental policies would in general alter the time-profile of national output, it may be possible to adopt some nonenvironmental structural policies concomitantly, so as to minimize this impact in the short run.

Despite such efforts, policy conflicts between the achievement of macroeconomic targets in the short run and the sustainability of growth and development over the long run will still remain and will need to be reckoned with. A few illustrations of these conflicts and trade-offs follow.

First, as noted earlier, fiscal or other policies designed to "internalize" externalities could significantly increase the costs of production and prices of relevant goods and services. The resultant increase in domestic prices could adversely affect economic growth (conventionally measured) as well as employment and international competitiveness.

Second, trade-offs could arise from a requirement that (short-run) macroeconomic objectives be pursued in a manner consistent with long-run sustainability. For a country dependent on a narrow export base of natural resources, placing a limit on the rate of exploitation of such resources in the interest of environmental protection might imply that balance of payments viability could only be achieved through a greater reduction in absorption and with reduced prospects for economic growth (conventionally measured) in the short run.

Finally, trade-offs could arise from international policies designed to address global environmental issues. A poor developing country with, say, abundant brown coal may not be willing to consider slowing its current rate of industrialization, or even afford to substitute domestic coal with imported oil because of the concern for global warming.

As environmental concerns are explicitly taken into account, whether or not the policy conflicts and trade-offs will become serious in a given country will depend upon, among other things, the degree of present environmental degradation, the intensity with which the authorities pursue environmental objectives, the mix of administratively feasible and politically acceptable environmental measures, and the seriousness of a country's macroeconomic imbalances.

c. International aspects

Domestic policies, both of an economic and a noneconomic nature, can sometimes have environmental effects which transcend national borders. 1/ Resolving transnational and global environmental issues are the primary responsibility of other multilateral agencies such as UNEP. However, to the extent that such issues significantly affect the conditions for achieving balanced growth and viable balance of payments, the Fund staff may need to become fully acquainted with these issues and reflect them in its policy dialogue with member countries. In addition, the Fund as an institution may be called upon to play an important role

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1/ Several types of international environmental externalities have been identified in the literature. First, there are unidirectional externalities, involving an imposition of an external environmental cost to other countries without the polluting country itself being harmed. Second, there are reciprocal externalities, in which a group of countries is both the source and the victim of a transnational environmental degradation. Finally, there are problems of global environmental degradation which affect all countries of the world. Deforestation in one country, which results in increased flooding in another country, represents unidirectional externality; cross-border effects of acid rain in an entire continent represents reciprocal externality; and possible climatic change or depletion of the ozone layer represents global externality. For further discussion on the different types of international environmental externalities, see Mäler (1990).

in efforts that nations themselves or the international community, including the United Nations, the World Bank, and other international organizations, may wish to undertake in resolving these problems. 1/

The Fund may wish to pursue international coordination of environmental policies, provided this coordination helps achieve balanced growth and viable balance of payments of all member countries. As one example, this coordination could involve advising a member country to adopt and enforce environmental user charges, such as taxes on fertilizers or gasoline, if neighboring countries also levy such charges. As another example, the Fund could advise that industrial countries simultaneously levy taxes on certain polluting industries so that there is no loss of international competitiveness for any given country. International coordination in this area could also involve pressuring countries to eliminate or reduce the export to other countries of pollution-intensive activities.

It needs to be stressed, however, that international cooperation in the area of the environment, as in the area of economic policies, will not be easy. For example, countries could differ in their assessments of the seriousness of particular international environmental problems, primarily because of considerable uncertainty regarding the incidence of the problems themselves or the effects of any environmental policies that may be designed to alleviate them. Substantive difficulties could also arise in carrying out a policy dialogue in countries where environmental problems are major and transnational in character. Finally, monitoring and policing of international agreements could be difficult in the face of issues relating to national sovereignty.

It is likely that other international agencies such as the United Nations and the World Bank will be more actively involved in bringing about international cooperation in this area. The Fund's actively undertaking coordination of environmental policies will perhaps be going beyond its mandate. It is, thus, difficult to see a precise role for the Fund, except as situations arise in which the Fund is asked to encourage and facilitate debt-for-nature swaps (like the ones that have recently taken place in Bolivia, Costa Rica, and Madagascar) or participate in deliberations on international environmental issues. 2/

1/ Several international agreements dealing with environmental spillovers already exist. Some of these agreements deal with transnational pollution, including conventions on the Baltic Sea and the North Sea and treaties on the use of several rivers. Other conventions address global issues, ranging from trade in endangered species to marine pollution. The 1987 Montreal Protocol on Substances that Deplete the Ozone Layer constitutes an important recent example of successful international cooperation (see Dorfman (1988)).

2/ The UN Conference on Environment and Development, planned for June 1992 in Brazil, for example, is the biggest attempt at achieving international coordination in the area of environment; the Fund has been invited.

IV. Limitations for the Fund's Work on the Environment

As noted earlier, the Fund's Articles of Agreement could be accommodative of environmental concerns, and the policy framework of the Fund could encompass environmental issues of relevance to the Fund's main objectives, if the Executive Board so desired. However, Fund involvement in environmental issues is likely to remain constrained by certain factors, not the least of which is that many environmental problems are multi-disciplinary in character and beyond the expertise of the present staff; furthermore, some of the problems are of a global nature, and their solutions require international coordination and negotiation as well as monitoring and enforcing of rules, which may well be beyond the principal mandate of the Fund. There are some other limitations as well, which are noted below.

1. Differences in political commitments of governments and capacities of environmental agencies

Political commitment to environmental protection varies widely across countries. The capacities of environmental agencies, which reflect the resources available more than the extent of political commitment, also varies widely across countries. Most developed countries have environmental protection agencies that are technically, analytically, administratively, and, in some cases, politically strong, while developing countries, in general, do not.

Thus, the Fund's involvement would have to be custom-tailored to the specific situation in each country, not only with respect to its state of environmental degradation but also to the extent of its commitment and the availability of resources to address the problem.

2. Limited perceptions about the Fund

The Fund is a monetary institution central to the smooth operations of international trade and financial flows, and is perceived as such. Interventions by the Fund in areas other than those mandated, for example, structural reforms, have met with some resistance from the authorities of member countries, who have feared potentially additional conditionality, while nongovernmental organizations in many countries have criticized as insufficient the Fund's interventions in areas such as poverty alleviation. The adoption of yet another objective, viz., the environment, and its incorporation into the Fund's operational work, could face similar double-edged criticism and could exacerbate the operational difficulties of the staff.

3. Constraints of staff resources

As noted earlier, a variety of disciplines bear on environmental issues, and effective solutions to environmental problems may be far beyond the competence and capacity of the Fund staff. A minimum amount of analytical work at the country level would be required in any case to

better understand the relationships between the Fund-supported economic policies and environmental degradation.

Perhaps much of the country-specific information on environmental concerns and their solutions could be obtained from other multilateral organizations, including the World Bank and the United Nations, that have been engaged in country environmental studies. However, such studies are likely to be oriented more toward micro-sectoral and even non-economic issues while the Fund's approach would require environmental factors to be incorporated only in its macroeconomic framework. All these would entail some allocation or diversion of manpower, possibly concentrated in a very small cell/unit with a mandate to obtain, if needed, the support of other agencies when an obvious environmental issue emerges in the framework of our consultations.

V. Feasible Approach for Fund Involvement

The Fund's primary responsibilities are to promote international monetary cooperation, an open trade and payments system, and sustained growth in member countries, and its main activities have been geared toward achieving these objectives by promoting sound macroeconomic and structural policies in member countries. The concerns that there may be serious implications of environmental degradation for sustainable economic growth and of macroeconomic policies for the environment seem legitimate concerns and deserve consideration.

In addressing these concerns, however, the monetary character of the Fund's mandate, the macroeconomic orientation of its policies, and the structure of its staff resources in the discharge of its primary responsibilities, have to be recognized. Thus, if the Fund were to integrate environmental concerns into its operations, the first step for the staff would be to improve its understanding of the relationship between the environment and the Fund's primary objectives, drawing as much as it can on the expertise of other specialized institutions, such as the World Bank.

Provided there is overwhelming evidence that environmental degradation threatens sustainable and efficient economic growth and that policy instruments under the purview of the Fund can effectively address the issues of environmental degradation, the Fund staff could be encouraged to raise the issue in Article IV consultations and/or UFR negotiations with the member country. Similarly, the Fund staff could also raise the issue in consultations and/or negotiations if there is convincing evidence that a member country's macroeconomic policies under the purview of the Fund might have adverse implications for the environment. The case for Fund involvement in the former situation is self-explanatory. Fund involvement in the latter situation may be less obvious because correcting the policies may have adverse effects on macroeconomic balance. In both situations, the Fund staff will need to be cautious because policy responses could involve various trade-offs. Furthermore,

the Fund should avoid intruding into the process of social choices, which are a prerogative of the authorities of a member country.

However, it must be stressed that any Fund involvement in environmental issues should be based on evidence that is both convincing and obvious. It must be convincing because otherwise, however well-intentioned, the Fund may not be seen as the right institution to step in. The evidence must also be obvious in that it must be based on findings of organizations more competent than the Fund in environmental issues because the Fund staff generally would neither be able nor have the time to establish evidence that is not obvious. Other institutions, such as the World Bank and relevant UN and nongovernmental organizations, have a comparative advantage in this area. In this regard, to the extent possible, it would be helpful for the Fund staff to maintain contacts with major environmental groups and institutions. It should also continue to support organizations in their work to incorporate environmental measurements into national income accounting frameworks.

Given the constraint on staff resources, it would be unrealistic and unproductive for the Fund staff to engage in wide-ranging discussions on environmental questions. The staff should focus on the following aspects in its policy dialogue with the authorities:

1. Assessment of significant price distortions, including subsidies on energy, irrigation water, fertilizer, and pesticides, and tax holidays or credit subsidies which may result in pricing natural resources below their scarcity value. Removing these distortions has always been a key ingredient of the policy advice offered by the Fund, in its effort to promote efficiency; doing this even more systematically would not only improve countries' macroeconomic and structural policy objectives but also strengthen their capacity to address environmental problems.

2. Assessment of the adverse environmental effects of the Fund's policy advice, if any. For example, policies to promote exports, in the absence of well-defined property rights, may induce indiscriminate cutting of trees for export. In this case, the Fund staff could explore with the authorities possible structural measures (e.g., establishing property rights along with appropriate tax measures) that may be helpful both in protecting the environment and improving fiscal balances. It should be borne in mind that the relationship between macroeconomic policy advice and the environment is typically indirect and often ambiguous, and that it will not always be possible to make the necessary assessment. However, whenever structural measures aimed at controlling environmental damage have a short-run adverse impact on the external balance, the staff will have to take into account the trade-off.

3. Evaluation by the staff of instances in which there is a case for taxing polluters; and the review process should ensure that such issues are raised.

VI. Issues for Discussion

This paper has discussed the environmental implications of Fund-supported policies and advice and the possible implications of environmental policies for macroeconomic balances and sustainability of economic growth. While the paper has shown that, in many respects, sound macroeconomic and structural policies protect the environment by promoting efficient economic growth, it has indicated how pursuing environmental objectives may conflict, at least in the short run, with the pursuit of the Fund's traditional objectives, viz., efficient and stable growth with external payments viability.

These are important conclusions that the Executive Board may wish to take into account in deciding on the extent to which the Fund staff in the future should incorporate environmental concerns in policy advice to member countries. Incorporating environmental concerns explicitly in policy advice would also have implications for staff time and other resources.

In the light of these conclusions, the Executive Board may wish to discuss the following issues:

1. Do the Executive Directors think that the Fund should incorporate environmental concerns more explicitly in its policy advice?

2. If the Executive Directors do agree, then what should be the extent of the Fund's involvement? How and under what conditions should the Fund get involved? The staff-suggested approach, outlined in Section V, has two components:

a. First, the Fund would continue promoting policy reforms to strengthen both macroeconomic and structural adjustment as it currently does, but the staff would pay particular attention to tax and subsidy policies which may affect the environment adversely, distort resource use, and harm macroeconomic balances.

b. Second, the Fund, in formulating its macroeconomic and structural advice in support of traditional Fund objectives, would take into account, on a selective basis, any major adverse environmental implications of such objectives; if the evidence is convincing and obvious, the Fund would explore alternative policy mixes that would address environmental concerns without significantly sacrificing macroeconomic and structural objectives.

Do the Executive Directors see the approach described above in 2.b. as appropriate? Or, should the aim be more modest and the staff deal only with the issues described in 2.a.? Alternatively, do the Executive Directors wish the staff to follow a more active approach?

3. Should the Fund limit itself to national environmental concerns only, or should it also get involved in transnational and global issues as part of multinational surveillance (discussed pp. 17-18)? If the Executive Directors believe that the Fund should do the latter, how and to what extent should this be done?

4. Incorporating environmental concerns into Fund operations would have obvious implications for the Fund's resources. Even the modest approach outlined in Section V would inevitably increase the demand for Fund resources. How should the Fund address this constraint of manpower resources?

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