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# ECONOMIC INTELLIGENCE REPORT

# THE ECONOMIC IMPORTANCE OF THE RESOURCES OF SELECTED AREAS TO THE US AND OTHER FREE WORLD COUNTRIES


EIC–R–5
30 September 1953

Prepared Jointly by US Intelligence Agencies

## ECONOMIC INTELLIGENCE COMMITTEE

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# FOREWORD

Economic Intelligence Committee members from CIA, the Joint Chiefs of Staff, and the Departments of State, Defense, the Army, the Navy, the Air Force, Interior, and Agriculture have reviewed and concurred in this report. It is cautioned, however, that this report must be read with due consideration to its original purpose as outlined below.

In the last quarter of 1951 the Army Intelligence Member of the IAC proposed that a series of National Intelligence Estimates dealing with the loss of important economic resources in five selected areas be undertaken. In November 1951 the Board of National Estimates prepared terms of reference for NIE-56: "Likelihood of Loss of Important Economic Resources in Selected Foreign Areas." Responsibility for preparing the economic contributions to the estimate was assigned to the Economic Intelligence Committee.

On 24 April 1952 the EIC contribution covering the first three areas, Near and Middle East, South Asia, and the Far East, was transmitted to ONE from the EIC with the notation that EIC had concurred in these contributions, though only for the purpose of supporting the proposed National Estimate.

In the last quarter of 1952, Army Intelligence reviewed its original request for these National Intelligence Estimates and recommended to the IAC that NIE-56 be canceled provided that the EIC contributions would be published as completed studies. This report is therefore issued as a summary of the EIC contributions to the economic phase in lieu of the canceled NIE.

This report provides information about the important commodities of each of the five areas and indicates by rough order of magnitude the importance of each area's commodities to the rest of the Free World and to the US. The data for the report have been drawn from the EIC contribution and are considered worthy of preservation for possible use in other studies. No attempt has been made to make the indication-of-importance estimates more current than the data in the original contributions would permit. The original contribution, which had been oriented in another direction, did not contain several of the figures now listed under the heading "Percent of US Supply Coming from This Area" in the tables. As many figures as were available have therefore been added to complete this phase of the report.

An additional number of individual sector papers were prepared as contributions to this summary report. These sector papers are working drafts which have never received the complete concurrence of all members of the EIC Working Group and are therefore not being issued as part of this report. However, several complete sets of the sector papers are available in the EIC Secretariat and will be made available upon request (Code 143, Extension 8632). These sector papers include the following:

1. Economic Importance of Near and Middle East.
2. Statistical Tables for Agricultural Commodities of the Near and Middle East.
3. Economic Importance of Far East.
4. Economic Importance of South Asia.
5. Statistical Tables for Agricultural Commodities of the Far East and South Asia.
6. Economic Importance of Africa.
7. Statistical Tables for Agricultural Commodities of Africa.
8. Economic Importance of Latin America.
9. Statistical Tables for Agricultural Commodities of Latin America.
10. Statistical Tables for Selected Minerals of the Free World.

Users of these working papers should bear in mind that stockpile data, while useful as basic information, are now outdated and that the apparent consumption figures for minerals (which do not take into consideration stock changes) are only useful measures of the order of magnitude of consumption of these minerals.

An analysis of uranium, its location in the world, and its importance to the Free World and the US was not undertaken in the original study, because of the security problem which such an analysis presented.

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SECURITY INFORMATION

# THE ECONOMIC IMPORTANCE OF THE RESOURCES OF SELECTED AREAS TO THE US AND OTHER FREE WORLD COUNTRIES*

## I. Economic Importance of the Resources of the Five Geographic Areas.

The five geographic areas discussed in this report -- Near and Middle East, Far East, South Asia, Africa, and Latin America -- can be characterized as agrarian rather than industrial regions. Although a degree of industrialization has developed in several of the nations within these areas, their primary economic importance stems from their supplies of raw materials. The most vital raw materials found in these areas are primarily mineral resources, and, secondarily, a number of important agricultural commodities.

Tables 1, 2, 3, 4, and 5 indicate, for each area, the important commodities, their chief sources, a measure of the importance of the area to the rest of the Free World, and a measure of the importance of the area to the US. Almost all of the commodities listed for these areas are on the Munitions Board Stockpile List and are therefore considered to be important strategic materials.

## II. Resources of the Five Geographic Areas.

### A. Near and Middle East.**

The economic importance of the Near and Middle East to the Free World rests largely on its petroleum production and the metallurgical grade chromite of Turkey. In addition, Egypt's extra long-staple cotton is important to the UK and other NATO countries, though it is not indispensable. Other resources of the area which are of lesser importance to the Free World are manganese, copper, salt, phosphate rock, opium, rice and other grains, and tobacco. Table 1*** shows the important resources, chief sources, and exports of the area, and the percent of US supply coming from the Near and Middle East.

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* This report contains information available as of 1 August 1952.

** Including Egypt, Iraq, Israel, Jordan, Syria, Lebanon, Saudi Arabia, Iran, Turkey, Afghanistan, Kuwait, Qatar, Bahrein, Cyprus, and Aden.

*** Table 1 follows on p. 2.

Table 1

Important Resources in the Near and Middle East a/

| Resources b/ | Chief Sources | Net Exports of the Area as Percent of Free World Production c/ | Percent of US Supply Coming from this Area d/ |
|---|---|---|---|
| **Natural Resources** | | | |
| Petroleum | Saudi Arabia<br>Kuwait<br>Iran<br>Iraq | 17 e/ | Negligible |
| Chromite, Metallurgical Grade | Turkey<br>Cyprus | 21<br>f/ | 20<br>Negligible |
| Manganese | Turkey<br>Egypt | | |
| Copper | Turkey | 1 | Negligible |
| **Agricultural Resources** | | | |
| Long-Staple Cotton | Egypt<br>Sudan | 90 | g/ |
| Opium | Turkey<br>Iran | 65 | 100 |

a. Including Egypt, Iraq, Israel, Jordan, Syria, Lebanon, Saudi Arabia, Iran, Turkey, Afghanistan, Kuwait, Qatar, Bahrein, Cyprus, and Aden.

b. All commodities in this column, except petroleum, are on the Munitions Board Stockpile List.

c. The purpose of this column is to indicate, by rough order of magnitude only, the importance of this area to the rest of the world for each of the commodities listed. Ideally, this measure would relate net exports of the area to net supply of the Free World (excluding this area) or to consumption of the Free World (excluding this area). Actually, Free World production figures are used because (1) they are more readily available, (2) they do not involve spurious computations as in apparent consumption figures, and (3) for the purposes of order of magnitude in this table, the production

Table 1
(Continued)

figures are about as useful as the consumption figures. Unless otherwise noted, the figures relate to 1950.
d. The purpose of this column is also to indicate, by rough order of magnitude only, the importance of this area to the US supply for each of the commodities listed.
e. This percent is based on the estimated exports plus bunker fuel and estimated output for 1952 as given in the original EIC contribution.
f. The figure is not available from the original EIC contribution, but it is probably small.
g. To the extent that the US imports long-staple cotton, Egypt is probably the major supplier. However, long staples are relatively unimportant in the US cotton economy.

1. Petroleum.

It was estimated that the Near East would export 93.9 million metric tons of oil and would supply 10.3 million metric tons of bunkers to ships in 1952. This is 17 percent of the estimated Free World total output for 1952 but is a small part of the Near East's potential production. The percentage figure assumes greater importance when it is realized that the Western Hemisphere, which is the only other large Free World source of petroleum, could increase output only slightly.

2. Chromite.

Turkey, which exported 354,000 metric tons of all types of chromite in 1950, was the Free World's second most important source as well as the most important source of the metallurgical grade of chromite. Turkish ore represented about 35 percent of the Free World's production of metallurgical grade chromite and 32 percent of the US imports of this grade in 1950. In 1951, Turkey provided 44 percent of the US imports of this grade.

3. Extra Long-Staple Cotton.

Although this type of cotton constitutes only about 3 percent of total world cotton production, it is important for a few specialized uses, such as airplane cloth and high-speed machine sewing thread. Substitute fibers are not suitable for all uses. However, the US could produce, at least after some seasons, sufficient long-staple cotton to meet its own requirements.

B. Far East.*

The Far East, including Oceania, is a major Free World source of supply for a number of important commodities including tin, tungsten, refractory grade chromite, rutile, rubber, abaca, apparel-wool, copra and coconut oil, cinchona bark, and silk. The most important of these to the US and the rest of the Free World are tin, refactory grade chromite, and apparel-wool. Far Eastern nickel, although quantitatively small, was important because of the severe shortage of this commodity at the time that the EIC contribution was written. The UK depends quite heavily on the Far East for supplies of dairy products and meat. Other materials usually exported from the Far East include bauxite, metallurgical grade chromite, cadmium, lead, zinc, shellac, rice, wheat, pepper, tea, palm oil, and sugar. This group of materials is of lesser importance to the Free World. Table 2** shows the important resources, chief sources, and exports of the area, and the percent of US supply coming from the Far East.

1. Tin.

The Far East furnishes more than 100,000 metric tons annually, or over 60 percent of the Free World supply of new tin. Other sources, chiefly Bolivia, Belgian Congo, and Nigeria, produced about 54,000 metric tons in 1951, but little increase can be expected from these countries through 1954. The largest single use for tin is in tinplate, which in turn is largely consumed in food-packing. For example, between 30 and 40 percent of the tin consumed in the US goes into tinplate. In an emergency, alternative packaging, in part, could be adopted, although it would be somewhat more

* Including Japan, South Korea, Taiwan, the Philippines, mainland Southeast Asia, Indonesia, Australia, and New Zealand.
** Table 2 follows on p. 5.

Table 2

Important Resources in the Far East a/*

| Resources b/ | Chief Sources | Net Exports of the Area as Percent of Free World Production c/ | Percent of US Supply Coming from this Area d/ |
|---|---|---|---|
| **Natural Resources** | | | |
| Tin | Malaya<br>Indonesia<br>Thailand | 60 | e/ |
| Tungsten | South Korea<br>Burma<br>Thailand<br>Australia | 27 | 37 f/ |
| Nickel | New Caledonia | 3 | Negligible |
| Bauxite | Indonesia | 7 | 15 g/ |
| Chromite, Metallurgical Grade | New Caledonia<br>Philippines | 12 | 20 h/ |
| Chromite, Refractory Grade | Philippines | 40-45 | 50-65 g/ |
| Lead | Australia | 10 | i/ |
| Zinc | Australia<br>Japan | 9 | i/ |
| Rutile | Australia | 63 | 85 j/ |
| Beryl | Australia | Negligible | 0 |
| Cadmium | Australia<br>Japan | 7 | i/ |
| Rubber | Malaya<br>Indonesia<br>Thailand | 67 k/ | e/ |
| Shellac | Thailand<br>Indo-China | e/ | 34 |
| **Industrial Resources** | | | |
| Machinery | Japan<br>Australia | Negligible | Negligible |

* Footnotes for Table 2 follow on p. 6.

Table 2
(Continued)

| Resources b/ | Chief Sources | Net Exports of the Area as Percent of Free World Production c/ | Percent US Supply Coming from this Area d/ |
|---|---|---|---|
| **Agricultural Resources** | | | |
| Abaca | Philippines | 85 l/ | 67 |
| Apparel-Wool | Australia<br>New Zealand | 43 m/ | 41 l/ |
| Copra and Coconut Oil | Philippines<br>Malaya<br>Indonesia | 55-60 | 100 |
| Cinchona Bark (Quinine, Quinadine) | Indonesia | 60-65 | 75 |
| Silk, Raw | Japan | 31 n/ | 85 |
| Palm Oil | Indonesia<br>Malaya | i/ | 3 |

a. Including Japan, South Korea, Taiwan, the Philippines, mainland Southeast Asia, Indonesia, Australia, and New Zealand.
b. All commodities in this column except rutile, machinery, and apparel-wool, are on the Munitions Board Stockpile List.
c. The purpose of this column is to indicate, by rough order of magnitude only, the importance of this area to the rest of the world for each of the commodities listed. Ideally, this measure would relate net exports of the area to new supply of the Free World (excluding this area) or to consumption of the Free World (excluding this area). Actually, Free World production figures are used because (1) they are more readily available, (2) they do not involve spurious computations as in apparent consumption figures, and (3) for the purposes of order of magnitude in this table, the production figures are about as useful as the consumption figures. Unless otherwise noted, the figures relate to 1950.
d. The purpose of this column is also to indicate, by rough order of magnitude only, the importance of this area to the US supply for each of the commodities listed.

Table 2
(Continued)

e. The figure is not available in the original EIC contribution, but is probably large.
f. This figure is for 1951.
g. 1949-51 average figure.
h. 1949-50 average figure.
i. The figure is not available in the original EIC contribution, but it is probably small.
j. This is based on 1950 Australian exports and average US consumption 1948-50.
k. This percentage is based on estimated 1950 natural rubber exports and estimated 1950 new rubber supplies in the Free World (including synthetic rubber).
l. 1948-50 average figure.
m. Taking average annual net exports of the area in recent years as 340,000 metric tons.
n. Based on estimate of data for recent years. Raw silk is important to the US primarily because it is a source of silk waste, which is important in the manufacture of gun powder bags.

expensive. Other important uses for tin are in solders and bearing metals. Conservation measures can reduce somewhat the amounts of tin in these alloys, but they are widely used throughout industry and few substitutes exist.

2. Tungsten.

In 1950 the Far East produced about one-quarter of the Free World's new supply of tungsten. The most important single source in the area is South Korea. Most tungsten is used in high-speed and tool steels for hardening and in tungsten carbide for cutting tools. Lesser quantities are used in lamp filaments, contact points, and bronze powders. Substitutes are not satisfactory for all applications, but molybdenum is being used widely for high-speed steels. The loss of the large Communist Chinese supplies and the requirements for rearmament have led to high prices, with the result that marginal mines are being opened and producing mines are expanding output.

3. Refractory Grade Chromite.

The Philippine Republic is a major producer of refractory grade chromite, which is used for furnace linings. The Republic's share is not clearly determinable statistically, but in 1950 it probably amounted to about 40 to 45 percent of the Free World production of about 430,000 metric tons. The Philippine ore is considered to be of a superior quality for some applications and therefore is more important than the percentage would indicate. Adequate supplies could be obtained from other sources with some difficulty, but the quality would be less satisfactory.

4. Rutile.

In 1950, Australia produced almost 19,000 metric tons of rutile, which represented all of the Far East's and about 70 percent of the world's total production. The US has received about 60 percent of this quantity since 1947. This form of titanium is customarily used for welding rod coatings, though recently it has been in demand for conversion into metal. Other higher-cost sources can be developed, and synthetic titania can replace rutile in some uses. Because of greatly expanded requirements brought on by the mobilization program, adequate supplies from usual sources are difficult to procure.

5. Nickel.

Present production of nickel in the Far East is confined to New Caledonia, where mine output in 1950 amounted to only about 6,300 metric tons (equivalent to about 5 percent of world production). This rather small figure assumes importance, however, because of the extreme shortage of nickel for urgent defense purposes. Its most strategic use is in alloys to produce heat-resistant and acid-resistant metals. Substitutes are also in short supply. Cuba and Canada are both expected to contribute substantial increases in nickel production in 1953 and 1954.

6. Rubber.

The Free World received about 66 percent of its new rubber supplies and about 90 percent of its natural rubber from the Far East in 1950. With the increase of synthetic supplies, this dependence is expected to decline to about 60 percent of total supplies for 1952.

Reclaimed rubber is also usable for some types of rubber goods. The Free World, excluding the Far East, could produce enough natural and synthetic rubber, which, when added to government stock accumulations (mainly in the US), would enable it to maintain the 1950 level of consumption for about two years. To extend this rate for a longer period would require that synthetic capacity be increased substantially with the attendant high costs in time and money.

7. Abaca.

About 85 percent of the Free World supply of abaca comes from the Philippines. Its main uses include marine cordage and nets, drilling cable, rope, and others. Substitute materials can be employed for many, though not all, uses but often at a sacrifice in quality. Further plantings of abaca in Latin American, which would require US investment, without assurance of entirely satisfactory results, could probably increase production to a level adequate for US needs.

8. Apparel-Wool.

Australia and New Zealand produce about one-half of the apparel-wool produced in the world. The minimum industrial and military needs of the Free World, in both type and quantity, can only be supplied adequately with apparel-wool from this area. The US is in a better position than some allied countries because of domestic production and the availability of substitute fibers such as cotton, re-used wool, and various synthetic fibers.

9. Copra and Coconut Oil.

The Far East exported about 75 percent of the world's supply of copra and coconut oil in 1950. Coconut oil is used widely for soaps, as a source of lauryl and octyl alcohols, and as food. Other fats and oils can be used interchangeably with coconut oil for many purposes, though not for all. The fact that the US is now a major net exporter of fats and oils, together with a good stock position, reduces drastically US dependence on the Far East sources of copra and coconut oil.

C. South Asia.*

South Asia is a major Free World source of supply for important commodities including amorphous lump graphite, mica, manganese, shellac, and jute and jute products. Except for jute and jute products, these are basic raw materials for many industrial and military uses and present problems of substitution which have not yet been successfully overcome for some applications. Satisfactory substitute materials are available for jute and jute products, though at greater real economic costs. In the case of manganese, large alternative sources of supply are available for exploitation. This area is important for the other three commodities because subsititutes are not presently available for certain strategic uses and alternate sources are either nonexistent or difficult to develop. Other commodities normally exported from the area are beryl, opium, iron ore, chromite, kyanite, tea, and black pepper. These materials are of lesser importance to the Free World. Table 3** shows the important resources, chief sources, and exports of the area, and the percent of US supply coming from South Asia.

1. Graphite.

The grade of graphite known as 97 to 98 percent amorphous lump is found only in Ceylon. Its most strategic use, for which there is no satisfactory substitute material known, is in electric brushes for high-altitude aircraft engines. It is also desirable as a lubricant, but other materials can be substituted for it. So far as is now known, there are no important alternate sources of supply.

2. Mica.

India is the world's largest producer of muscovite mica. Mica is valued because of its unique insulating properties and high dialectric strength. Reasonably satisfactory substitutes can be found for some uses, and technological developments encourage hope that better ones can be found. Effective results, however, cannot be anticipated for several years. Alternate sources of supply are difficult to develop and are quantitatively small as compared with Indian supply. Furthermore, a highly skilled labor force trained in splitting mica exists in India and is difficult to replace.

* Including India, Pakistan, and Ceylon.
** Table 3 follows on p. 11.

Table 3

Important Resources in South Asia a/

| Resources b/ | Chief Sources | Net Exports of the Area as Percent of Free World Production c/ | Percent of US Supply Coming from This Area d/ |
|---|---|---|---|
| **Natural Resources** | | | |
| Manganese | India | 20 | 35 |
| Mica, Muscovite Block Sheet, and Splittings | India | 65-70 e/ | 70 |
| Kyanite | India | 70 e/ | 66 f/ |
| Graphite, Amorphous Lump, 97-98 Percent Carbon | Ceylon | 100 | 100 |
| Rare Earths | India | 0 | 0 |
| Beryl | India | 1-10 e/ | 0 e/ |
| Shellac, Unbleached | India | 70-75 g/ | 65 |
| **Agricultural Resources** | | | |
| Jute and Jute Products | India Pakistan | 99 | 100 |
| Opium | India | 35 | 1 |

a. Including India, Pakistan, and Ceylon.
b. All commodities in this column, except jute and jute products, are on the Munitions Board Stockpile List.
c. The purpose of this column is to indicate, by rough order of magnitude only, the importance of this area to the rest of the world for each of the commodities listed. Ideally, this measure would relate net exports of the area to new supply of the Free World (excluding this area) or to consumption of the Free World (excluding this area). Actually, Free World production figures are used because (1) they are more readily available, (2) they do not involve spurious computations as in apparent consumption figures, and (3) for the purposes of order of magnitude in this table, the production figures are about as useful as the consumption figures. Unless otherwise noted, the figures relate to 1950.

Table 3
(Continued)

d. The purpose of this column is also to indicate, by rough order of magnitude only, the importance of this area to the US supply for each of the commodities listed.
e. Estimated.
f. Consumption of imported kyanite.
g. This figure includes a large amount of Thai shellac which is processed in India.

3. Manganese Ore.

India now produces about 25 percent of the Free World's annual manganese production. The superior quality of this ore makes it more important in the production of steel than the percentage might indicate. Alternate sources of manganese are available and are being developed, but it will require several years to complete the necessary mining installations, transport facilities, and handling facilities.

4. Shellac.

India produces nearly 75 percent of the Free World's unbleached shellac. The raw material for this product is crude lac of which about two-thirds of the world's output comes from India. There is no universal substitute for shellac, and for a few highly-specialized uses there is doubt whether a satisfactory substitute can be found. For most uses, however, comprising at least half of total shellac consumption, other materials have already been developed which can be used satisfactorily. Production in Southeast Asia, particularly in Thailand, has been increasing since the close of World War II.

5. Jute.

India and Pakistan produce almost all of the world's jute and process a large proportion of it. The bulk of the jute is used in bagging. For this purpose, cotton and paper may be substituted, and for a number of uses bagging may be eliminated. The Free World might be able to adjust to the loss of South Asian jute through the use of substitute materials, but programs to utilize these substitutes would require far-reaching adjustments.

D. Africa.*

Africa is the most important source of strategic minerals in the Free World and is a significant supplier of a few agricultural commodities. Africa's resources are especially vital to the US, since many of them are critical raw materials for the industrial strength of this nation. The most important of these materials are asbestos, beryl, chromite, cobalt, columbite and tantalite, industrial diamonds, manganese ore, and sisal. All of these commodities can be characterized not only by important end uses but also by the fact that substitute materials are generally either poor or nonexistent and that alternate sources are either not available or are available at high costs in time, money, and effort. Antimony, copper, and phosphate rock are important because Africa's share in world supply is substantial, although alternate sources are available. Other minerals which are normally exported from the area include bauxite, cadmium, corundum, crucible grade graphite, lead, platinum and platinum-group metals, tin, and zinc. Other agricultural commodities which are normally exported from the area include vegetable oils, wattle, cacao beans, wool, and sugar. Table 4** shows the important resources, chief sources, and exports of the area, and the percent of US supply coming from Africa.

1. Asbestos.

Southern Rhodesia produced about 95 percent of the Free World supply of low-iron chrysotile of strategic grade (used by the US Navy for covering electric cables) in 1950. Fiber glass can be substituted for some uses of this grade, and there is some hope that the iron can be removed from Canadian chrysotile. There are no other major developed sources for the low-iron grade. The Union of South Africa produced 100 percent of Free World supply of amosite (used for thermal insulation) in 1950. There are no satisfactory substitutes for amosite, but in an emergency Canadian chrysotile is a possible subsitute at a high cost in efficiency of military items.

2. Beryl.

Africa produced about 50 percent of the Free World's output of beryl in 1950. Beryl products are used in the manufacture of beryllium-copper alloys and for atomic applications. The most

* Includes all of Continental Africa except Egypt.
** Table 4 follows on p. 14.

Table 4

Important Resources in Africa a/*

| Resources b/ | Chief Sources | Net Exports of the Area as Percent of Free World Production c/ | Percent of US Supply Coming from This Area d/ |
|---|---|---|---|
| Natural Resources | | | |
| Antimony | U of S Africa | 30 | e/ |
| Asbestos, Low-Iron Chrysotile and Amosite | S Rhodesia<br>U of S Africa | 95-100 | 100 |
| Bauxite | Gold Coast | 2 | 0 |
| Beryl | U of S Africa<br>SW Africa | 50 f/ | g/ |
| Cadmium | SW Africa<br>Belgian Congo | 18 f/ | e/ |
| Chromite | U of S Africa<br>S Rhodesia | 41 | h/ |
| Cobalt | Belgian Congo | 90 f/ | g/ |
| Columbium and Tantalum | Nigeria<br>Belgian Congo | 97 | g/ |
| Copper | N Rhodesia<br>Belgian Congo | 23 f/ | e/ |
| Corundum | U of S Africa | g/ | g/ |
| Graphite, Crucible, Strategic Grade | Madagascar | 100 | e/ |
| Industrial Diamonds | Belgian Congo | 98 | g/ |
| Lead | French Morocco<br>SW Africa | 8 f/ | e/ |
| Manganese | Gold Coast<br>U of S Africa<br>French Morocco | 50 | 43 |
| Phosphate Rock | French Morocco | 34 f/ | 0 |
| Platinum and Platinum Group Metals | U of S Africa | 32 f/ | 0 |

* Footnotes for Table 4 follow on p. 15.

Table 4
(Continued)

| Resources b/ | Chief Sources | Net Exports of the Area as Percent of Free World Production c/ | Percent of US Supply Coming from This Area d/ |
|---|---|---|---|
| Natural Resources (Continued) | | | |
| Tin | Belgian Congo<br>Nigeria | 14 f/ | e/ |
| Zinc | Belgian Congo | 7 f/ | e/ |
| Agricultural Resources | | | |
| Palm Oil | Nigeria<br>Belgian Congo | g/ | 83 |
| Wattle | U of S Africa | 100 | 100 |
| Sisal | British East Africa | 68 | 40 |

a. Including all of Continental Africa except Egypt.
b. All commodities in this column, except phosphate rock, are on the Munitions Board Stockpile List.
c. The purpose of this column is to indicate, by rough order of magnitude only, the importance of this area to the rest of the world for each of the commodities listed. Ideally, this measure would relate net exports of the area to new supply of the Free World (excluding this area) or to consumption of the Free World (excluding this area). Actually, Free World production figures are used because (1) they are more readily available, (2) they do not involve spurious computations as in apparent consumption figures, and (3) for the purposes of order of magnitude in this table, the production figures are about as useful as the consumption figures. Unless otherwise noted, the figures relate to 1950.
d. The purpose of this column is also to indicate, by rough order of magnitude only, the importance of this area to the US supply for each of the commodities listed.

Table 4
(Continued)

e. The figure is not available from the original EIC contribution, but it is probably small.
f. Output (which is probably about equal to net exports) of the area as a percent of Free World production.
g. The figure is not available from the original EIC contribution, but it is probably large.
h. US imports from Africa in 1950 were 100 percent of chemical ore, 30 percent of metallurgical ore, and 14 percent of refractory grade.

important alternate source for beryl is Brazil, which accounts for about 40 percent of Free World supply. Output from alternate sources could not be expanded very much, except after a long period of time and at a high cost.

3. Chromite.

Africa produced 795,000 metric tons of chromite in 1950, or 44 percent of total Free World production. The US received all of its chemical grade chromite, 30 percent of its metallurgical grade, and 14 percent of its refractory grade from Africa in 1950. It is doubtful if alternate sources could be developed to provide either the quantity or the quality of chemical grade chromite, which is produced in Africa.

4. Cobalt.

In 1950, about 90 percent of the Free World supply of new cobalt was produced in Africa, primarily in the Belgian Congo. Cobalt is important as an alloying element in high-temperature alloys, high-speed cutting tools, and high-performance magnetic alloys. Alternate sources of cobalt cannot be counted on for any substantial increase in output.

5. Columbium and Tantalum.

These two metals are produced from the minerals columbite and tantalite and are recovered from tin slag. Columbium is an essential component of high-temperature alloys required in jet engines and

gas turbines, and tantalum is critically important for manufacture of capacitator parts and electronic tubes. Both metals are also used in atomic developments. In 1950, Africa produced about 97 percent of the Free World supply of columbite. Also, the Belgian Congo is presently the only Free World area whose tin slags are utilized for columbium-tantalum production. Other sources of the minerals and the tin slags might replace Africa, but only after several years.

6. Industrial Diamonds.

The Free World supply of industrial diamonds comes mainly from Africa, which supplied about 98 percent of the 13 million carats of industrial diamonds of all types produced in the world in 1950. Substitutes for both industrial stones (used mainly in drawing dies and large rock drill bits) and crushing bort (used mainly in grinding wheels and rock drill bits) are difficult to obtain.

7. Manganese Ore.

In 1950, Africa produced about 54 percent of the total Free World production of manganese ore. Alternate sources are India and Brazil, but substantial expansion of their production would be difficult and would require considerable time. There is also a possibility of increasing production in the US through beneficiation of low-grade ore or by recovery from slag, but both of these involve considerable time and money.

8. Sisal.

Africa, the world's most important source of sisal, produced about three-quarters of the average world production of sisal during 1948-50. Latin America could increase production of sisal, but at least several years would be required for new plantings to yield fiber. Henequen can be used as a substitute material in many instances, and the output of this fiber could be increased in Mexico, although 5 to 7 years would be required from planting to harvest.

E. Latin America.*

The Free World is vitally dependent on Latin America for supplies of strategic minerals. This area is especially important to the US, and any evaluation of the area must give weight to its

* Including Central and South American and Caribbean area.

future position in current programs rather than its historical supply performance. This continent ranks second only to Africa as a source of strategic minerals for the Free World, the most important of which are petroleum, bauxite, beryl, copper, manganese, tin, and tungsten. In addition, various fibers (sisal, henequen, and abaca) are strategically important. All of these commodities offer little, if any, opportunity for substitute materials and can be obtained from alternate sources only at an expense in time, quality, and money. Latin America normally exports many other mineral and agricultural commodities. Table 5* shows the important resources, chief sources, and exports of the area, and the percent of US supply coming from Latin America.

1. Petroleum.

Latin America, led by Venezuela, is second only to the Near East in terms of the amount of oil which is available for export. It was estimated that Latin America would export 64.2 million metric tons of oil and would supply 9.2 million metric tons of bunkers to ships in 1952. This is equivalent to about 12 percent of the estimated Free World total output for 1952. The refining capacity of Latin America is substantial and vital and would require several years to supplant.

2. Bauxite.

Latin America, principally Surinam and British Guiana, provides about half of the Free World's bauxite supply. Almost all of this output is exported to the US and Canada. Alternate sources of bauxite equal in quantity and quality to that found in Latin America are not available. Jamaica has vast reserves of bauxite ore which are of a different character than the South American ores.

3. Beryl.

In 1950, Brazil produced about 40 percent of the Free World supply of beryl and exported most of it to the US. Principal alternative sources are Africa and India. The Indian Government has limited exports from that country, and Africa can probably expand output relatively little. There is no effective substitute for this vital mineral which is used in the manufacture of beryllium-copper alloys and for atomic developments.

* Table 5 follows on p. 19.

Table 5

Important Resources in Latin America a/*

| Resources b/ | Chief Sources | Net Exports of the Area as Percent of Free World Production c/ | Percent of US Supply Coming from This Area d/ |
|---|---|---|---|
| **Natural Resources** | | | |
| Petroleum | Venezuela<br>Mexico | 12 e/ | f/ |
| Antimony | Bolivia<br>Peru | 20 | g/ |
| Bauxite | Surinam<br>British Guiana | 51 | g/ |
| Beryl | Brazil | 40 | 56 |
| Bismuth | Mexico<br>Peru | 15-25 | g/ |
| Copper | Chile | 20 h/ | 25 h/ |
| Iron Ore | Brazil<br>Chile<br>Venezuela | 2 | f/ |
| Lead | Peru | 3 | f/ |
| Manganese | Brazil | 9 | 6 |
| Platinum and Plantinum Group Metals | Columbia | 5 i/ | 7 |
| Quartz Crystals | Brazil | 100 | 95 |
| Rare Earths | Brazil | g/ | 48 |
| Tantalum | Brazil | g/ | f/ |
| Tin | Bolivia | 20 | 20 |
| Tungsten | Bolivia | 21 | f/ |
| Zinc | Peru | 18 i/ | f/ |
| **Agricultural Resources** | | | |
| Quebracho | Argentina<br>Paraguay | 100 | 100 |

* Footnotes for Table 5 follow on p. 20.

Table 5
(Continued)

| Resources b/ | Chief Sources | Net Exports of the Area as Percent of Free World Production c/ | Percent of US Supply Coming from This Area d/ |
|---|---|---|---|
| Agricultural Resources (Continued) | | | |
| Sisal | Brazil<br>Haiti | 20 | 60 |
| Henequen | Mexico | 100 | 100 |
| Castor Oil | Brazil | g/ | 90 |
| Abaca | Costa Rica<br>Guatemala<br>Panama | 15 | 25 |

a. Including Central and South America and Caribbean Area.
b. All commodities in this column, except petroleum, iron ore, and henequen, are on the Munitions Board Stockpile List.
c. The purpose of this column is to indicate, by rough order of magnitude only, the importance of this area to the rest of the world for each of the commodities listed. Ideally, this measure would relate net exports of the area to new supply of the Free World (excluding this area) or to consumption of the Free World (excluding this area). Actually, Free World production figures are used because (1) they are more readily available, (2) they do not involve spurious computations as in apparent consumption figures, and (3) for the purposes of order of magnitude in this table, the production figures are about as useful as the consumption figures. Unless otherwise noted, the figures relate to 1950.
d. The purpose of this column is also to indicate, by rough order of magnitude only, the importance of this area to the US supply for each of the commodities listed.
e. This percent is based on the estimated exports plus bunker fuel and estimated output for 1952 as given in the original EIC contribution .
f. The figure is not available in the original EIC contribution, but it is probably small.

Table 5
(Continued)

g. The figure is not available in the original EIC contribution, but it probably large.
h. Estimate.
i. Output as a percent of world output.

4. Copper.

Latin American countries, primarily Chile, mine about 20 percent of the Free World's copper. It is possible to substitute steel and aluminum for some uses of copper, although this also would require using strategic metals. Africa and Canada are both important alternative sources of copper but could not expand output enough to equal that of Chilean copper

5. Manganese Ore.

In 1950, more than 93 percent of US requirements for manganese ore were imported, principally from India, Africa, and Latin America. With the loss of the USSR as an important source of supply, efforts have been directed for the past several years toward the development of the vast reserves of Brazil which should raise that country to a position of major importance as a world producer of manganese by 1956. Although Brazil's production of manganese ore in 1950 was equivalent to only about 5 percent of world production, the presently planned operational potential is about a million tons annually, which is equal to about one-half of US consumption in 1950.

6. Tin.

Latin America is the only important source of tin in the Western Hemisphere. In 1950, Bolivia produced about 20 percent of the Free World primary tin output. About half of this was shipped to the US.

7. Tungsten.

The loss of China's great tungsten resources has emphasized Free World dependence on South America, which in 1951 furnished about

18 percent of Free World supplies of tungsten. The Far East, Western Europe (mainly Spain and Portugal), and the US are the other important world producers of tungsten. These sources possible could increase production above current levels, though at higher costs. Molybdenum can be substituted for tungsten in certain applications, such as high-speed tool steel, but this substitution would be limited when molybdenum is in short supply.

8. Hard Fibers.

Latin America produces about one-fourth of the world production of sisal, virtually all of the world's henequen, and about 15 percent of the world supply of abaca. Sisal and henequen are similar in nature and in uses, although, of the two, sisal is preferred. Abaca is generally superior to both of the others but is more expensive and in much smaller supply. There are some substitute materials for these fibers, but their use entails higher economic costs. Alternative areas can increase production only after several years.

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