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RELATED NEAR AND LONG TERM ISSUES
AS SEEN BY RELATIVELY DEVELOPED
RESOURCE RICH NATIONS

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MATERIALS SUPPLY AND DEMAND PROBLEMS AND RELATED NEAR- AND LONG-TERM ISSUES AS SEEN BY RELATIVELY DEVELOPED RESOURCE-RICH NATIONS

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Even when energy and food are omitted, the term materials* covers a diverse range of commodities with a correspondingly wide range of productive and market characteristics. Partly because of close interrelationships between materials technology and materials markets, these technologies are continuously changing and the markets are notoriously volatile.

The concerns of the relatively developed, resource-rich (RDR-R) countries (basically Canada, Australia, South Africa, and New Zealand) fall between those of the industrialized countries and the developing countries. The advanced countries are principally concerned about their dependence on imports, often from developing or RDR-R countries, to meet their increasing raw materials needs, while the latter are concerned about both conditions of trade for their raw material exports, and, more broadly, their long-term ability to obtain materials for their own expected economic growth [1]. It is as risky to generalize about the RDR-R countries' perceptions of materials as it is to generalize about the problems themselves. It is also difficult to separate the materials supply and demand issues of RDR-R nations from those of other resource-rich or poor nations. No nation, however well endowed, is self-sufficient in all material resources. Resource-rich nations themselves import large quantities of materials (see Table 1). In addition, RDR-R nations obtain benefits, and face problems of resource production and export also experienced by other countries, though often to a significantly different degree. Nevertheless, a number of factors have led to greater public interest and government involvement in raw material industries in these countries. These factors concern principally environmental questions, world-wide supply and demand concerns, and the importance of materials trade.

As in most countries, in RDR-R nations public interest has turned to environmental aspects of resource development in the sense of the generation of pollution and specific ecological effects. The domestic environmental pollution and degradation problems are normally of a relatively localized on-site kind, rather than the generalized water and atmospheric pollution common in large urban conglomerations. Nevertheless,

such localized and regional problems—which include soil erosion and forest degradation; water pollution; the disposal of toxic residuals; the ugliness of open-cut mine areas, or of mine dumps; and the destruction of scarce native plant and animal species or of attractive scenic and recreational facilities—are often of major significance and concern.

There is also a greater consciousness of the pressures future world demands will impose on resource developments in ecologically sensitive areas, or in reserves of indigenous peoples. Both will require more detailed observation by developers and governments, of protective rules and regulations established to reflect enhanced community sensitivity. In most cases,

Table 1. Trade in raw materials for various countries as a proportion of total trade: selected years*

	1953	1960	1970	1973
Imports				
Australia	51.3	45.6	36.5	40.1
Canada	34.4	34.2	26.7	24.9
New Zealand	43.2	47.6	46.0	44.7
South Africa	46.0†	43.0	32.0	35.9
(Customs Union)				
France	41.5	45.6	41.7	40.6
West Germany	56.0	52.3	44.0	41.0
Japan	54.4	60.9	50.6	48.7
Sweden	36.3	40.8	38.0	35.7
U.K.	45.0	43.8	42.8	39.4
U.S.	53.8	47.6	33.5	30.2
Exports				
Australia	63.0	58.0	51.6	51.0
Canada	60.0	40.2	47.9	44.0
New Zealand	43.9	45.5	38.7	43.4
South Africa	69.0†	68.8	59.0	60.7
(Customs Union)				
France	52.3	48.8	39.7	36.8
West Germany	40.6	39.3	36.6	36.5
Japan	63.7	53.9	41.6	36.6
Sweden	71.5	62.5	51.3	49.9
U.K.	42.4	38.0	37.7	39.8
U.S.	29.8	37.4	32.8	31.4

Source: *UN Yearbook of International Trade Statistics*.
* Total of SITC Classes 2 (crude materials excluding fuels), 4 (animal, vegetable oil, fat), 5 (chemicals), and 6 (basic manufactures).

† 1957 for South African Customs Union.

* See Symposium Editors' introduction.

however, the impact on production and market supplies is likely to be more one of delays in new developments than of severe limits to developments themselves, though some added costs will normally be involved.

As far as global questions of resource supplies and needs are concerned, it appears accepted that even if, as seems possible, world demand for raw materials grows more slowly in the future than in recent decades [2], RDR-R countries will play a growing role in meeting what will still be a substantial expansion in world needs. In these countries, reserves—in forms of deposits or cultivatable capacity for many important resources—are substantial; available technologies for exploration, cultivation, and production are at high levels; and the relatively stable economic and political situation offers supply security.

Matters of importance in these countries include questions of what rate of resource development should be encouraged or permitted, and how the gains from resource exploitation should be shared between investors and the community.

The domestic questions outlined above are difficult to separate from those of international trade in basic materials, and particularly from those relating to the share of the gains from trade between exporter and importer. RDR-R countries are necessarily concerned about international trade. On the basis of one classification of what constitutes raw materials, used in Table 1, about 50% of Australian exports, 44% of Canada's, and 43% of New Zealand's exports consist of basic materials, excluding energy and food. In South Africa's case, some 60% falls into these categories. This trade, in common with trade in food and fuels, has traditionally been very unstable, with frequent periods of surpluses and low prices. The inevitable adjustment problems at the national level are often accompanied by difficult regional or local adjustment problems.

In part, many of the sharpened public reactions to these issues reflected the short-term situation of unusually high international prices in 1973 and 1974; the strength of this reaction has since diminished with lower prices and profits, but could re-emerge when prices rise again. Moreover, there are significant longer term elements in this thinking, due partly to the greater international political importance of the resources and materials trade and the greater concerns about the optimum use of depletable resources.

The implication of the above discussion of these several factors is that to the extent that governmental actions have been taken directly or indirectly to control resource developments, supplies on world markets may be affected. Moreover, such actions, whatever their motivation and however limited their effect, generate external reactions of a political or noneconomic nature which do not help rational discussion of international materials problems. It is useful, therefore, to examine some of the issues involved in a little more detail.

FOREIGN INVESTMENT

With their limited capital resources and small capital markets, considerable concern exists in RDR-R countries about the limited local control over resources that past foreign investment has involved [3,4]. This is not dissimilar to the concern being expressed in industrialized countries over the possibilities of direct OPEC country investments in key industries. Broad community support has been given, therefore, to changes in investment policies. The international consequences are twofold. First, domestic measures to reduce the proportion of foreign ownership itself could reduce foreign investment in these countries. This may simply lead to additional investment being made elsewhere. However, the resulting likely reduction in the overall productivity of a given capital expenditure level, and the consequent increase in risk may limit overall investment levels. Second, if control is exercised directly through various regulations, the effect may be similarly to inhibit foreign investment, though possibly less than where ownership is the operative variable.

In addition to broader issues, such as those seen as impinging on the sovereignty of the host country (when, for example, decisions might be taken in the investing country's national interest rather than that of the host), foreign investment can pose problems as to the share of the proceeds that accrue to each party. This can result from the characteristics of taxation systems, through vertical integration in resource enterprises, or through investments by companies who are major customers.

PROCESSING

The objective of increasing the extent of processing as a further means of possibly increasing domestic benefits is common in the RDR-R countries, although it is far from simple to achieve. Frequently, the development of processing requires imported technology and it usually requires large-scale production for exports to be competitive. Moreover, tariff and non-tariff barriers that protect processing in the industrialized countries limit the extent to which any comparative advantage in processing can be utilized by RDR-R countries. However, increased processing in RDR-R countries is likely even if its growth is slow—in Canada, minerals processing has been actually declining in importance relative to the growth of the economy, for example [5]. Further growth in absolute, if not proportionate, terms could result from advantage being taken of relatively inexpensive fuel resources in RDR-R countries.

Suggestions are often made that heavily polluting industrial processes—from steel works to wool scouring—should be deliberately transferred from the resource importing countries to resource exporting countries. Improved pollution control technologies available in importing countries, however, and some

reluctance by RDR-R countries to accept imported pollution, have reduced the emphasis on the possibilities of this kind of development. While demands for a wholesome environment are unlikely to be less in RDR-R countries than elsewhere, real differences exist in the absorptive capacity of the environments in various countries, and hence pollution control costs differ. Consequently, such developments may occur naturally through the market.

Although some encouragement to greater local processing can be expected, whether through foreign investment guidelines or through special local or regional government incentives, the impact of these factors seems likely to be small without a reduction in the current protection provided to processing in importing countries.

MARKET DIVERSIFICATION

Increased processing is at times seen as one means of reducing the instability of materials production and exports. Market diversification is also often a general objective in RDR-R countries for the same reason. The United States, for example, takes some 44% of Canada's minerals and metal exports, and some 70% of its forest product exports [6]. Japan is the major market for most of Australia's material exports—from wool to iron ore, bauxite, and wood chips. Obviously, geographic proximity and lower transport costs are an important reason for these close trade ties. Substantial diversification would consequently be costly and its feasibility is doubtful [7].

DESIRABLE RATES OF RESOURCE EXPLOITATION

Insofar as questions of optimum rates of exploitation of exhaustible resources concern benefits for future rather than present generations, they tie in with the general question of long-term resource availability. Obviously, there is no single view on this subject. For nonenergy and food materials, there is now a greater acceptance of the likelihood that the general availability of appropriate resources, the existence of substitutes, the possibilities of continued technology growth and further recycling, and the probably less than exponential future growth of demand, will reduce substantially the possibility of early physical exhaustion of resource supplies. Lessened concerns about resource exhaustion may be colored by presently depressed resource markets. They seem also to reflect greater understanding of the issues than when they were reintroduced in stark form by the *Limits to Growth* discussion.

Community concerns about appropriate rates of resource exploitation reflect conflicting motives. There are many interests seeking faster resource development. These include industries directly involved in production or processing, and the regional or local governments to whom the associated employment

and other benefits are important. Pressures for rapid development also come from those with more general interests in helping to meet the world's growing needs for materials. Conversely, the pace of exploitation is questioned by parties interested in avoiding so rapid an expansion of resource development that markets would be depressed and also by those with a variety of broader underlying beliefs and values.

In practice, interventions by governments have been relatively limited and appear to be based largely on either fears of inadequate investment and hence exploitation rates, or concerns to avoid undue price effects by managing market supplies.

RESOURCE TAXATION

Concerns about who shares in the benefits from resource exploitation have emerged strongly in RDR-R countries and raise many complex issues. Those whose potential benefits are threatened are strongly opposed to resource taxes or other measures designed to influence the distribution of benefits. This opposition argues the undesirability of such interference with the free market or labels this interference as economic nationalism. Such arguments may, of course, be valid; for example, it may not be possible to accurately assess the appropriate level of taxes or economic rents until after the event—if they are set too high, investment is discouraged. In any case they are often persuasive domestically and are readily taken up internationally.

The extent and nature of foreign ownership of the resource may also be important, particularly where there are taxation systems that give special concessions such as depletion allowances or the deduction of interest on loan capital and thus leave few of the gains from resource developments in the host country. In such circumstances, assuming these anomalies cannot themselves be rectified, special taxes that would otherwise be economically dubious may become worthwhile [8, 9]. With vertically integrated enterprises, such as bauxite, these are inevitably questions about resource transfer prices and how benefits are distributed between the developer and the community in intracompany transactions. Similarly, investments made by companies which are major customers for the resource product raise questions about the effective arm's-length nature of the price negotiations for that product [5, 10]. While public discussion of these issues is clearly desirable, there is an inevitable risk of it being interpreted as an attempt at "resources diplomacy", or as reflecting narrow economic nationalism by those likely to be disadvantaged, and by outside observers.

EXPORT TAXES

The above risk does not mean that the imposition of export taxes, with direct international effects, may not at times be worthwhile for an individual country.

The RDR-R countries are important in the trade in a number of basic materials—wool, newsprint, wood pulp, nickel, lead, zinc, asbestos, potash, silver, copper, iron ore, and bauxite. For some countries, the imposition of a tax could increase the total returns from the market in the short run and possibly in the long run as well. The conditions under which this is true are not easily met and I am not aware of any such taxes being levied by RDR-R countries on nonenergy raw materials.

Moreover, it is difficult in practice to distinguish motives. Export taxes might be considered acceptable if they were clearly a means of recovering certain inspection or administrative costs, or covering the costs of holding emergency reserves of a commodity (as has been suggested for grains), but not otherwise [11].

Nevertheless, while it might appear reprehensible to contemplate such actions judged against some noneconomic criterion of the world's needs for inexpensive raw materials, export taxes really differ little in principle from the imposition of restrictions on imports which reduce the market for a product, so forcing down its world price, enabling the permitted amount of imports, in consequence, to be purchased more cheaply. The U.S. voluntary restraints on textile imports, or on beef, appear to have this effect.

A CONFUSED INTERNATIONAL TRADE DISCUSSION

The RDR-R countries are not alone in welcoming the renewed international interest in raw materials trade, and in seeking to benefit from it. The developing countries see recent developments as an opportunity to achieve basic reforms in world materials trade, and are seeking major changes in international commodity trade in a new international economic order. Raw materials issues for these countries have much wider political implications, including the whole question of the transfer of resources between rich and poor countries [12].

Some groups in the RDR-R countries, as well, saw increased political power arising from ownership of resources—predating discussions in the United States about using its productive food strength for political purposes [13]. This was perhaps mainly significant for the wide international publicity it received. These views have since become muted in RDR-R countries for obvious market reasons, but dissatisfaction with the basis of trade in resources remains strong, with little optimism about early improvements. This is due, in part, to the continued confusion of emotion and logic in discussions on trade in resources. For example, a study of critical raw materials made by the U.S. Council on International Economic Policy refers extensively to "price gouging" [14], a term redolent of emotional overtones. Moreover, the term has continued in use in more recent studies by the U.S. Comptroller-General [15] and elsewhere [16].

"Price gouging" is defined as "an exorbitant administered price increase by one or more producers, exploiting a tight supply situation, to a level that can be maintained over the longer term only by restricting supply" [14]. Terms like "exorbitant" and "tight supply situation" are value-laden and beg the question.

Thus, for example, the United States, Canada, and subsequently Australia, reduced production of wheat in the 1960's in the name of supply management. Whether this was "price gouging" is largely a matter of judgment. The United States, Canada, and Australia control a larger share of the international wheat trade than the Middle East countries do of the crude oil trade; to an importer it could be regarded as cartellike action—"an exorbitant administered price increase by one or more key producers supported by actual restriction of supply". It might be argued that this was not a "tight supply situation", but developing countries importing food are likely to judge differently.

There are many examples of actions by industrialized countries which, when taken by materials exporters, are commonly described as the flexing of commodity muscles, price gouging, cartellike action, economic nationalism, and the like. The U.S. producers' action in raising sharply the price of phosphates, following (admittedly not fully) Morocco's lead; the "spirit of OPEC walking among European oil producers" [17]; the export taxes imposed by the European Community on cereals and olive oil during the commodity boom; and Italy's joining Spain and Yugoslavia in seeking, through a producer group, raised mercury prices, are just a few examples of such behavior.

The essential point is that there is no way to define price gouging or cartellike activity precisely, except in terms of value judgments. Such actions are not unusual: all countries, and not only traditional resource exporters, attempt them.

Although this symposium is about raw materials, examples from trade in other commodities have been quoted deliberately since RDR-R countries are concerned that trade in resources or materials tends to be considered separately from trade in other commodities. Trade is a two-way process; the RDR-R countries do not believe that different rules should apply to resource exporters than to resource importers. Among other problems, it encourages those who approach discussions of raw materials and food with a moral fervor that may be understandable but is also likely to be obfuscating.

Success in past efforts to improve the resources trade has been limited, in part, by the inherent difficulties of the subject. It was not helped, however, by importing countries maintaining in international forums that virtually any action would be damaging because it would interfere with the operation of free international markets. Given the frequent and observed absence of the necessary preconditions for such free markets, this was widely interpreted as an

ideologically based argument, reflecting particular positions of economic power.

When, in the early 1970's, there appeared a shift in world market strength, reactions among some resource exporters to this attitude, which led at times to hopes to emulate the OPEC actions on prices, were understandable, if no more rational.

EXPORT EMBARGOS

In international discussions of materials policy, there is frequently insufficient distinction between resource embargos, such as on soy beans and particularly the politically motivated oil embargo by the Organization of Arab Petroleum Exporting Countries (OAPEC), and the price-raising actions of resource producers, such as those for oil and phosphates. The motives for these two kinds of actions and their effects are dissimilar, and their implications different.

Obviously, strong emotions are aroused by threats of supply embargos. Among RDR-R countries, the importance of ensuring security of supply, or at least of avoiding arbitrary and unpredictable restrictions on materials supplies, has a particularly strong historical basis, especially in the Pacific area. The lessons of the period preceding World War II, which gave rise to an explicit provision on raw materials in the Atlantic Charter, have been revived for the first time since the early postwar period and have been reinforced by recent embargo actions. Yet the RDR-R nations demonstrated concretely their unwillingness to take such action. It seems forgotten, for example, that in 1973 Australia's domestic political pressures to restrict beef exports and so hold down rapidly rising domestic consumer prices were extremely strong, but these pressures were successfully resisted principally because any such restriction would undermine confidence in security of resource supplies. It was shortly followed by the U.S. embargo on exports of soy beans.

The need for effective international rules for ensuring supply stability is not in question, although no international rules will prevent OAPEC oil embargoes. It is also true, however, that there is a reluctance by RDR-R countries to accede to existing steps in this direction. Fred Bergsten pointed to Canadian and Australian reluctance to accept the 1-yr moratorium on export controls in the 1974 Organization for Economic Cooperation and Development (OECD) trade "standstill" agreement [18]. Because of their long-standing dissatisfaction with trading conditions for raw materials, the RDR-R countries also see attempts proceeding in the OECD to develop new international rules for export controls, as at best one-sided and, at worst, as attempts to exercise importer power. Irrespective of their causes, these moves ignore the concerns of resource exporters to balance commitments on their part to limit the possibility of arbitrary and unpredictable action on resource supply against some deterrent for importer breaches of existing obli-

gations on market access. That is, a two-way, and not simply a one-way, responsibility to avoid unpredictable and arbitrary action is involved. It is much more complex, therefore, than the flexing of commodity power muscles that Bergsten seems to imply.

CONDITIONS OF TRADE IN RESOURCES

To some, the dissatisfaction with trade in basic resources is that, historically, prices have been too low; to others, it is instability in world raw materials markets; to others, high tariff and nontariff protective barriers to processed materials are important; the considerable degree of noncompetitive organization in the market is of concern to still others.

It is difficult to generalize about the general long-term price level for resources. In the past, long-term real prices have often tended downward, with technology changes offsetting labor cost increases or moves into less favorable mineral deposits or areas of cultivation [19]. It is not certain that this will occur in the future; moreover, internalizing environmental and other external costs will raise production costs. Nevertheless, technology changes may be sufficient to offset substantially such cost increases for many commodities.

Although the developing countries' concerns about their long-term ability to obtain materials are not easily reconciled with their views that their terms of trade are falling, the question of long-term raw material prices is basic to them. While this is normally less an issue in RDR-R countries, the debate between developed and developing countries remains important to them because the RDR-R countries sit uneasily in the middle. This continues as largely a political debate and is likely to remain excessively so, even when it involves technical issues, unless a more pragmatic and less dogmatic dialogue takes place. Unless this occurs, there appears little chance of achieving improvements which, it appears to RDR-R countries, could in the long term benefit all concerned with materials issues, irrespective of the conclusion of the political debate.

The prescription that interference with the market is not practicable may have much general substance, but may not be readily accepted by developing countries. They may be aware that the free market does not guarantee any particular sharing of gains from trade—the developing countries may get little of such gains. They understand that amounts spent on resources will grow, but perceive that overall, in the longer term, more of the world's increased income is likely to be spent on knowledge and technology-intensive than on resource-intensive goods. Therefore, resource exports will not enable them to increase their incomes as fast as the resource importers. Also, the freedom of the existing market often seems empirically in doubt.

Moreover, the basic argument of developing country resource exporters, which is rejected internationally, appears acceptable in many of the domestic policies of importing countries. Many such policies are based on the assumption that the free market needs help—through antimonopoly legislation or legislation on producer marketing, or consumer protection—to make it work efficiently and equitably. Supply management—including the withdrawal of resources from production, such as set-asides of land, or quotas on production in agriculture—is accepted domestically to restore equity and efficiency.

The view of importers also appears to be that any overt action to bring about an increase in prices internationally over time is unacceptable, even though any feasible increases would probably have minimal effects [15]. Yet, the apparent policy of several countries, including Japan, is to diversify import sources and to ensure, as far as possible, reasonably free availability of raw material supplies. This presumably sound business practice, which to the extent that it succeeds reduces materials prices through the additional competition it implies, gains government support and encouragement through Export-Import Bank loans, in Japan and in the United States for example. Consequently, in the light of the terms of these loans, it is not a free market measure. Further, such approaches appear under consideration in the relevant U.S. institutions [15]. Should such "price depressing" actions be internationally acceptable?

Formal RDR-R country policies do not seek producer cartels [20]; rather, their preferred objective is to reduce market barriers erected by raw material importers and exporters. For importing countries this includes tariff and nontariff barriers to imports and collective behavior, overt or covert, by importer interests. Obviously, not only are governments frequently unwilling to limit coordinated action among their buyers of raw materials, but they may often be unable to do so.

Given these difficulties, steps have at times been taken in RDR-R countries to achieve greater balance in bargaining power through improving the exporter position, whether through the use of governments' export control powers, or even in an association with an international commodity group.

The importance of consumer representation in commodity groups has been stressed by RDR-R countries. It has been argued, however, that the traditional form of such consumer-producer groups, as defined in the Havana Charter, with equality of voting between consumers and producers, results in asymmetrical action with an in-built bias to inaction [21]. If this is likely, and considering the limited past success of such groups, it is not necessarily surprising that developing country producers are not enthusiastic about consumer participation.

They can also point to existing arrangements to indicate that such action is often seen by the industrialized countries, or major interests in those coun-

tries, as needed for market stability. Examples are the pre-OPEC regulation of crude oil production by the oil companies; the international diamond cartel; the world shipping and air transport cartels; cartels for dyestuffs and quinine; until recently, a reported uranium cartel; and administered prices for copper, nickel, and zinc. Although concern has been expressed about the International Bauxite Arrangement, to which Australia belongs, the bauxite industry, made up effectively of six highly vertically integrated companies, hardly fits the free market competitive model.

Much of the discussion on raw materials trade issues, therefore, is based on premises which are open to question. While developing country claims, as in the new international economic order, may be unrealistic in straight economic terms, this unreality could itself be seen as a response to lack of reality in developed country arguments. In practice, this may not have important implications for the specific policies suggested—market decisions even in an imperfect market are likely to be better than political decisions—but as long as the credibility of argument is so easily challenged, the chance of progress in reducing market imperfections, or offsetting their consequences is limited.

INSTABILITY AND INVESTMENT

One test of whether a market works adequately is whether, over the long term, it leads to sufficient productive capacity being installed to meet the market's needs at a reasonably stable price level. It is difficult to argue that major capacity shortfalls have occurred consistently enough to suggest totally inadequate market price levels. Yet the instability of the market suggests that it is not efficient at providing the required productive capacity at the right time.

Given the nature of raw material supply and demand, that production tends to continue while marginal costs are covered, and that large capital investments and long lead times are involved in expanding productive capacity, instability in market prices is unsurprising. Because of such capacity ties with investment, the institutional changes taking place in the investment process may cause instability to be more prominent in the future.

The costs of market imperfections could be significant where they result in underinvestment in materials productive capacity [22, 23]. For resource exporting countries, inadequate investment world-wide would have some short-run benefits; it would lead initially to supply shortages and price increases in those materials. There would, however, be substantial offsetting disadvantages. The consequent instability in production and prices would have large destabilizing effects internally, not only in RDR-R countries, but internationally. Periods of high levels of international economic activity could be short lived because of needs to restrain industrial activity to control inflation.

It is difficult to be general about what action is feasible in these circumstances. Moreover, within RDR-R countries, views range widely from those who argue that costs of any offsetting measures could well exceed gains to those that see some corrective action as inevitable. In any case, it would be widely accepted that generalizations are difficult and misleading. There appears to be a strong need for international action, but possible measures, whether buffer stocks, buffer funds, improved information exchanges, supply management arrangements and so on, can only be judged by looking at each raw material individually [16]. This remains true even though the integrated approach of the developing countries is in part a reaction to the past use of detailed commodity studies to bury a particular issue.

If resource investment levels are inadequate because changed institutional factors have raised costs of covering given levels of risk and uncertainty, then real raw materials costs have risen, as they will if external costs in resource exporting countries of whatever kind are internalized. To deal with this problem by finding "novel ways of channelling funds into mining ventures" [24] may, like the aids to investment referred to earlier, be open to the criticism that it substitutes for price increases which in free markets would bring forth adequate investment.

TECHNOLOGY

There has been little discussion of technology in this paper, but assumptions about technology are implicit throughout. The conclusion by RDR-R countries that problems of raw materials are not generally problems of long-term supply availability depends partly upon assumptions that adequate technological breakthroughs continue to be made. Such breakthroughs will be needed in exploration, exploitation, cultivation, and processing of raw materials, particularly to ensure that expansion into lower grade mineral deposits, more marginal lands or forests does not substantially increase costs. These assumptions about technological change are increasingly important the longer ahead we look. Fears of physical supply restrictions are considered grossly exaggerated, except possibly in isolated cases such as chrome. Increasing concern seems warranted, however, that capacity expansion may be inadequate for some minerals. Thus, materials problems are seen more as market problems with consequences for long-term investment.

Technology will also be important in conservation and use of materials, and in its various forms will contribute to raising living standards. Deliberate subsidization of particular technologies of conservation, use, or recycling to substitute for imports, however, is likely to be enormously costly and is open to criticism as a further form of market intervention to depress world raw material prices.

CONCLUSION

This paper has argued that while domestic issues of materials supply and demand are important for RDR-R countries, the particular viewpoint of these countries relates to materials supplies and trade.

Given the importance of resources to these countries, a major reexamination of the relation of domestic environmental, social, political, and economic policies to resource development is unsurprising. In the emotional atmosphere following the energy crisis, however, this has added fuel to an already confused international debate.

This renewed international interest in these issues is welcome and vital. As yet, little has emerged from it to reduce confusion. The reasons for this are many, but they include failure to approach issues pragmatically rather than dogmatically; to take a realistic rather than a moralistic approach; and to specify issues precisely.

The consequences are a lack of credibility in discussion and a misinterpretation of actions and of situations. This could result in wrong policy prescriptions, as well as continued political conflict and uncertainty. Among the consequences could be a further discouragement of investment in raw material productive capacity. The developing countries in total might then achieve their objective of higher prices unintentionally through world underinvestment in capacity.

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DISCUSSION

(Part A, Following Stuart Harris)

Harold Barnett (Woodrow Wilson International Center for Scholars)

What are Australia's intentions with respect to the International Bauxite Association?

Harris

The participation by the Australian government in the Bauxite Association has a number of objectives.

As I do not speak for the government, I can't pretend to know exactly what weight each one will receive, but Australia has pressed very strongly the importance of having consumers participate in the Association, and the argument that price actions in such an association cannot "bust the market"; they can only hope to reduce market instability. Currently, I believe there are difficulties because of conflicting objectives within the Association about the level of prices, but I think Australia is likely to continue to seek reasonable prices, in keeping with its interest in maintaining a long-term market position in bauxite and aluminum.

Ben Bauer (CBS Technology)

Would you elaborate on your statement that we should take the realistic rather than the moralistic approach? Might they not be identical?

Harris

My point there was that it is just not sensible to preach a doctrinal or moralistic view on the free market, when it is obvious that free market conditions do not exist. A related point was that imperfect though the economic system is, it may well lead to better decisions than those reached politically. But such reality is not going to be accepted if there is simplistic insistence on starting from the incorrect premise that there exists a totally free market situation. An illustration is the strong opposition from certain industrialized countries to Australia's membership of the Bauxite Association, with arguments that free trade and the free market should be allowed to work in trade in bauxite. Yet, such a free market did not exist in the bauxite/aluminum industry. A discussion which is based on a doctrinal view often reflects economic power rather than understanding.

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