Chapter II

NATIONAL MATERIALS ISSUES RELATED TO ECONOMIC STOCKPILING

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Chapter II addresses the question, "Should the United States consider implementing an economic stockpile?" The major issues which necessitate such consideration are discussed from five vantage points:

- Increasing U.S. import dependence,
- International cartel actions,
- Response of U.S. market system to materials problems,
- Use of U.S. stockpiles for economic purposes, and
- Economic stockpiling in selected foreign countries.

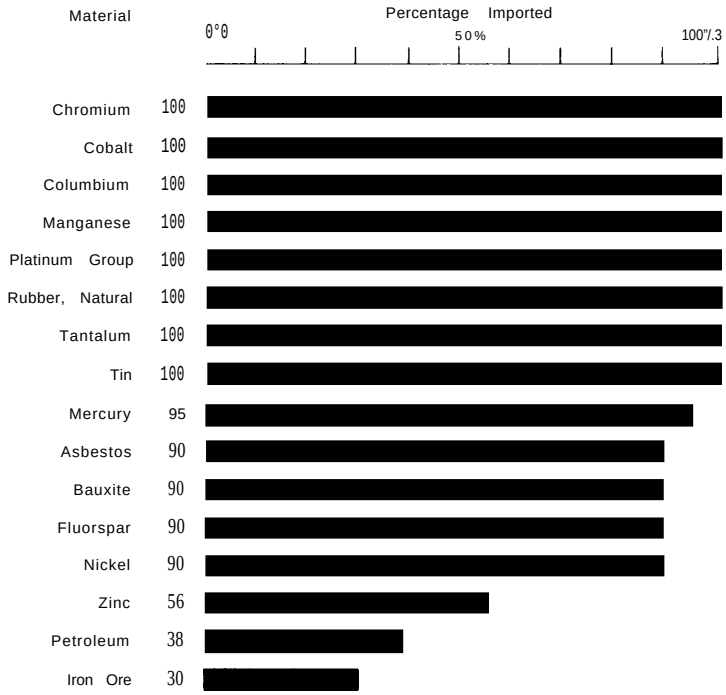
A. INCREASING U.S. IMPORT DEPENDENCE

In 1970, the United States, which has only one-twentieth of the world's population, consumed approximately one-third of the world's raw material supply. Although the United States is a major producer of both energy and raw materials, it has become increasingly dependent on imports from other countries to supply its industrial economy. As a result, the country is vulnerable to supply cutoffs or price increases, particularly for several key materials. Figure II–1 dramatizes this import dependence for 16 selected materials. Although the percent import dependence for zinc, petroleum, and iron ore is reasonably small, three factors alone—the degree of dependence, the importance of these materials in the U.S. economy, and the existence of a potent cartel in the case of petroleum—are cause enough for concern about the future supply and price of these materials.

The dependence on imports is increasing either because such supplies are cheaper than using indigenous U.S. sources (e.g., bauxite ore), or the material is not indigenous to the United States but has performance characteristics uniquely suited to specific and desired technological needs (e.g., platinum for use as a catalyst in chemical reactions and chromium for resistance to corrosion and oxidation). Most of the other industrialized nations are even more dependent on importing raw materials than the United States and are therefore more vulnerable to future supply disruptions and price increases, Furthermore, many of these nations depend upon the United States as a reliable source of major commodities essential to their economies, a dependence recognized in bilateral or multilateral agreements. As a result, the economies of the United States, and its allies, the less-developed countries, and the Communist countries are mutually interdependent upon each other for continuing prosperity. For those countries like Japan and West Germany which rely almost totally upon imported raw materials, the situation is even more precarious. While freedom from dependence on imports may be desirable for the United States, it may not be a practical reality.

Figure 11-1.

U.S. Import Dependence for Selected Materials



Source Derived by comparison between U S imports and usage over a number of years (Import data from Department of Commerce usage data from Bureau of Mines and Rubber Manufacturers Association)

In addition to concern regarding price and supply of imports over the next several decades, there is an immediate and serious problem of the present actual shortages in many processed materials such as steel, aluminum, and copper. These particular shortages appear to be the result of an undercapacity in the United States and world materials producing industries which occurred for several reasons: (1) a long period of underinvestment in new capacity, (2) unprecedented period of high rate of economic growth which has occurred simultaneously in most of the developed countries, (3) large reductions of inventories, and (4) the recent economic slump. The resulting higher prices for materials, which are also impacted by energy price increases, are stimulating some cautious expansion in production capacity and some improved efficiency of materials use or substitution in the materials and manufacturing industries. While such changes can be expected to alleviate this particular source of shortages, they will not resolve the questions of vulnerability due to U.S. dependence on imported raw materials.

B. INTERNATIONAL CARTEL ACTIONS

The emergence of the Organization of Petroleum Exporting Countries (OPEC) cartel as a force powerful enough to manipulate the normal flow of petroleum to the international economy has made the world painfully aware of the potential which this type of organization can have on both producing and consuming countries. Although OPEC has been in existence since 1960, its action in October 1973 was the first instance in which its members used

their joint strength as a political weapon against petroleum-consuming countries, many of which are completely dependent on imports for this indispensable material. While the United States is far from being completely dependent on OPEC's oil, the effects of the temporary embargo and the quadrupling of prices have been of the most serious nature, Whatever may come of a long-range program for energy independence in this country, the more immediate concern requires, among other approaches, the consideration of an economic stockpile for materials other than petroleum included in the new strategic petroleum reserve to avert or counteract future cartel actions which may either restrict supply or impose monopolistic prices to the detriment of the U.S. economy. It should be emphasized, too, that because of the interdependence of the economies of the world industrial nations, U.S. policy in this important area will also have repercussions on nations other than the members of a cartel,

1. Conditions Necessary for Successful Cartelization

OPEC's example has undoubtedly stirred the hopes of other producers of raw materials, especially where the "climate" for successful cartels is favorable. If such a cartel action is to be successful, however, several conditions must exist:

- The supply of materials must be concentrated in a relatively small number of countries;
- The material must be traded internationally on a fairly large scale;
- c. Substitute materials must not be too readily available to the consumer, forcing him to continue paying higher prices for a period of time before seeking a substitute;
- . The material must be one in which U.S. Government stocks do not exist in significant quantity;
- The producers, or at least their organization, must be able to simultaneously forgo export earnings from sale of the material for some period of time, and withstand retaliatory import restrictions on other economic fronts, as well as overcome the possible internal labor problems which deprivation would cause;
- . Consumer demand must be somewhat unresponsive to price changes; and
- The members of the producer group must have compatible objectives which could be either political or economic.

Even though all of these conditions were not present in the OPEC action, the political advantage was the deciding factor in that organization's determination to act as it did.

2. Materials Cartels

Given these conditions, one question dominates the analysis of materials planning: Is there a probability of a materials cartel like the petroleum OPEC, and if so what can be done about it? To the first part of the question, one can respond only with informed judgment. To the second, however, there is a history of scientific and technological solutions which can be assessed and--contingent upon their economic, social, and political ramifications—applied in an effort to avert or counteract cartel action.

Many producing countries are showing increasing interest in changing present terms of trade to their benefit.[1] Hence, many of these countries have either discussed or attempted market intervention to raise or at least influence raw materials prices. First, seven major bauxite-exporting countries met in March 1974 and formed an organization to coordinate their future policies. while some of the members opposed using the International Bauxite Association (IBA) as a cartel, Jamaica in-

[1] *International Economic* Report *of* the President, transmitted to the Congress March 1975.

creased its taxes and royalties on bauxite by 500 percent in June 1974. Second, the four countries which make up the International Council of Copper Exporting Countries (CIPEC) met several times throughout 1974 to discuss setting minimum copper prices. They finally agreed to reduce exports of copper in all forms by 10 percent in an attempt to stop the downward price movement. Third, Morocco raised the price of phosphate rock by nearly 60 percent during 1974. Finally, a number of iron-ore-exporting countries—mostly less-developed countries are currently discussing plans to create a formal collective organization.

In general, it must be pointed out that the price multiplication of raw materials should affect product prices much less than has been the case for energy. Bauxite, for example, has been close to $12 per ton, whereas the price of aluminum ingot is about $600 per ton. Although it takes about 4 tons of bauxite to produce 1 ton of aluminum, it is clear that doubling the bauxite price should not influence the price of aluminum as strongly as the changes in crude oil prices increased the resulting prices for energy fuels and petrochemical products, However, there is a trend for the producing countries to seek price increases for their raw materials, as well as to develop their own industries for materials processing and fabrication rather than simply exporting raw materials. Such changes in industrial emphasis could not only result in significant changes in the economic development of producing countries, but it could also damage the U.S. materials processing industry,

The prospect of a "Materials OPEC" is currently the subject of serious examination, both inside and outside the Federal Government, and such consideration has already changed the character of discussions in international trade relations from the focus of the past several decades on "access to markets" toward one of "access to supply, " The statement by U.S. Ambassador William Eberle (Special Representative for Trade Negotiation) at the recent Hearings on Materials Shortages before the Joint Economic Committee of Congress pointed to such an administration view on the development of a stable and equitable framework for international trade in raw materials.

Further, developments in the negotiations recently concluded in the United Nations Conference on Trade and Development (UNCTAD IV) suggest new considerations for U.S. materials policy, A group of 77 countries have been pressing for the creation of a $3 billion Common Fund to finance buffer stocks as a means of stabilizing world prices for various raw materials, Buying and selling these buffer stocks would permit countries, they argue, to keep prices within specified ranges and thus avoid price fluctuations. Initially, the U. S., Japan, West Germany, France, and Britain opposed this suggestion, offering instead to negotiate commodity agreements on a case-by-case basis, then at some future date to discuss the issue of stockpile financing, A compromise was reached during the last week of the conference which would permit negotiations to begin on certain commodities before the end of 1976, Moreover, the conference urged quick review of the debts of 20 very poor nations, and authorized various studies on world economic problems, z

The second part of the question regarding a materials cartel is concerned with what might be done if the threat of an OPEC-like action becomes reality. Both increases in price and uncertainty of supply are likely to stimulate the following technical responses:

- Materials substitution (i.e., the use of a different material, to perform the same function, such as copper or aluminum in conductors);
- Process substitution (i.e., the use of a different raw material, such as other alumina clays in place of bauxite);
- System modification or substitution (i.e., reduce or avoid the need for a specific material by changing the

[2]Washington Post, June 1, 1976.

engineering system, such as the use of a magnetic circuit breaker in a car ignition system in place of the conventional electrical circuit breaker); and

. Stockpiling either of materials or of technology. s

The first three of these responses will require relatively long leadtimes to develop the substitute technologies and will be very expensive if heavy investments in new facilities are required. For example, the substantial substitution of natural fibers by sythetic fibers has taken some 40 years; the replacement of open-hearth steelmaking technology by the basic-oxygen process, some 10 years. Historical experience indicates that the substitution of a material or a new process for another generally takes about 20 years. While it is true that crash programs like the development of the atomic bomb or the manned spacecraft program can result in unusually rapid change, the investment in resources to achieve such change is extremely large.

Table II–1 sets forth the cartel outlook for 16 materials, along with related information on U.S. imports, major import sources, the U.S. Government stockpile situation, and the trend of U.S. demand over the next 5 years. Further details on cartels and potential cartels are contained in appendix B.[4]

[3] *Requirements for Fulfilling a National Materials Policy*. Proceedings of an Engineering Foundation Conference held at Henniker, N.H., August 1974. Note.—All other references to articles from these proceedings will be cited as the *Henniker* Report.

[4] See also the Council on International Economic Policy *Special* Report: Critical Imported Materials for an analysis of the potential for materials cartelization, and Eight Mineral Cartels; The New Challenge To Industrialized Nations, published by Metals Week, 1975.

a. Copper Cartel.—The International Council of Copper Exporting Countries (CIPEC) has been less successful than OPEC, due in part to the fact that the four countries in CIPEC control only about one-third of the world production. In any event, CIPEC poses little threat in terms of supply disruptions to the United States, which is almost independent of foreign sources for copper. However, a successful action by CIPEC will certainly affect domestic copper prices.

b. Bauxite Cartel.--Other than OPEC, this is probably the most serious cartel threat to the United States. Ten countries which produce over 65 percent of the world's output and account for 80 percent of the bauxite/alumina trade are members of the International Bauxite Association. The IBA's purposes are to coordinate information on bauxite production and increase revenues from bauxite operations in member countries. Unilateral action by Jamaica, which accounts for about 20 percent of world production, increased revenue from the sale of bauxite through higher taxes. Although that country may press other members of the IBA to attempt joint restrictions of supply, no firm pricing and taxing policies have yet been established. The U.S. response to supply or further price actions could be a shift to substitute materials and, in the long run, the domestic development of aluminum-bearing clays and other aluminum bearing materials,

c. Mercury Cartel.—A mercury cartel has had an intermittent existence over the last **50** years. During the early 1970's a group of mercury producers met informally to exchange market views and try to formulate a price policy. A producers' organization, formed in May **1974** to maintain high prices, has been unsuccessful and is likely to remain so because of the existing U.S. mercury stockpile and the decrease in world demand.

Table II–1.—U.S. import situation for selected materials

Material U.S. consumption price per unit[1]	Percent of U.S. consumption imported[2]	Major import sources and percent of total (1974)[3]	U.S. Government stockpile (9-30-75)[4]	Annual U.S. demand growth through 1980 (percent)[5]	Cartel outlook
Chromite 1,438,000 short tons $33-$58/short ton, Turkish ore	100	U.S.S.R. (50%) South Africa (18%) Turkey (17%) Rhodesia (13%) (metallurgical grade)	22 months' supply	2.1	Possible, if South Africa and Rhodesia find tacit cooperation of U.S.S.R.
Cobalt 9,400 short tons $6,920/short ton	100	Zaire (50%) Belgium	38 months' supply	2.6	Unlikely; cobalt is byproduct of other mineral production.
Columbium 3,250,000 pounds $1.45–$1.80/lb. Columbite (ore)	100	Brazil (75%)	0 months' supply	5	Unlikely; variety of close substitutes.
Manganese 1,645,000 short tons, ore $71–$85/short ton, metallurgical ore	100	Brazil (39%) Gabon (25%) Australia (16%) (ore)	20 months' supply	2	Unlikely; large world reserves and potential seabed recovery.
Platinum Group 1,981,000 troy ounces Platinum—$184.98/troy ounce Palladium—$136.67/troy ounce	100	U.S.S.R. (35%) South Africa (34%) United Kingdom (21%)	11 months' supply	2, except in automobile emissions control catalysts which could be much higher	Potential for collusive pricing fairly high but this may have reached its limits; development of alternate materials should restrict cartel supply/price actions.
Rubber, natural 719,000 metric tons $868 per metric ton		Indonesia (45%) Malaysia (32%)	5 months' supply	2-3	Unlikely; disruptive to local employment and overall producers; limited by potential switch to synthetic rubber; International Rubber Study Group has not acted to control supply or price.
Tantalum 2,425,000 pounds $15 per pound, tantalite (ore)		Canada (42%) Brazil (8%) Malaysia (7%)	15 months' supply	3	Unlikely.
Tin 51,611 long tons, primary 13,131 long tons, secondary $8,865/long ton, primary		Malaysia (52%) Thailand (15%)	45 months' supply	Less than 1	Unlikely; International Tin Agreement with producer and consumer members is not apt to restrict supplies.

Mercury 59,479 flasks (7[illegible] pou[illegible]s) $282 per flask	95	Canada (33%) Algeria (20%) Mexico (20%)	42 months' supply	Less than 1	Producers' efforts to restrict supplies to raise prices have been unsuccessful.
Asbestos 849,000 short tons $122 per short ton	90	Canada (98%)	Less than 1 month's supply	2	Unlikely.
Bauxite (aluminum ore 16,904,000 long tons $11.37 per long ton, import value, f.o.b. export port	90	Jamaica (53%) Surinam (21%)	10 months' supply	6	Highly possible; potential structure exists in International Bauxite Association (10 producing countries).
Fluorspar 1,325,000 short tons $71 per short ton	90	Mexico (80%)	11 months' supply	1	Unlikely; large number of producer countries.
Nickel 193,000 short tons, primary $3,060–$4,020 per short ton	90	(68%)	None	3	Unlikely; potential seabed recovery.
Zinc 1,288,000 short tons $719 per short ton, Prime Western	56	Canada (56%) Mexico (6%) Peru (6%)	3 months' supply	3.1	Unlikely; would require close cooperation of highly disparate private sector entities.
Petroleum 6,070,000 barrels, products U.S. $6.74 per barrel, crude, wellhead $11.20 per barrel, import value, f.o.b. export port	38	Venezuela (20%) Canada (18%) Nigeria (12%) Iran (9%) Saudi Arabia (7%)	None	3.3	OPEC controls supply and price.
Iron ore 140,500,000 long tons $13.85–$15.75 per long [illegible]	30	Canada (41%) Venezuela (32%) Brazil (14%)	None	2	Unlikely; iron ore abundant and widely distributed.

Sources:
(1) Bureau of Mines, Census Bureau, Rubber Manufacturers Association, and trade press.
(2) Percent of U.S. consumption imported—derived from import and usage data over a number of recent years.
(3) Major import sources and percent of total (1974)—Department of Commerce.
(4) U.S. Government stockpile—derived by Ultrasystems from stockpile and usage data. Stockpile relationship [illegible] supply is based on average consumption 1973–74.
(5) Annual U.S. demand growth through 1980—Commodity Data Summary, Bureau of Mines 1975; Special Report—Critical Imported Materials, Council on International Economic Policy, December 1974.

C. RESPONSE OF US MARKET SYSTEM TO MATERIAL PROBLEMS

In mid-1973, the Secretary of the Interior issued his "Second Annual Report Under the Mining and Minerals Policy Act of **1970. "** Stating that "development of domestic mineral resources is not keeping pace with domestic demand, " he cited nine major problem areas confronting the mining, minerals, metal, mineral reclamation, and energy industries. Of the nine areas cited, two are of particular importance in relation to how the U.S. market system responds to materials problems;

- Expropriate ions, confiscations, and forced modifications of agreements have severely modified the flow to the United States of some foreign mineral materials produced by U.S. firms operating abroad, and have made other materials more costly; and
- U.S. industry is encountering greater competition 'from foreign nations and supranational groups in developing new foreign mineral supplies and in assuring the long-term flow of minerals to the United States.

The Secretary made a number of corrective legislative recommendations, including the creation of a Department of Energy and Natural Resources, provision of an organic act for the Bureau of Land Management, revision of the mineral leasing laws, regulation of surface mining activities, amendment of the Natural Gas Act, construction of deepwater ports, and modifications of right-of-way limitations. Only the latter recommendation, defined as the Alaska pipeline bill, was enacted into law in 1973; the other recommendations were carried forward as considerations for the 94th Congress.

Also in mid-1973, the National Commission on Materials Policy (NCMP) issued its Final Report which made 177 detailed recommendations, those affecting minerals being in close agreement with the Interior Minerals Policy Report. Perhaps the most significant recommendation of the NCMP was that

> it should be the policy of the United States to rely on market forces as a prime determinant of the mix of imports and domestic production in the field of materials but at the same time decrease and prevent wherever necessary a dangerous or costly dependence on imports.[5]

Under the extraordinary conditions now facing the United States, however, the American market system may be unable to respond quickly and effectively to the variety of supply problems now occurring. One major reason is the system's dependence for much of its raw materials upon purchases in international markets which are undergoing rapid changes and do not operate in the same manner as the U.S. system. Whereas in the past many U.S. firms had subsidiaries abroad which provided much of their raw materials, now the situation is complicated by direct foreign government involvement in many industrial phases of raw materials supply. In the United States the political and social ramifications involving raw materials producers or consumers may override economic factors. Furthermore, legal and constitutional barriers may be deterrents to the production and flow of raw materials. Aside from the significant impact of the raw materials problems stemming from import dependence, the U.S. economy is faced with problems of quick and effective response to domestic supply/demand changes.

For these reasons, analysis of a certain limited form of Government action to complement the market may be necessary. It must be clearly recognized, however, that an economic stockpile is subject to political as well as economic manipulation. Its mere existence constitutes a threat overhanging the market,

[5]National Commission on Materials Policy, Material Needs and the Environment, June **1973,**

unless acquisitions, holdings, and disposals are carefully disciplined with respect to the potential dangers of market management. It is therefore the purpose of this assessment to examine how national stockpiling policy can be used to assist, not replace, private industry's management and operations in the American market system.

D. USE OF U.S. STOCKPILES FOR ECONOMIC PURPOSES

The only direct U.S. experience with stockpiling has been the handling of materials in the agricultural and strategic stockpiles and Defense Production Act inventories.[6] Despite their statutory limitation to military purposes, these stockpiles have in actual practive been used as a de facto economic stockpile, especially through disposals after the termination of national emergencies. Moreover, recent disposals from both the strategic stockpile and Defense Production Act inventories have depleted U.S. materials resources to the extent that our capabilities to discourage or counteract foreign disruptions of materials required by the economy have been seriously compromised.

1. Economic Use of the Strategic Stockpile

The Stockpiling Act of 1946 specifically, albeit unintentionally, included some aspects of an economic stockpile when it provided in section 3 that purchases of strategic and critical materials be made, so far as practicable, from supplies of materials in excess of the current industrial demand. In the same Section, the matter of disposals provides for the protection of producers, processors, and consumers against avoidable disruption of their usual markets.

Acquisition and sale of materials from the strategic stockpile were governed by the imbalance between objectives and inventories.[7] The objectives were governed by an ever-changing set of assumptions relating to the length of war, accessibility of foreign supply, size of the Armed Forces, degree of civilian austerity, and similar considerations which had a profound effect on either demand or supply or both, and consequently on the size of the stockpile objective, This, in turn, determined whether or not Congress could be asked for money to buy or authorization to sell. Not surprisingly, the record shows that when there was a disposition toward acquisition of materials, for whatever reason, the assumptions tended to result in reduced supply estimates and/or increased demand estimates. When disposal became a policy objective, whether to fight inflation or simply to add to Treasury receipts, changes in the assumption produced a totally opposite supply/demand effect.

Evidence of the foregoing abounds in the case studies and other materials developed from the literature search conducted during this assessment. Specifically, the post-Korean war acquisition period in the fifties, the disposals during the peak of the Vietnam war production effort in the sixties, and the inflation fight of the early seventies provide highlights over a period of several decades. One item of interest is the total independence of the stockpile program and actions from political-party persuasion. Managing a stockpile has many political aspects, but orientation to one party or the other has not been one of them.

In addition to the effect of changing assumptions or objectives, one other aspect of the management of the strategic stockpile should be mentioned. Under section 5a of the

[6] For further elaboration of the events discussed here, see app. A.

[7] As explained in ch, I, stockpiling objective in this study refers to the goal (or use) of a given stockpiling policy, not to the amount of material to be stockpiled, as defined here by the strategic stockpile.

Stockpiling Act, the President can order releases of material when, in his judgment, such release is "required for purposes of the common defense. " Thus, the released material was allocated by the Commerce Department largely to contractors and subcontractors based on their defense-rated orders for programs of the Department of Defense, the Energy Research and Development Administration, the Nuclear Regulatory Commission, and the National Aeronautics and Space Administration. The rules were followed to the letter and beyond in the sense that "common defense" was given the broadest possible interpretation.

The net effect, however, was essentially the opposite of what appeared on the surface. As pointed out earlier, defense production and construction operated under the rules of the Defense Materials System (DMS). Under those rules, purchase orders of defense contractors had an absolute priority over purchase orders of nondefense contractors. After defense needs were met from available supply, the remainder was sold to meet nondefense needs. To the extent that defense needs were met by a stockpile release, an equivalent amount of material was made available from regular supply for sale to nondefense users.

2. Defense Production Act Inventory

The above discussion relates primarily to the strategic and critical materials stockpile, for which statutory language was relatively tight. However, purchasing and disposal actions under the Defense Production Act (DPA) inventory took place under a much more flexible set of rules.

Under the Defense Production Act of 1950, congressional approval of individual actions was not required. As a matter of fact, the program was managed by the Director of Emergency Preparedness and predecessor agencies. He could accept deliveries into the DPA inventory, divert them to private industry, or accept them and transfer them to the strategic stockpile to remove the threat of their sale from the market.

The DPA inventory was not originally envisaged as a stockpile. As is pointed out several times in the literature search, floor price purchase contracts represented an inducement to help persuade private investors to expand productive capacity. e In some cases deliveries were small in relation to the potential expectations (or fears) of the DPA program managers of the 1950's. As time went on, the huge amounts of materials made it possible to use the DPA inventory as an economic balance wheel, and it was so used.

Table II–2 presents a summary of stockpile disposals (as of March 31, 1975) from the various types of inventories, comparing sales values with acquisition costs. Total sales value of all disposals is about 3 percent above acquisition costs. A somewhat different comparison between national stockpile inventory acquisition costs and market values (which do not necessarily reflect the amount that would be realized at time of sale) shows the result of inflationary rises, especially in 1973 and 1974. At the end of 1966, these two figures were fairly close—$4.7 billion in inventory, against a market value of $4.8 billion. By June **30, 1975,** as a result of large amounts of disposals, inventories had been reduced to **$2.6** billion, while their market value was calculated at more than $5.4 billion.

In these program actions, there is not the slightest suggestion that any law was violated or any action of questionable legality taken. Nevertheless, the history of U.S. stockpiling makes it abundantly clear that any legislation establishing an economic stockpile and delegating operational authority to the executive branch should be designed to include congressional review and approval.[9] In March 1975, the General Accounting Office (GAO) recommended in a report to Congress that "until the Nation's critical resource requirements are clarified, the Congress may" wish to consider halting future disposals currently

Wee the case study, "Releases of Copper from the Stockpile, " App. B.

[9]See, for example, S. 1869, a bill to provide for national stockpiles to protect the economic security of the United States.

Table II–2.—Summary of stockpile disposals as of Mar. 31, 1975

Nature of disposal	Saks commitments	
	Sales value	Acquisition cost
Cumulative to date:		
National and supplemental stockpiles.	$4,823,872,570	$4450,789,238
Defense Production Act	1,347,293,393	1,589,238,982
Other inventories.	212,170,670	94,007,911
Presidential releases.	487,955,000	389,119,000
Total disposals.	6,871,291,633	6,523,155,131
Purchase and resale: Defense Production Act.	1,749,646,112	1,808,406,671
Grand total	8,620,937,745	8,331,561,802

NOTE:-Acquisition cost is based on the average unit price of inventory on hand at time of sale. This unit price is established without regard for (1) the grade, type, or quality of the commodity in inventory, and (2) the varying purchase prices or appraisal value that have accumulated in inventory records since the inception of the program.

Source: General Services Administration DM-80 Quarterly Report, Mar. 31.1975.

authorized under specific legislation and grant no further requests to dispose of strategic and critical materials. "[10] The report also suggested that Congress might want to "study the advisability of broadening the strategic and critical materials stockpile concept to release material to meet short-term economic as well as national defense emergencies. " In addition to the GAO report, the House Armed Services Committee has requested a complete reevaluation of the requirements of the strategic stockpile in terms of materials and the length of a potential conflict requiring their use. Further, Senator Domenici introduced a bill, S.2767, which calls for a moratorium of 1 year on all sales from the strategic stockpile, including those previously authorized but not sold. This bill was introduced to enable a reevaluation of the strategic stockpile, permit the question of an economic stockpile to be resolved, and insure that no materials would be sold which might have to be purchased in the future at an increased price.

3. Interaction Among Federal Agencies

Another useful product of the literature search is the insight provided into the actions and interactions among Congress, the executive branch, private industry, and persons responsible for other Government programs such as national security, economic stabilization, industrial growth, and budget deficits.

On the one hand, no amount of literature can ever adequately convey the strength of the pressures, the degree of abrasion, or the intensity of program conflicts. These are not committed to paper. Yet the literature search did illustrate that powerful forces and pressures were commonplace for many stockpile transactions. The significance of this is simply that if a defense-oriented stockpile is susceptible to external forces, it can certainly be expected that similar pressures will rise exponentially for an economic stockpile.

Given these pressures and potential conflicts, any piece of economic stockpiling legislation will have to be both more flexible and less flexible than the strategic stockpiling legislation: more flexible in the sense that disposals under present legislation take so long that the optimal selling time frequently disappears by the time action can be taken, and less flexible in addressing the question of the policy assumptions which underlie individual actions. Perhaps the process could be speeded up by having the President submit a proposed transaction to Congress which would have a 10-day period for disapproval.

[10] General Accounting office, "Stockpile Objectives of Strategic and Critical Materials Should Be Reconsidered Because of Shortages," March 1975.

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E. ECONOMIC STOCKPILING IN FOREIGN COUNTRIES

The same threats of supply disruptions which could seriously affect the United States could also damage the economies of other nations, many of which are more import dependent than the United States. Several of these countries have established or are planning to establish economic stockpiles as a form of self-protection against supply disruptions or price increases, It is extremely important for the United States to pay close attention to the materials which these countries may stockpile. Inherently, economic stockpiling is a process of market intervention and will create economic as well as social and political impacts,

One country which maintains both a government-owned stockpile and grants incentives to private industry to insure supply and price stability is Sweden. Sweden is now ranked fourth in the world in the production of iron ore and is still discovering new deposits. The major importers of Swedish iron ore are West Germany, the United Kingdom, and Belgium-Luxembourg. If Sweden decided to cut back on its exportation of iron ore, for either price or strategic reasons, the importing nations could be adversely affected, creating foreign policy implications for the United States. For example, if West Germany were unable to receive its needed iron ore supply, it might very well turn to the United States to supply some of its needs. These stockpiling programs are summarized in the following sections; a more detailed analysis is included in appendix C,

1. Japan

The Japanese Government is considering several forms of economic stockpiling. In 1974, the Mining Industry Council, an advisory group to the Ministry of International Trade in Industry (MITI), recommended that the Japanese Government immediately subsidize the stockpiling of nine nonferrous metals:

- Immediate stockpiling of copper, nickel, chromium, and tungsten;
- Stockpiling held desirable but not currently appropriate for zinc, cobalt, and molybdenum; and
- Supplies considered stable but in need of continuing observation for tin and antimony.

The stockpiling program will be carried out by a private corporation financed by Government-guaranteed funds and partially subsidized by the Government. The corporation—Japan Metal Mining Public Corporation-controlled by MITI is supervising the issuance of bonds.

"Scrap Steel Stockpiling" was created in 1975 by MITI with the formation of a nonprofit foundation composed of steel manufacturers, scrap wholesalers, and scrap collectors. It will stockpile steel to stabilize domestic prices of scrap and to encourage recycling of steel. In addition to this, a special recycling association was created to promote utilization of iron resources, It will generate loans for new equipment and develop new technology for utilization of scrap.

2. France

In 1972, the French Government decided to establish a natural stockpile of critical materials to meet economic rather than strategic supply crises. The French economic stockpile has four purposes:

- Serve political and economic defense needs,
- Reduce the excessive vulnerability of certain processing industries,
- Allow France to participate in international agreements to stabilize prices of raw materials, and
- Provide a basis for regulating prices of materials.

The stockpile management is under the "Groupment d'Importation et de Repartition des Meteoux" (GIRM). GIRM specifically will assist French mining companies beyond their traditional efforts in French Africa and oversea territories. It will help French companies extend endeavors into developed countries with mineral resources such as Canada and Australia and oil-rich countries such as Iran, Indonesia, Zaire, Yugoslavia, and Brazil.

The economic stockpile will contain 2 months' average input supply of each category of materials. One hundred million francs (approximately $23 million) were provided for 1975. Appropriations are expected to double in 1976 and remain there for the level build up of 3 to 4 years.

3. Sweden

The Swedish inventory management system provides incentives to private industry to maintain stockpiles. This is done through taxation of corporate income in three areas:

- Inventory valuation,
- Depreciation, and
- Reserves for future investment.

In reality these will not create a national stockpile but rather a healthy industry with inventories large enough to meet emergency situations.

4. European Common Market (EEC)

The Common Market Study currently underway is oriented toward a policy/management system. The policy objectives include the growth and stabilization of the economics of less-developed countries now dependent on revenue from exports of particular materials.

To support these objectives, the EEC nations would enter long-term agreements for purchase of such materials and agree upon prices. This would presumably work independently of the world market prices being either higher or lower. West Germany is very concerned about any EEC program which could interfere with the operation of the free enterprise system.

The EEC study consideration is an alternative to economic stockpiling. A big question is how it could work without affecting world market prices and/or other nations.

5. Other Countries

The United Kingdom is also creating an economic stockpile, and unconfirmed reports indicate that this is the case in several other countries, including Brazil. Of considerable importance is the question of how various national economic stockpiles will relate to one another, and of their tremendous potential for abuse and use beyond the intended policy objectives.