

Minerals in the World Economy

By Charles L. Kimbell¹ and John Panulas²

Virtually every available measure of total world mineral industry activity demonstrated that 1982 was little, if any, better for the industry than 1981 had been. Levels of production, trade, and consumption for virtually every major commodity declined; unit prices for most commodities fell, particularly in terms of constant dollars, and as a result of cutbacks in output and lower prices, capital available for investment within the industry was reduced. These conditions, coupled with the existence of considerable idle capacity, tended to retard investment, although there was an upturn in U.S. oil industry investment overseas.

Despite the overall depressed situation of the world's mineral industry, there were indications of possible improvements in market economy countries near yearend, as output of some materials increased marginally and as prices for some mineral commodities reversed their downward trends. The downturns in total world mineral industry activity were not universal from the viewpoint of individual countries. Indeed, output of a number of commodities increased in centrally planned economy countries, and these gains were insufficient to offset declines in market economy countries, thereby sharply altering the proportion of total world output accounted for by each of these two groups of countries. There was a similar shift in consumption on a percentage basis.

International political events continued to have effects on mineral output and trade, but the influences were not so much upon worldwide levels of activity but rather upon the geographic distribution of these activities. In the Near East, the continuing war between Iran and Iraq served to curtail mineral industry activities in those nations,

but there were clear signs that Iran was beginning to increase production from the much reduced levels of 1981 despite continuing hostilities.

Persistent intranational and international political problems in the Eastern Mediterranean countries of Lebanon, Syria, and Israel in 1982 undoubtedly restricted mineral activities below the levels that could have been attained were there peace in the area, but the relatively small contribution that these nations make to total world mineral supplies made the problems of this distressed area minimal to worldwide mineral industry activity.

The continued Soviet presence in Afghanistan undoubtedly had an adverse effect on mineral industry development there, but as in the Eastern Mediterranean, the impact on world mineral supplies was negligible, and the same could be said for continued internal and international strife in the Central American countries of Nicaragua, Costa Rica, Honduras, and Guatemala.

There were some allegations that the British-Argentinian confrontation over the Falkland Islands might be based in part on unproven offshore oil potential of those isolated islands, but it was apparent that far more important were the domestic and international implications to both countries of the basic principles of sovereignty. The main significance of this war to the mineral industry was in the vastly increased fuel consumption for the naval and air arms of the belligerents. If an offshore oil potential exists at all, and its existence seems purely speculative, construction of production facilities in the storm-tossed waters near the Falklands would be even more hazardous and costly than present ventures in the North Sea.

Poland's mineral industry undoubtedly suffered adversely from continued worker dissatisfaction and governmental actions, but partial recovery was evident in some industries.

Interest in a Law of the Sea Treaty in general and in seabed mining in particular remained more a subject for academic consideration through the year.

PRODUCTION

The estimated value of world crude mineral production in 1982 was \$540,000 million in terms of 1978 dollars, an amount slightly below the 1981 value and 4.8% below the

historical peak of 1979, as shown in the following tabulation on value of world mineral production for selected years:

Year	Billion constant 1978 dollars	
	Value of 53 ¹ major crude mineral commodities ²	Value of all crude mineral commodities ³
1950	67.8	77.2
1953	88.5	101.7
1958	113.6	136.5
1963	125.7	154.0
1968	145.6	176.5
1973	234.0	281.6
1978	478.9	539.7
1979 ^r	508.1	567.0
1980 ^r	489.5	551.7
1981 ^r	482.3	543.6
1982	480.0	540.0

^rRevised.

¹The list of commodities included appears in table 3 of this chapter; one commodity covered in 1950-68 (beryl) is excluded from the 1973-81 figures, but the overall impact of this omission is regarded as insignificant.

²Data for all years except 1979, 1980, 1981, and 1982 are as reported in *Annales des Mines*, November-December 1980, p. 173; data for 1979, 1980, and 1981 are extrapolated from the 1978 *Annales des Mines* figures on the basis of the United Nations index of extractive industry production in the United Nations Monthly Bulletin of Statistics, May 1983, p. xiv, and that for 1982 are estimated from available quarterly data and a variety of other sources of information.

³Data extrapolated from values of 53 commodities to compensate for other mineral products. For details on the basis for this extrapolation, see accompanying text under "Value of World Mineral Production."

The estimate of the total world crude mineral output value for 1982 cannot be supported by available United Nations data; these data being incomplete. On the basis of published indices for total world mineral production through the first three-quarters of the year, the value of output would slightly exceed that of 1981, but it is felt that direct extrapolation using such partial data would provide an erroneous result.

The foregoing data on value of crude mineral output do not completely portray the role of the mineral industry in the world economy in that they represent only the value of crude mine output (raw material from mines, quarries, and wells) rather than the considerably enhanced value that results from beneficiation, smelting, refining, and other equivalent downstream processing. If the value added through such processing were included, a 1982 figure of \$1,270,000 million (1978 dollars) could be regarded as a conservative estimate of the

value of output of mineral industry plants operating from primary materials only. An additional unestimated increment should also be included for the value of those processed materials recovered from secondary sources—scrap and other reclaimed materials.

It should be stressed that crude and processed mineral commodities constitute not only the overwhelmingly dominant share of the total raw material base for all manufacturing operations but also, in the form of fertilizers, are a vital material for the agricultural sector, and the only significant source of energy for all sectors of the world's economy.

PRODUCTION INDEX PATTERNS

The following tabulation summarizes the development pattern in world mineral industry output as reflected by the United Nations indexes for extractive mineral industry components:

Year	Index numbers (1975=100)			
	Coal	Crude petroleum and natural gas	Metals	Extractive industry total
Annual averages:				
1978	100.9	116.4	100.9	112.7
1979	106.1	122.4	103.2	118.4
1980	109.2	117.1	105.1	115.2
1981	108.3	115.0	103.0	113.5
1982 ¹	110.2	120.4	100.4	117.3
Quarterly results:				
1981:				
1st quarter	112.8	116.0	102.1	114.8
2d quarter	99.9	122.7	104.4	118.5
3d quarter	108.4	116.3	101.8	114.2
4th quarter	112.2	105.1	103.5	107.0
1982:				
1st quarter	112.6	108.0	102.3	109.2
2d quarter	112.7	127.0	102.5	122.7
3d quarter	105.4	126.1	96.4	120.0
4th quarter	NA	NA	NA	NA

NA Not available.

¹Average for 1st through 3d quarters, inclusive only, and as such, probably not reflective of full-year activities.

Source: United Nations. Monthly Bulletin of Statistics. V. 37, No. 5, May 1983, p. xiv, except for 1982 annual average, which is calculated from published quarterly data as indicated.

The tabulation demonstrates that while results for the three major components were considerably different from each other through the individual quarters of 1981 and 1982; in aggregate there was a substantial downturn in 1981 and only a modest recovery during the first three-quarters of 1982, with the situation within the fourth quarter still in doubt. Information available on quantitative output of major commodities such as petroleum, coal, and iron ore among others, and upon mineral commodity prices, suggests that fourth-quarter 1982 results will prove to be lower than the average for the first three-quarters of the year, and will reduce the annual indexes to lower levels than those of 1981.

Comparison of world extractive industry production indexes in the foregoing tabulation with indexes for the processing sectors of the mineral industry that are presented in the following tabulation demonstrates that the processing sectors were even more hard hit by the 1981-82 recession than was the extractive sector, with the 1982 averages for the first three-quarters below the yearly averages for 1981 for all three sectors shown.

Year	Index numbers (1975=100)		
	Non-metallic mineral products	Chemicals, petroleum, coal, and rubber products	Base metals
Annual averages:			
1978	117.4	125.5	115.3
1979	122.0	132.0	120.3
1980	123.1	131.6	117.2
1981	121.6	131.7	116.5
1982 ¹	119.1	128.5	110.4
Quarterly results:			
1981:			
1st quarter	117.9	133.8	120.5
2d quarter	127.3	135.4	120.1
3d quarter	122.2	128.6	112.9
4th quarter	119.0	128.9	112.5
1982:			
1st quarter	115.6	130.3	115.1
2d quarter	123.1	129.7	112.8
3d quarter	118.7	125.4	103.3
4th quarter	NA	NA	NA

NA Not available.

¹Average for 1st through 3d quarters, inclusive only, and as such, probably not reflective of full-year activities.

If fourth-quarter processing results are poorer than those for the first three-quarters, as it is expected that they will be, the overall picture for 1982 will be even poorer than that reflected by the partial figure averages.

Various world areas were far from uniform in their performance, both in mineral extraction and in mineral processing. For region-by-region details, the reader is referred to the source publication for the foregoing tabulations.

QUANTITATIVE COMMODITY OUTPUT

Total world production of 97 distinct mineral commodities and/or specific forms of mineral commodities is given in table 1 for 1978-82. Of these, only 18 registered gains in 1982 relative to the 1981 level, and the remaining 79 recorded declines. These results were far worse than those for 1980-81, when 34 registered gains and 63 recorded declines, and than those for 1979 to 1980, when 55 registered gains and 42 recorded declines. It is significant to note that of the 79 commodities with lower 1982 output than that of 1981, 53 had recorded declines between 1980 and 1981 as well, while of the 18 commodities showing increases in 1982 relative to their 1981 output level, only 9 recorded increases between 1980 and 1981 as well.

Of the 50 listed metallic commodities, only 9 were produced in greater quantities in 1982 than in 1981. The only major commodities recording increases were gold, silver, lead, and zinc, all at the mine stage of

production only, and primary smelter and refined lead.

Among the 36 nonmetallic commodities listed, only 6 showed increases between 1981 and 1982, and of these 6, cement and gem and industrial diamond were the only major commodities registering increases. Cement would have declined were it not for a phenomenal 12% growth in the recorded output of China; most major producers reduced output in 1981.

Of the 11 fuel mineral commodities (excluding uranium, which is included under metals), 8 recorded declines in output levels between 1981 and 1982. The continued decline in oil and gains for natural gas and coal were notable.

No viable means exist to sum up the overall performance of the nonfuel mineral industry except on a value basis, and for these commodities, exactitudes on value on a commodity-by-commodity basis are not available for 1979-82. Among the fuel commodities, however, the overall pattern of output change can be demonstrated by United Nations data in which all fuels are reduced to a common energy equivalent basis. The following tabulation summarizes world energy commodity output for 1977-81 on this basis, with estimates for 1982:

Year	Million metric tons of standard coal equivalent ¹				Total
	Coal	Crude petroleum and natural gas liquids	Natural gas	Hydro and nuclear electricity	
1977	2,447	4,482	1,681	249	8,859
1978 ^a	2,450	4,524	1,765	275	9,014
1979	² 2,583	¹ 4,718	¹ 1,855	288	^r 29,445
1980 ^r	2,621	4,495	1,874	302	9,292
1981	2,641	4,231	1,903	320	9,095
1982 ^e	2,730	4,035	1,880	310	8,955

^aEstimated. ^rRevised.

¹Virtually all figures are revised from those published in the 1980 edition of this chapter owing to revisions made by the source agency.

²Data do not add to total shown because of independent rounding.

Sources: United Nations, 1980 Yearbook of World Energy Statistics, New York, 1982, p. 2; 1981 Yearbook of World Energy Statistics, New York, 1983, p. 2.

Table 1.—World production of major mineral commodities¹

Commodity	1978	1979	1980	1981 ^b	1982 ^c
METALS					
Aluminum:					
Bauxite, gross weight ²					
thousand metric tons	82,555	86,991	90,699	87,054	76,333
Alumina, gross weight	29,753	31,374	33,426	31,969	27,829
Unalloyed ingot metal	14,131	14,574	15,381	15,072	13,268
Antimony, mine output, metal content					
metric tons	61,907	63,067	63,476	57,476	53,800
Arsenic, white ³	30,818	29,631	28,596	28,043	26,730
Beryl concentrate, gross weight ³	2,620	2,397	2,561	2,955	2,865
Bismuth ³	4,254	3,423	3,323	3,382	3,248

See footnotes at end of table.

Table 1.—World production of major mineral commodities¹—Continued

Commodity	1978	1979	1980	1981 ^P	1982 ^E	
METALS—Continued						
Cadmium metal, smelter	metric tons	17,310	18,654	17,953	17,242	16,140
Chromite, gross weight ⁴	thousand metric tons	9,255	9,588	9,766	9,057	8,185
Cobalt:						
Mine output, metal content	metric tons	26,824	29,832	30,974	32,275	25,084
Metal, refined	do	24,750	28,301	29,844	25,616	19,691
Columbium-tantalum concentrate ^{4 5}	do	23,633	35,156	36,615	35,568	34,344
Copper:						
Mine output, metal content	thousand metric tons	7,604	7,675	7,663	8,175	7,963
Metal:						
Smelter:						
Primary ⁶	do	7,533	7,526	7,453	7,826	7,718
Secondary ⁷	do	413	476	462	471	434
Refined:						
Primary ⁶	do	7,567	7,591	7,580	7,981	7,837
Secondary ⁷	do	1,252	1,344	1,388	1,338	1,282
Gold, mine output, metal content	thousand troy ounces	39,057	38,807	39,197	41,225	42,713
Iron and steel:						
Iron ore, gross weight	thousand metric tons	846,648	912,057	897,854	856,737	795,200
Metal:						
Pig iron	do	505,699	531,274	515,644	505,604	453,616
Ferroalloys	do	13,840	16,009	15,368	14,701	13,709
Steel, crude	do	714,811	744,872	714,007	705,208	641,012
Lead:						
Mine output, metal content	do	3,372	3,406	3,411	3,356	3,464
Metal:						
Smelter:						
Primary ⁶	do	3,162	3,228	3,144	3,082	3,230
Secondary	do	1,961	2,083	1,935	1,946	1,845
Refined:						
Primary	do	3,278	3,331	3,323	3,178	3,236
Secondary	do	2,236	2,385	2,223	2,142	1,996
Magnesium metal, smelter, primary ⁸	metric tons	288,263	307,428	316,112	295,660	247,361
Manganese ore, gross weight	thousand metric tons	22,642	26,274	26,364	23,543	22,436
Mercury, mine output, metal content	76-pound flasks	181,372	174,436	205,210	213,970	204,009
Molybdenum, mine output, metal content	metric tons	100,064	104,031	109,617	109,360	90,872
Monazite concentrate (source of rare-earth metals and thorium)	do	22,380	22,371	20,619	19,735	19,760
Nickel:						
Mine output, metal content	thousand metric tons	658	681	759	712	608
Metal, smelter	do	603	643	730	698	619
Platinum-group metals, mine output	thousand troy ounces	6,440	6,487	6,838	6,923	6,454
Selenium metal, smelter ^{4 5}	metric tons	1,443	1,620	1,270	1,302	1,218
Silver, mine output, metal content	thousand troy ounces	344,978	343,848	339,382	362,308	372,523
Tellurium metal, smelter ^{4 5}	metric tons	152	147	110	105	97
Tin:						
Mine output, metal content	do	241,108	245,307	247,264	252,575	241,114
Metal, smelter	do	244,128	249,242	249,916	247,250	241,164
Titanium concentrate, gross weight:						
Ilmenite ^{4 5}	thousand metric tons	3,515	3,515	3,643	3,638	3,058
Rutile ^{4 5}	do	302	357	417	371	346
Titaniferous slag	do	941	764	1,219	1,129	1,061
Tungsten, mine output, metal content	metric tons	46,056	48,506	51,210	49,206	44,872
Uranium oxide, mine output, U ₃ O ₈ content ^{4 5}	do	44,101	45,037	51,993	52,059	48,255
Vanadium, mine output, metal content	do	32,129	35,968	36,751	37,433	34,982
Zinc:						
Mine output, metal content	thousand metric tons	5,854	5,872	5,757	5,657	6,047
Metal, smelter:						
Primary ⁶	do	5,674	6,027	5,808	5,827	5,586
Secondary ⁷	do	208	243	248	285	295
Zirconium concentrate ³	do	525	628	678	632	555
NONMETALS						
Asbestos	do	4,693	4,906	4,808	4,480	4,311
Barite	do	6,886	7,257	7,428	8,216	7,155
Boron minerals	do	2,663	2,520	2,609	2,558	2,269
Bromine ⁴	do	361	403	342	342	380
Cement, hydraulic	do	852,946	872,085	884,324	891,990	892,108
Clays: ⁴						
Bentonite ⁵	do	6,114	6,339	6,363	6,780	5,186
Fuller's earth ⁵	do	1,731	1,833	1,767	1,926	1,996

See footnotes at end of table.

Table 1.—World production of major mineral commodities¹—Continued

Commodity	1978	1979	1980	1981 ^P	1982 ^e
NONMETALS—Continued					
Clays⁴—Continued					
Kaolin ----- thousand metric tons	19,417	21,062	20,834	20,589	19,088
Corundum, natural ----- metric tons	17,217	26,366	29,081	22,133	19,117
Diamond:⁴					
Gem ^e ----- thousand carats	9,461	10,235	10,626	10,451	10,564
Industrial ^e ----- do.	30,162	29,195	33,251	32,106	34,602
Total ----- do.	39,623	39,430	43,877	42,557	45,166
Diatomite ⁴ ----- thousand metric tons	1,460	1,520	1,513	1,475	1,390
Feldspar ⁴ ----- do.	3,035	3,111	3,133	3,142	3,099
Fluorspar ----- do.	4,665	4,612	4,821	5,051	4,539
Graphite ³ ----- metric tons	533,798	625,524	609,679	574,121	550,418
Gypsum ----- thousand metric tons	77,799	80,319	77,351	76,272	73,134
Iodine ----- metric tons	10,378	11,134	11,580	12,027	11,773
Lime ⁴ ----- thousand metric tons	121,210	120,022	121,034	116,507	112,114
Magnesite ³ ----- do.	10,232	10,987	11,630	11,209	11,129
Mica ⁴ ----- do.	352	333	316	335	283
Nitrogen: N content of ammonia ----- do.	67,223	71,244	73,949	74,002	72,549
Perlite ----- do.	1,428	1,506	1,477	1,426	1,344
Phosphate, gross weight:					
Phosphate rock ----- do.	125,022	132,010	139,604	137,524	122,633
Thomas slag ----- do.	4,498	4,593	4,349	3,429	3,335
Guano ----- do.	27	10	29	8	9
Potash, marketable, K ₂ O equivalent ----- do.	26,122	25,768	27,855	27,046	26,730
Pumice ^{4, 5} ----- do.	14,665	13,865	13,102	12,459	11,676
Salt ----- do.	168,248	173,429	168,397	170,352	168,696
Sodium compounds, n.e.s. ⁴					
Sodium carbonate ----- do.	27,210	28,053	28,276	28,027	27,734
Sodium sulfate ----- do.	5,237	5,537	5,406	5,489	5,247
Strontium minerals ^{4, 5} ----- metric tons	92,871	97,500	94,432	118,856	110,820
Sulfur, elemental basis:					
Elemental ¹⁰ ----- thousand metric tons	16,242	16,654	17,235	16,239	13,932
From pyrite ----- do.	9,694	9,803	10,388	10,439	10,431
Byproduct ¹¹ ----- do.	26,202	26,728	27,366	26,885	26,297
Total ----- do.	52,138	53,185	55,009	53,563	50,660
Talc, soapstone, pyrophyllite ----- do.	6,397	6,876	7,529	7,217	6,883
Vermiculite ^{4, 5} ----- metric tons	542,146	540,179	537,723	522,669	511,966
MINERAL FUELS AND RELATED MATERIALS					
Carbon black ^{4, 5} ----- thousand metric tons	3,991	4,134	4,192	4,163	3,964
Coal:					
Anthracite ----- million metric tons	228	228	226	228	225
Bituminous ----- do.	2,411	2,561	2,617	2,620	2,718
Lignite ----- do.	925	953	962	992	1,023
Total ----- do.	3,564	3,742	3,805	3,840	3,966
Coke:¹²					
Metallurgical ----- thousand metric tons	355,231	370,162	366,265	360,534	351,192
Other ----- do.	12,904	12,566	12,529	11,089	11,066
Gas, natural, marketed ----- billion cubic feet	51,357	54,360	54,840	55,491	54,783
Natural gas liquids ⁴ ----- million 42-gallon barrels	1,090	1,175	1,196	1,307	1,269
Peat ----- thousand metric tons	236,320	269,953	305,804	351,286	370,304
Petroleum:					
Crude ----- million 42-gallon barrels	22,090	22,907	21,900	20,664	19,224
Refined ----- do.	22,836	23,340	22,629	21,633	20,852

^eEstimated. ^PPreliminary.¹Incorporates numerous revisions from the table corresponding to this table in previous editions of this chapter. Figures generally conform to those published in appropriate commodity chapters of volume I of the Minerals Yearbook, 1982 edition.²Includes bauxite equivalent of nepheline syenite and alunite produced in the U.S.S.R. (the only producer on record of such materials as a source of aluminum).³Excludes data for the United States (withheld to avoid disclosing company proprietary data).⁴Excludes data for China (no adequate basis for estimation available).⁵Excludes data for the U.S.S.R. (no adequate basis for estimation available).⁶Includes all metal clearly identified as primary as well as all metal that cannot be subdivided clearly between primary and secondary (see footnote 7).⁷Includes only that metal that is clearly identified as secondary. Some countries do not distinguish between primary and secondary, and for some of these, no basis is available for estimating the breakdown of total production. For such countries, the total has been included under primary (see footnote 6).⁸Excludes data for the United States (withheld to avoid disclosing company proprietary data), which in previous years accounted for approximately 50% of the world total.⁹Includes leucocene.¹⁰Comprises sulfur produced by the Frasch process plus sulfur mined in the elemental state from ores.¹¹Comprises sulfur recovered from coal gasification, metallurgical operations (except pyrite processing), natural gas, petroleum, tar sands, spent oxides, and gypsum, whether recovered in the elemental state or as a sulfur compound.¹²Production of coke other than metallurgical by China and the U.S.S.R. is included with metallurgical coke production.

VALUE OF WORLD MINERAL PRODUCTION

The value of world crude mineral output in 1982 was estimated at \$540.0 billion constant 1978 dollars as shown in a foregoing tabulation. Details on the methodology employed to prepare this estimate are summarized in the 1980 edition of this chapter, to which the reader is referred.

GEOGRAPHIC DISTRIBUTION OF WORLD MINERAL OUTPUT VALUE

Available information is inadequate to extrapolate to 1982 the 1978 data on geographic distribution of world crude mineral output published in the November-December 1980 edition of *Annales des Mines*. A summary of the 1978 distribution, together

with comparable figures for 1973 and 1950 and additional textual comments on regional distribution of these values, was included in the 1980 edition of this chapter, and the reader is referred to this publication as well as to the original source for further detail.

COMMODITY DISTRIBUTION OF WORLD MINERAL OUTPUT VALUE

As in the case of geographic distribution of world crude mineral output value, the inadequacy of data precludes any reliable extrapolation of the various commodities' shares of the totals shown in the preceding edition of this chapter and in the source publication, *Annales des Mines*. The reader should refer to these publications for the data for 1978 and prior years.

TRADE

In 1981, the aggregate value of total world trade in mineral commodities totaled an estimated \$765,600 million (current dollars), a 3.7% decline from the record high set in 1980 and the first decline registered in a number of years. Comparable data for 1982 were not available in time for inclusion in this chapter, but available partial information suggests a further slight decline, based on lower volumes of material moved and

lower unit prices for a number of commodities. This decline would be even more significant if the computations were on the basis of constant rather than current dollars. The following tabulation summarizes the growth pattern in mineral commodity trade value for 1977-81 inclusive, as well as the share of that trade in total commodity trade:

Year	Estimated value of all mineral commodities traded (millions)	Change from previous year (percent)	Mineral commodities' share of all commodities traded (percent)
1977	\$387,400	+9.7	34.4
1978	†407,500	†+5.2	31.4
1979 ^f	581,200	+42.6	35.5
1980 ^f	795,200	+36.8	39.9
1981	765,600	-3.7	39.1

^fRevised.

Table 2, which serves as the basis for the estimates of total mineral commodity trade that appear in the foregoing tabulation, provides reported data on the value of trade in major mineral commodity groups and total commodity trade for 1977-81. Table 3 shows the percentage share of major mineral commodity groups in the aggregate for these commodities for 1977-81, and table 4 provides individual growth (or, particularly

in the case of 1981, decline) rates for each of the major mineral commodity groups as well as for total commodity trade for the same 5 years. Major mineral commodity trade by region (such as tables 8-10 in the 1976 edition of this chapter provide) may be obtained for more recent years directly from the United Nations Monthly Bulletin of Statistics for May 1983.

CONSUMPTION

NONFUEL MINERAL COMMODITIES

From the viewpoint of total world consumption of mineral commodities, 1982 registered declines in virtually every commodity for which data are available. Table 5 provides statistics on iron ore, iron and steel scrap, aluminum, cadmium, copper, lead, magnesium, nickel, tin, zinc, nitrogenous fertilizers, phosphatic fertilizers, potassic fertilizers, and sulfur, and of these 14 commodities, only nitrogenous fertilizers recorded a slight increase in consumption. (Cadmium registered no decline in the table, because both years are recorded as 16,000 tons, but there was a small drop in consumption). Even for copper, phosphatic fertilizers, and potassic fertilizers, which went against the trend in 1981, registering modest consumption gains, the year 1982 was one of diminished demand.

For the two steel industry raw materials listed, the declines in consumption in 1982 were even more pronounced than those in 1981; in contrast, among nonferrous metals, all except cadmium, copper, and zinc recorded greater declines in 1981 than in 1982, reflecting possibly a somewhat stronger fourth-quarter result.

Data on nonferrous metals in table 5 is presented for the first time in this chapter distributed between market economy countries and centrally planned economy countries. This has been done not only to demonstrate the varying pattern in consumption level changes between these two distinct groups of countries, but also because the figures for the centrally planned economy countries as prepared for the source publications incorporate production figures for the U.S.S.R. that for some commodities are at considerable variance with U.S. Bureau of Mines estimates. Utilization of such figures in calculations to estimate consumption levels obviously produce results different from those that would result if Bureau of Mines figures were used. The average differences in centrally planned economy

consumption that would result if Bureau of Mines production data were substituted would be as follows: aluminum—lower by 600,000 tons per year; copper—lower by 440,000 tons per year; lead—lower by 150,000 tons per year; nickel—higher by 11,000 tons per year; tin—higher by 19,000 tons per year; and zinc—lower by 200,000 tons per year. There would be no significant change in cadmium or magnesium.

Among the fertilizer nonmetals listed, the particularly poor 1982 showing demonstrated in table 5 is more a function of the years used rather than an actual vast downturn: data listed for 1981 in reality are for the last half of 1980 and the first half of 1981, and thus do not reflect the worsening of conditions in late 1981. The 1982 figures then represent the last half of 1981 and the first half of 1982, and as such do not reflect any recovery that may have begun during those months from July through December 1982. Sulfur's poor showing, on a calendar year basis, is attributed to continued economic problems within some major sulfur-consuming industries in market economy countries.

MINERAL FUEL COMMODITIES

Table 5 also includes data on mineral fuel commodity consumption, with use of each fuel expressed in terms of standard coal equivalent in order to make interfuel comparisons possible. It should be further noted that departing from practice in past issues of this chapter, estimates have been provided for the year of review, 1982 in this case. Previous editions provided information only for the year prior to the year of review. The table demonstrates the continued downturn in liquid fuel use, both quantitatively and on the basis of its share of the total, as well as a slight downturn for natural gas both quantitatively and proportionally, for the first time in several years. Solid fuels and primary electricity registered gains, but these were insufficient to offset the liquid and gaseous fuel losses.

INVESTMENT

Comprehensive world mineral industry investment data do not exist, but available figures generally point to a slightly reduced rate of investment. Data published by the U.S. Department of Commerce germane to U.S. foreign investment in 1982 showed a sharp decline in capital outlays, relative to those of 1981.

Available information on steel industry investment by Organization for Economic Cooperation and Development nations (table 6) shows a modest upturn between 1980 and 1981.

Updated information related to capital expenditures and exploration expenditures for the petroleum industry of market econo-

mies through 1981 are not yet available. For data covering the period 1976-80, the reader is referred to tables 6 and 7 of the 1981 Minerals Yearbook.

Table 7 of this chapter provides some data

on U.S. direct foreign investment in mineral industry activities divided between (1) mining, smelting, and refining and (2) petroleum for 1980-82.

TRANSPORTATION

MARINE TRANSPORT

Tankers, bulk carriers, and freighters are the three classes of vessels engaged in transporting mineral commodities. The number, gross tonnage, and deadweight tonnage of these vessels, as well as similar data for other vessels of the world's merchant fleet, as reported by the U.S. Maritime Administration for 1977-78 inclusive, are given in table 8.

It should be noted that vessels in each of the three categories are not devoted wholly to mineral commodity transport. Tankers, although largely engaged in moving crude oil and refinery products, also transport liquid chemicals, wine, molasses, and whale oil. Bulk carriers move agricultural products as well as crude minerals and mineral fertilizers, while freighters, because of their great variety, can be devoted wholly to hauling mineral products or wholly to moving nonmineral goods, as well as carrying mixed mineral and nonmineral cargoes.

Unfortunately, new and revised data on total loadings and unloadings of vessels, divided between tanker-type cargo and dry cargo, such as was presented in table 10 of the previous edition of this chapter for the years 1976-80, was not available in time for inclusion in this edition. Although it is recognized that such figures on loadings and unloadings include goods other than minerals, they nevertheless serve as a reasonable measure of mineral commodity shipments, because the preponderance of total weight of all goods moved is accounted for by minerals. Some measure of the significance of mineral commodity movement to total commodity movement is apparent in data for the world's two major canals, the Panama and the Suez, but it should be noted that figures for these waterways are skewed in favor of nonmineral commodities by both waterways' inability to handle large supertankers and bulk cargo vessels engaged in ore trade. Although exact recent figures are not available, it appears likely that minerals and mineral products account for three-quarters or more of total cargo carried in any single year on a weight basis.

Update information of the geographic breakdown of loadings and unloadings of dry cargo and tanker cargo, respectively, for 1978-80, such as was shown in tables 11-12 of the previous edition of this chapter, also were not available for inclusion in this edition. Again recognizing that both tables include mineral and nonmineral goods, but also recognizing the dominance of mineral materials from the viewpoint of tonnage, the reader is referred to these tables in the 1981 chapter, for some idea of the relative importance of various world areas as origins and destinations for mineral materials.

Although physical characteristics of vessels—size, draft, age, crew requirements, type of propulsion systems, etc.—as well as fuel costs have an undeniable influence on shipping industry performance, problems of the changes in the quantity and type of material being moved also significantly affect the shipping sector of the world economy. Therefore, before detailing changes in composition of the merchant fleet that serves the mineral industry, some observations on major mineral cargoes seem in order.

First in importance because of the volume of material moved was oil. Reflecting a continuing slump that began in 1980, shipments of crude oil and oil products declined 13% from the 1981 level of 1,445 million tons to a level of 1,258 million tons in 1982. Although economic recession and relatively low fuel oil contributed to the reduced demand for seaborne oil transportation, two other factors also exacerbated the problem. The first was the larger shipments of short-haul crude internationally. Of particular significance were the United States purchases of large quantities of Mexican and North Sea crudes in lieu of the higher priced long-haul crudes produced in the Persian Gulf region. The second was the increase in throughput to full capacity at the Ras Tanura-Yanbu (Saudi Arabia) and SUMED (Egypt) pipelines.

Another mineral commodity of considerable importance to seaborne transport was coal, whose shipments fell from 210 million tons in 1981 to 202 million tons (144 million

tons of metallurgical coal and 58 million tons of steam coal) in 1982. In terms of steam coal trade, the United States, Australia, Canada, the Republic of South Africa, and Poland accounted for 86% of exports in 1982. Of this amount, Poland's share was considerable and reflected an increase in its portion of the steam coal market that resulted from cutting steam coal prices to levels below those of the United States and the Republic of South Africa. Consequently, the United States shipped 6 million tons of steam coal less than in 1981, thereby reversing a growth trend in coal exports, and the Republic of South Africa, which has experienced a decline in coal exports in recent years, saw a 2-million-ton reduction in its coal exports. Coal outflows from Australia, Canada, and the U.S.S.R. remained, roughly, at 1981 levels.

On the import side, Japan continued to rank first among the world's coal importers, taking 3.4% more coal in 1982 than in 1981. Responsible for this growth was an increase in the volume of steam coal imported. Australia was Japan's chief coal supplier and was followed by the United States, Canada, and the Republic of South Africa. The other major coal importers were France, Italy, and Canada.

The increasing volume of coal traded over long distances, in 1982, required the use of bulk carriers on the order of 40,000 deadweight tons to an extent that those vessels accounted for 70% of the seaborne coal trade. The remaining 30% were vessels of over 100,000 deadweight tons, used largely in short-haul European movements.

Iron ore ranked first among nonfuel minerals traded, posting total shipments of 272 million tons. However, this amounted to a 31-million-ton decrease from that of 1981, owing primarily to a decline in iron ore demand resulting from reduced steel output. Average haul length, on the other hand, increased from 7,984 ton-kilometers in 1981 to 8,493 ton-kilometers in 1982, a direct effect of more numerous iron ore shipments from Brazil to Japan. Approximately two-thirds of total seaborne iron ore cargoes were transported in bulk carriers of 100,000 deadweight tons, serving the long-haul trades from Australia, South America, and the Republic of South Africa to Europe and Japan. Less than 15% of the total was moved in vessels below 60,000 deadweight tons.

The seaborne bauxite-alumina trades

were adversely affected by plant closures in the Federal Republic of Germany, the United States, and Japan by output reductions and by integration of operations, from bauxite mining to aluminum metal production, on the part of developing nations. This was reflected in the 5-million-ton decline in bauxite-alumina shipments, from about 46 million tons in 1981 to roughly 41 million tons in 1982. The preponderance of this total was moved in the short-haul Caribbean-U.S. trades and, consequently, average haul-length remained at its 1981 level of 6,118 ton-kilometers. Approximately 25% was shipped along the long-haul routes from Australia to North America and Europe. Of the total quantity of bauxite-alumina transported, 40% was moved by vessels above 40,000 deadweight tons, 22% by vessels between 40,000 to 60,000 deadweight tons, and 18% by vessels in the 60,000- to 80,000-deadweight-ton category.

Shipments of phosphate rock declined from 41 million tons in 1981 to 39 million tons in 1982. In large measure, reduced phosphate rock exports from the United States and Morocco were the cause of the decrease. Of the cargoes moved, 41% originated from North Africa, of which Morocco's outflows amounted to 36%, 22% from the United States, 16% from the Near East, 8% from the Pacific Islands, and about 7% from West Africa. On the import side, Western Europe took approximately 45% of the total shipped and Eastern Europe took approximately 20%. Of this amount, about 50% was provided by North American producers and about 20% was provided by those of the Near East. Asian imports increased slightly and were chiefly supplied by Jordan. With regard to Latin American imports, it should be noted that Brazil's phosphate rock intake fell from 800,000 tons in 1980 to 400,000 tons in 1982. That precipitous drop impacted most negatively on Morocco, Brazil's principal source of phosphate rock. In terms of haul-length, the average amounted to 5,313 ton-kilometers and the vast majority of vessels employed in the shipment of phosphate rock were of the 40,000-deadweight-ton class.

Bulk Carriers.—In 1981, the world's bulk carrier fleet increased by 189 vessels, compared with an 84-vessel increase in 1980. The 1981 growth represented a 3.9% gain on the basis of number of vessels. There was a very small increase in the average gross tonnage and deadweight tonnage of such

vessels for a second year. The average bulk carriers grossed 22,422 tons and had a deadweight tonnage of 38,975, compared with 1980 figures of 22,286 and 38,622, respectively. The following tabulation shows the distribution of the world's bulk carrier fleet by country of registry for 1981 (it should be noted that the tabulation corresponding to this one in the 1981 edition of this chapter was erroneously captioned as showing 1979 data, when in reality it covered 1980 data):

Country	Number of vessels	Deadweight tonnage (thousand tons)
Liberia	859	42,706
Greece	955	30,843
Japan	504	22,579
Panama	505	14,745
Norway	150	10,472
United Kingdom	198	10,323
Italy	134	6,606
India	105	4,486
Korea, Republic of	134	3,762
Brazil	63	3,719
China	115	3,691
U.S.S.R.	163	3,323
Singapore	77	2,842
France	45	2,645
Germany, Federal Republic of	44	2,537
Spain	71	2,213
Poland	81	2,022
Australia	33	1,650
Belgium	30	1,577
Yugoslavia	51	1,543
Philippines	43	1,447
Romania	44	1,237
Turkey	28	1,004
Netherlands	25	876
Sweden	22	728
Other	508	14,792
Total	4,987	194,368

Freighters.—In 1981, the world's freighter fleet decreased by 41 vessels, a 0.2% decrease. In terms of total gross tonnage and deadweight tonnage, there were 1.9% and 0.2% increases, respectively, over the 1980 levels. The average freighter in 1981 had a gross weight of 6,488 tons (6,367 tons in 1980) and a deadweight tonnage of 8,529 tons (8,514 tons in 1980), a modest increase when the number of vessels involved is considered. The following tabulation shows the distribution of the world's freighter fleet by country of registry for 1981 (the tabulation corresponding to this one in the 1981 edition of this chapter was erroneously captioned as showing 1979 data, when in reality it covered 1980 data):

Country	Number of vessels	Deadweight tonnage (thousand tons)
Panama	1,849	14,669
Greece	1,449	14,550
U.S.S.R.	1,785	11,136
United States	457	6,701
Japan	509	6,631
Liberia	529	5,357
China	375	4,107
United Kingdom	400	3,781
Singapore	314	3,256
Germany, Federal Republic of	231	2,862
India	351	2,470
Netherlands	161	1,985
France	173	1,976
Norway	188	1,771
Yugoslavia	315	1,758
Cyprus	250	1,741
Korea, Republic of	217	1,722
Poland	152	1,669
Denmark	3,789	29,285
Other		
Total	14,201	123,119

Tankers.—In 1981, the world's tanker fleet was 158 vessels greater than that of 1980. The average vessel's gross tonnage declined from 34,308 tons in 1980 to 33,451 tons in 1981, and deadweight tonnage similarly declined, from 64,626 tons in 1980 to 62,795 tons in 1981.

The following tabulation distributes the world's tanker fleet by country of registry for 1981 (the tabulation corresponding to this one in the 1981 edition of this chapter was erroneously captioned as showing 1979 data, when in reality it covered 1980 data):

Country	Number of vessels	Deadweight tonnage (thousand tons)
Liberia	845	97,671
Japan	551	33,947
Greece	444	29,094
Norway	257	26,299
United Kingdom	344	22,649
United States	314	16,670
Panama	341	16,231
France	109	13,881
Spain	121	8,790
Italy	229	8,268
U.S.S.R.	452	7,303
Singapore	107	5,293
Denmark	70	5,019
Germany, Federal Republic of	79	4,988
Saudi Arabia	58	4,953
Netherlands	66	4,400
Sweden	72	3,208
Brazil	67	3,201
Other	991	34,574
Total	5,517	346,439

Considering the world's tanker fleet as a whole, there have been some modest changes in the share of the total accounted for by vessels of different size groups over the 5 years, 1978-82, as shown in the following tabulation, based on data published on page 24 in the British Petroleum Co. Ltd. annual publication, BP Statistical Review of the World Oil Industry, 1982:

Size group (deadweight tons)	Percent of total		
	1978	1980	1982
10,000-25,000	4.5	4.3	4.4
25,000-45,000	7.5	7.6	9.0
45,000-65,000	4.9	4.9	5.3
65,000-125,000	15.5	16.2	17.1
125,000-205,000	10.1	10.2	9.9
205,000-285,000	43.4	42.8	39.0
285,000 and over	14.1	14.0	15.3

OCEAN FREIGHT RATES

In 1982, as in 1981, ocean freight rates continued to fall. Tanker rates declined as a result of reduced oil consumption which, in turn, caused cutbacks in oil shipments and a concomitant oversupply of tankers.

Dry cargo rates also fell, the consequence of two factors related directly to the global economic recession. First, steel output dropped considerably and, in turn, demand for iron ore and coal and for the vessels needed to move these commodities also

diminished. Second, within this climate of slackened demand for seaborne transportation, the global fleet of bulk and ore carriers expanded by 5.7%. Apparently, deliveries on ships were made on orders that did not anticipate the depressed market conditions of 1982.

PANAMA AND SUEZ CANALS

Summary data on activity at the Panama Canal for the years ending September 30, 1981, and September 30, 1982, are not yet available, and activity for the fiscal year 1980 was summarized in the 1980 edition of this chapter. Readers desiring such information for the more recent years are referred to the annual reports of the Panama Canal Co., when they become available.

At the Suez Canal, a total of 22,545 vessels transited the canal in 1982, an increase of 968 vessels, relative to 1981 transits (up 4.5%). The tonnage passing through the waterway increased from 342,356,000 tons to 363,538,000 tons. Of the total number of vessel transits, tankers accounted for 3,548, a figure 3.2% above that of 1981. The net tonnage credited to tankers dropped from 135,164,000 tons in 1981 to 133,655,000 tons in 1982. The following tabulation indicates the distribution of tankers by number, direction, net tonnage, and status (loaded or in ballast):

Direction	Number		Net tonnage (thousand metric tons)	
	1981	1982	1981	1982
Southbound:				
In ballast	1,168	1,056	89,882	71,148
Laden	806	865	12,254	13,978
Total	1,974	1,921	102,136	85,126
Northbound:				
In ballast	541	465	8,158	8,300
Laden	923	1,162	24,870	40,229
Total	1,464	1,627	33,028	48,529

Freighters ranked next after tankers in terms of number of transits and net tonnage, with bulk carriers following in third

rank. The following tabulation summarizes transits by these vessel classes:

Vessel class	Number		Net tonnage (thousand metric tons)	
	1981	1982	1981	1982
Freighters:				
In ballast -----	1,785	1,860	10,437	11,038
Laden -----	8,167	8,020	58,808	59,275
Total -----	9,952	9,880	69,245	70,313
Bulk carriers:				
In ballast -----	564	772	8,819	12,601
Laden -----	2,245	2,416	35,520	39,586
Total -----	2,809	3,188	44,339	52,187

In terms of goods transported in a northbound direction on the Suez, 124,805,008 tons was shipped in 1982, an increase over the 1981 figure of 93,896,000 tons. Of the total, oil and oil products totaled 63,139,000 tons, a 72.7% increase over the 1981 figure of 36,566,000 tons. In 1982, 11,383,000 tons of metals and ores were carried northbound through the Suez, a 9.7% increase over the 1981 level of 10,377,000 tons. Northbound coal shipments transiting the Suez amounted to 3,996,000 tons in 1982, compared with 3,370,000 tons in 1981.

With regard to southbound movement of commodities through the Suez, 106,588,000 tons were carried in 1982, a 4.0% increase over the 1981 figure. Of the total south-

bound 1982 commodity volume, crude oil and oil products accounted for 20,312,000 tons or 19%. This constitutes an 11.5% increase over the 1981 figure. Southbound metals and ores moved on the Suez decreased from 7,324,000 tons in 1981 to 6,059,000 tons in 1982. Finally, whereas 333,000 tons of southbound coal and coke transited the Suez in 1981, 446,000 tons did so in 1982.

PIPELINES

Limitations of time and space preclude comprehensive assessment of international pipeline activities. Major projects in individual countries are treated in the various country chapters.

PRICES

Comprehensive data on world prices for crude minerals and for mineral products are not available, nor if they were would international averages be very meaningful. Tables 9-11 summarize prices for selected metals in the United States, the United Kingdom, and Canada, respectively, for 1978-82 inclusive, with monthly data provided for 1982. A brief review of the 1982 average prices on each of the three markets reveals that for every commodity shown except for aluminum and cobalt on the U.S. markets, the average price was below the 1981 average, and for these commodities the prices simply remained unchanged. Examining individual monthly prices shown in the tables, there were 10 series that showed an upturn of some sort in the closing months of the year, 6 that registered downturns in the last half of the year, and 4 that remained stable.

It should be noted that the table on U.S. prices includes three additional commodities, cadmium, cobalt, and nickel, and the

United Kingdom series includes one additional commodity—gold. This last-named series may be of specific interest, particularly in connection with the following figures, which, on the London market, represent the record final high and low prices for gold for each of the years noted, in U.S. dollars per troy ounce: 1978—high \$277, low \$173; 1979—high \$455, low \$277; 1980—high \$675, low \$514; 1981—high \$577, low \$409; and 1982—high, \$444, low \$315. Although gold prices on other markets differed, in some cases significantly from the London prices, these can serve as a general measure of the pattern of fluctuations.

Comparison of crude oil prices between yearend 1981 and yearend 1982 shows that for most Persian Gulf crude oils, prices per barrel f.o.b. declined from a range of US\$31.50 to US\$35.70 in December 1981 to a range of US\$29.30 to US\$34.56 in January 1982. African crudes (including Libyan and Algerian) dropped from a range of US\$36.32 to US\$37.50 to a range of US\$34.52 to

US\$35.50 in the same period; North Sea crudes declined from US\$35.00 (Britian Forties, 36.5° API) to US\$33.50 and from US\$37.50 (Norway Ekofisk, 42° API) to US\$34.25. Indonesian light (35° API) fell by US\$0.047 to US\$34.53, while Chinese and Venezuelan crude prices went unchanged. Mexican Isthmas crude (34° API) dropped from US\$35.00 to US\$32.50, and Mexican Maya crude (24° API) declined from US\$28.50 to US\$25.00. In the United States, the listed price for sweet crude fell from

US\$35.00 to US\$32.25 per barrel, while that for sour crude declined from US\$33.00 to US\$31.00 per barrel. Only in the case of Canadian crude oil, where the price in Canadian dollars advanced from Can\$21.25 to Can\$25.75 was an increase reported between 1981 and 1982, and a small part of this increase was a function of the declining value of the Canadian dollar, rather than an increase in the constant dollar price for crude oil.

STATISTICAL SUMMARY OF WORLD PRODUCTION AND TRADE OF MAJOR MINERAL COMMODITIES

The final 24 tables of this chapter, tables 12-35, extend the statistical series on production that was started in the 1963 edition of the International Area Reports volume of the Minerals Yearbook and was subsequently updated and expanded in the 1965 and 1967-81 editions. They are primarily a supplement to other statistical data within this chapter but also serve as a summary of international production data for major mineral commodities covered in greater detail, on a commodity basis, in volume I of the 1982 Minerals Yearbook and on a country basis in volume III.

In this edition, the data presented in these tables, in most instances, correspond with the data in the individual commodity world production tables appearing in volume I and may differ somewhat from a total that might be obtained by adding figures presented for any single commodity in each of the country chapters of volume III. This apparent disparity results from problems of scheduling compilation of tables in the numerous commodity and country chapters in the two volumes. In an effort to provide the

user with the most up-to-date information possible, data received after completion of worldwide commodity production tables (volume I) have been included in many of the individual country production tables (volume III). Limitations of time, however, have prevented the incorporation of these revisions in the abbreviated versions of the world commodity tables included here. Thus, a more precise figure for total world production of any commodity could be obtained by adding figures presented in the individual country chapters. For summary purposes, however, it is felt that tables 12-35 of this chapter are sufficiently correct without the inclusion of these generally minor revisions.

The series of data on world trade in major mineral commodities that has appeared in most previous editions of this chapter (tables 57-69 in the 1976 edition) could not be included owing to scheduling problems.

¹Senior foreign mineral specialist, Division of Foreign Data.

²Foreign mineral specialist, Division of Foreign Data.

Table 2.—Value of world export trade in major mineral commodities¹

(Million U.S. dollars)

Commodity group	1977	1978 ^r	1979 ^r	1980 ^r	1981
Metals:					
All ores, concentrates, scrap	15,669	16,525	23,559	29,258	26,693
Iron and steel	46,703	57,123	70,399	75,906	72,991
Nonferrous metals	24,235	27,753	37,129	50,332	38,126
Total	86,607	101,401	131,087	155,496	137,810
Nonmetals, crude only	7,009	7,796	9,598	11,891	11,378
Mineral fuels	222,116	222,887	333,031	478,706	474,792
Grand total	315,732	332,084	473,716	646,093	623,980
All commodities	1,124,883	1,298,121	1,636,403	1,994,310	1,960,088

^rRevised.

¹Data presented are for selected major commodity groups of the Standard International Trade Classification Revised (SITC-R) and as such exclude some mineral commodities classified in that data array together with other (nonmineral) commodities. SITC-R categories included are as follows: All ores, concentrates, and scrap—SITC Div. 28; iron and steel—SITC Div. 67; nonferrous metals—SITC Div. 68; nonmetals (crude only)—SITC Div. 27; and mineral fuels—SITC Div. 3. Major items not included are the metals, metalloids, and metal oxides of SITC Group 513; mineral tar and other coal-, petroleum-, and gas-derived crude chemicals of SITC Div. 52; manufactured fertilizers of SITC Div. 56; and nonmetallic mineral manufactures of SITC Groups 661, 662, 663, and 667. Data include special category exports, ship stores and bunkers, and other exports of minor importance, and exclude the intertrade of the centrally planned economy countries of Asia and trade between the Federal Republic of Germany and the German Democratic Republic.

Source: United Nations. Monthly Bulletin of Statistics. V. 37, No. 5, May 1983, pp. c-cxxiii.

Table 3.—Distribution of value of world export trade in major mineral commodity groups, by commodity group¹

(Percent)

Commodity group	1977	1978	1979	1980	1981
Metals:					
All ores, concentrates, scrap	5.0	5.0	5.0	^r 4.5	4.3
Iron and steel	14.8	17.2	14.9	11.7	11.7
Nonferrous metals	7.7	8.4	7.8	8.1	6.1
Total	27.5	30.6	27.7	^r 24.3	22.1
Nonmetals, crude only	2.2	2.3	2.0	1.8	1.8
Mineral fuels	73.3	67.1	70.3	^r 73.9	76.1

^rRevised.¹For detailed definition of groups, see footnote 1, table 2.Table 4.—Growth of value of world export trade in major mineral commodity groups¹

(Percent change from that of previous year)

Commodity group	1977	1978 ^r	1979 ^r	1980 ^r	1981
Metals:					
All ores, concentrates, scrap	-0.1	+5.5	+42.6	+24.2	-8.8
Iron and steel	+4.4	+22.3	+23.2	+7.8	-3.8
Nonferrous metals	+12.5	+14.5	+33.8	+40.9	-27.1
All metals	+5.7	+17.1	+29.3	+20.1	-12.5
Nonmetals, crude only	+11.6	+11.2	+23.1	+23.9	-4.3
Mineral fuels	+11.3	+3	+49.4	+43.7	-8
All major mineral commodity groups	+9.7	+5.2	+42.6	+36.8	-3.7
All commodities	+13.7	+15.4	+26.1	+21.9	-1.7

^rRevised.¹For detailed definition of groups, see footnote 1, table 2.

Table 5.—World consumption of selected mineral commodities

(Thousand metric tons unless otherwise specified)

Commodity	1978	1979	1980	1981	1982 ^P
Ferrous metals: World:					
Iron ore, gross weight ⁶ — million metric tons —	925	912	883		
Iron and steel scrap, gross weight ⁶ — do. —	337	344	324	862	776
Nonferrous metals:					
Market economy countries:					
Aluminum, primary, refined	12,027	12,607	12,007	11,238	10,842
Cadmium	13	15	13	13	12
Copper, refined ¹	7,278	7,518	7,118	7,255	6,759
Lead, refined ¹	4,047	4,118	3,842	3,764	3,715
Magnesium, primary	206	213	207	184	166
Nickel ²	512	586	528	469	434
Tin, refined ¹	177	179	169	159	154
Zinc, slab ¹	4,534	4,638	4,410	4,283	4,065
Centrally planned economy countries:					
Aluminum, primary, refined	3,302	3,374	3,299	3,310	3,352
Cadmium	4	4	4	3	4
Copper, refined ¹	2,242	2,299	2,293	2,229	2,161
Lead, refined ¹	1,423	1,438	1,466	1,456	1,479
Magnesium, primary	74	77	80	82	82
Nickel ²	185	190	189	187	194
Tin, refined ¹	54	54	55	51	51
Zinc, slab ¹	1,675	1,691	1,716	1,698	1,769
World total:					
Aluminum, primary, refined	^r 15,329	^r 15,981	^r 15,306	14,548	14,194
Cadmium	17	19	17	16	16
Copper, refined ¹	9,520	^r 9,817	9,351	9,477	8,920
Lead, refined ¹	^r 5,470	^r 5,556	^r 5,308	5,220	5,194
Magnesium, primary	280	290	287	266	248
Nickel ²	697	776	717	656	628
Tin, refined ¹	231	^r 233	224	210	^e 205
Zinc, slab ¹	^r 6,209	^r 6,329	^r 6,126	5,981	5,834
Nonmetals: World:					
Fertilizers:					
Nitrogenous ³					
million metric tons of contained N	49,763	53,526	57,433	60,445	60,536
Phosphatic ³					
million metric tons of contained P ₂ O ₅	27,876	29,731	31,171	31,520	30,572
Potassic ³					
million metric tons of K ₂ O equivalent	22,964	24,410	24,039	24,145	23,540
Sulfur					
million metric tons of elemental sulfur equivalent	51,991	54,894	55,708	54,256	^e 51,500
Solid fuels					
million metric tons of standard coal equivalent	^r 2,480	^r 2,581	^r 2,622	2,660	^e 2,710
Liquid fuels	^r 3,861	^r 3,947	^r 3,779	3,635	^e 3,540
Natural gas	^r 1,755	^r 1,837	^r 1,863	1,878	^e 1,860
Hydro, geothermal and nuclear electricity					
do.	274	288	^r 302	320	^e 340
Total	^r 8,370	^r 8,653	^r 8,566	8,493	^e 8,450

⁶Estimated. ^PPreliminary. ^rRevised.¹Primary and secondary combined.²Nickel content of refined nickel, ferronickel, and nickel oxide.³Data are for years ending June 30 of that stated.

Sources: Based on data provided by World Bureau of Metal Statistics (market economy country nonferrous metals except magnesium); Metallgesellschaft AG (centrally planned economy countries nonferrous metals and all magnesium consumption); British Sulphur Corp. (nonmetals); United Nations Yearbook of World Energy Statistics (all mineral fuels for 1978-81); and British Petroleum Co., p. 1c (mineral fuels data for 1982).

Table 6.—Annual investment expenditure in the steel industry for selected countries

(Million dollars unless otherwise specified)

Country or country group	1977	1978	1979	1980	1981
EEC ¹ -----	2,360	2,022	2,098	2,375	2,492
EFTA ² -----	476	364	509	840	605
Other countries:					
Australia -----	140	132	122	220	355
Canada -----	416	309	319	487	589
Japan -----	3,824	4,338	2,916	2,865	3,599
New Zealand -----	NA	NA	6	NA	NA
Spain -----	476	309	294	237	183
Turkey -----	304	387	NA	NA	NA
United States -----	2,850	2,595	3,367	3,400	3,451
Total ³ -----	10,846	10,456	9,631	10,424	11,274

¹Revised. NA Not available.²Source reports that values for European Economic Community (EEC) countries are in terms of "million units of account." For the Federal Republic of Germany (included in EEC in this tabulation), the source indicates that for 1976, 823.1 million "units of account" was equivalent to \$885.3 million (no conversion rate given for other countries for 1976 and no conversion rate given for any country for 1977-80, and no further explanation is offered).³European Free Trade Association (EFTA) figures exclude data for Switzerland.³Figures have been totaled as if EEC data were in U.S. dollars, in keeping with totals appearing in a graph in source publication (see footnote 1).

Sources: Organization for Economic Cooperation and Development. The Iron and Steel Industry in 1978. Paris, 1980, p.25; The Iron and Steel Industry in 1979. Paris, 1981, p. 22; The Iron and Steel Industry in 1980. Paris, 1982 p. 25; The Iron and Steel Industry in 1981. Paris, 1983, p. 32.

Table 7.—Salient statistics on U.S. foreign investment in mineral industry activities

(Million dollars)

	1980	1981 ¹	1982
Direct foreign investment:			
Mining, smelting, refining -----	6,755	7,217	6,574
Petroleum -----	47,595	51,223	55,697
Reinvested earnings of incorporated affiliates:			
Mining, smelting, refining -----	405	118	-141
Petroleum -----	4,633	4,160	380
Equity and intercompany account flows:			
Mining, smelting, refining -----	47	217	-1,829
Petroleum -----	-2,596	-1,117	3,903
Income:			
Mining, smelting, refining -----	1,321	802	161
Petroleum -----	13,185	13,292	10,333

¹Revised.

Sources: U.S. Department of Commerce. U.S. Direct Investment Abroad in 1981, in Survey of Current Business, August 1982, pp. 11-29, for 1980; computer printouts furnished by the Department of Commerce for 1981 and 1982 figures.

Table 8.—World merchant fleet distribution, by type¹

	1977	1978	1979	1980	1981
Number of vessels:					
Tankers-----	5,333	5,233	5,260	5,359	5,517
Bulk carriers-----	4,932	4,651	4,714	4,798	4,987
Freighters ² -----	13,176	14,141	14,329	14,242	14,201
Other ³ -----	655	487	495	468	405
Total-----	24,096	24,512	24,798	24,867	25,110
Gross tonnage:					
Tankers----- thousand metric tons--	185,405	182,367	183,130	183,858	184,551
Bulk carriers----- do-----	103,741	104,291	105,341	106,927	111,820
Freighters ² ----- do-----	81,414	87,700	89,643	90,674	92,142
Other ³ ----- do-----	5,268	4,551	4,535	4,252	3,967
Total----- do-----	375,828	378,909	382,649	385,711	392,380
Deadweight tonnage:					
Tankers----- do-----	349,976	344,780	345,880	346,329	346,439
Bulk carriers----- do-----	178,633	180,436	182,319	185,311	194,368
Freighters ² ----- do-----	109,857	117,953	120,494	121,252	123,119
Other ³ ----- do-----	2,753	2,319	2,209	2,017	1,827
Total----- do-----	641,219	645,488	650,902	654,909	665,753

¹Maritime Administration classification. Tankers include whaling tankers. Vessels shown here as "Other" include combination passenger and cargo and combination passenger and refrigerated cargo. The contribution of these vessels to mineral commodity trade is regarded as unimportant. Data are as of Dec. 31 of year indicated.

²Includes refrigerated freighters.

³Excludes refrigerated freighters.

Source: U.S. Department of Commerce, Maritime Administration. Merchant Fleets of the World. Annual issue for 1977, and unpublished data supplied by the same agency for 1978-81.

Table 9. — Nonferrous metal prices in the United States
(Average cents per pound unless otherwise specified)

Year and month	Aluminum ¹	Copper ²	Lead ³	Zinc ⁴	Tin ⁵	Silver ⁶	Nickel ⁷	Cadmium ⁸	Cobalt ⁹
1978									
January	58,075	65,510	33,653	30,971	7,867	75,401	2,084	2,449	11,94
February	59,395	62,334	52,642	37,296	7,133	71,094	2,715	2,758	24,58
March	69,566	101,416	42,456	37,428	7,734	70,632	3,415	2,843	25,00
1980									
January	76,000	83,744	36,531	44,555	7,554	70,519	3,429	1,870	(10)
1982:									
January	76,000	77,234	29,674	42,174	7,268	8,081	3,200	1,400	(10)
February	76,000	77,379	28,703	42,716	7,127	8,268	3,200	1,400	12,50
March	76,000	74,462	27,635	39,234	5,969	7,211	3,200	1,259	12,50
April	76,000	74,873	26,039	35,505	5,839	7,811	3,200	1,150	12,50
May	76,000	76,548	26,091	34,671	5,803	6,674	3,200	1,125	12,50
June	76,000	70,088	24,763	34,597	5,016	5,578	3,200	1,020	12,50
July	76,000	69,653	27,175	35,661	5,266	6,497	3,200	1,000	12,50
August	76,000	69,599	25,818	37,792	5,670	7,136	3,200	1,000	12,50
September	76,000	69,665	25,318	39,641	5,785	7,225	3,200	1,000	12,50
October	76,000	71,013	23,191	40,828	5,700	9,458	3,200	1,000	12,50
November	76,000	71,568	21,608	40,393	5,480	9,892	3,200	1,000	12,50
December	76,000	72,830	20,469	38,459	5,503	10,586	3,200	1,000	12,50
Average	76,000	72,909	25,542	38,473	5,869	7,947	3,200	1,113	12,50

¹Revised.

²U.S. list price, North American producer.

³Electrolytic, f.o.b. refinery (not delivered, United States, as erroneously reported in 1981 edition).

⁴Refined lead, nationwide.

⁵Prime Western, f.o.b. East St. Louis.

⁶U.S. dollars per pound, New York dealer.

⁷U.S. dollars per troy ounce, 0.999 fine, New York.

⁸U.S. dollars per pound, major producer cathode.

⁹U.S. dollars per pound, producer.

¹⁰U.S. dollars per pound, shot-cathode, 250-kilogram lots.

¹¹Price was \$25 in January and February, 1981; \$20 in March through August 1981, inclusive; and suspended from September 1981 through January 1982, inclusive.

Source: American Bureau of Metal Statistics Inc.

Table 10.—Nonferrous metal prices in the United Kingdom¹

(Average U.S. cents per pound unless otherwise specified)

Year and month	Aluminum ²	Copper ³	Gold ⁴	Lead ⁵	Silver ⁶	Tin ⁷	Zinc ⁸
1978 -----	60.060	61.826	193.228	29.803	^r 5.419	^r 5.839	26.870
1979 -----	72.724	90.113	306.686	54.520	^r 11.110	^r 7.027	33.588
1980 -----	80.753	99.297	612.562	41.213	^r 20.872	^r 7.631	34.482
1981 -----	57.274	79.488	459.715	33.296	^r 10.524	^r 6.500	38.932
1982:							
January ----	50.478	73.057	384.125	29.374	7.980	7.318	37.099
February ---	49.344	72.393	374.130	28.010	8.284	7.254	37.304
March -----	46.618	68.511	330.248	27.752	7.237	5.791	35.785
April -----	45.229	69.024	350.838	26.047	7.293	5.723	33.654
May -----	44.094	69.294	333.818	26.049	6.672	5.777	34.009
June -----	41.668	59.009	314.982	23.585	5.569	5.029	31.333
July -----	43.444	65.355	338.973	25.092	6.442	5.319	32.795
August -----	43.447	65.837	364.226	23.695	7.066	5.539	32.431
September ---	43.484	64.690	437.311	23.350	8.737	5.752	33.971
October -----	43.127	66.299	422.148	22.542	9.399	5.631	34.055
November ---	43.768	63.490	414.914	20.960	9.784	5.436	32.179
December ---	44.696	66.825	444.292	20.299	10.572	5.441	30.295
Average --	44.966	67.192	375.792	24.656	7.920	5.810	33.734

^rRevised.¹London Metal Exchange average monthly settlement prices.²Unalloyed ingot 99.5%.³Electrolytic wirebars.⁴U.S. dollars per troy ounce, final price.⁵Refined lead.⁶U.S. dollars per troy ounce, 0.999 fine.⁷U.S. dollars per pound, Straits tin.⁸Slab.

Source: American Bureau of Metal Statistics Inc.

Table 11.—Nonferrous metal prices in Canada

Year and month	Copper ¹	Lead ²	Silver ³	Zinc ⁴
1978 -----	66.376	32.213	^r 5.406	29.966
1979 -----	92.884	51.133	^r 11.086	36.888
1980 -----	100.596	42.174	^r 20.637	37.453
1981 -----	83.973	37.183	^r 10.528	44.778
1982:				
January ----	77.650	30.678	8.034	42.554
February ---	77.250	29.057	8.271	41.804
March -----	74.290	28.392	7.218	39.791
April -----	74.730	26.122	7.312	35.621
May -----	76.810	26.751	6.683	36.398
June -----	67.700	24.837	5.575	35.277
July -----	70.030	28.555	6.553	38.698
August -----	70.000	26.246	7.145	40.154
September ---	69.900	26.320	8.729	41.071
October -----	69.480	24.551	9.453	41.460
November ---	69.800	22.576	9.901	40.851
December ---	71.100	21.262	10.536	39.564
Average --	72.395	26.279	7.951	39.437

^rRevised.¹For 1978-79, electrolytic wirebar, f.o.b. delivered basis, Canadian points; for 1980-82, domestic producer delivered price for cathode.²Pig lead.³U.S. dollars per troy ounce.⁴Producers' prices, carload quantities, Cominco Ltd.

Source: American Bureau of Metal Statistics Inc.

Table 12.—Leading world producers of bauxite¹

(Gross weight, thousand metric tons)

Country	1978	1979	1980	1981 ^P	1982 ^e
Australia	24,293	27,583	27,178	25,541	² 23,621
Guinea ^e	¹ 11,627	¹ 11,326	11,862	11,112	² 10,908
Jamaica	11,739	11,618	12,054	11,682	8,000
U.S.S.R. ^{e 3}	6,180	6,180	6,180	6,180	6,180
Brazil	1,160	2,388	5,538	5,770	4,500
Yugoslavia	2,565	3,012	3,138	3,249	² 3,668
Greece	2,663	2,812	3,286	3,216	3,300
Suriname	5,188	5,010	4,646	4,100	2,900
Hungary	2,899	2,976	2,950	2,914	² 2,627
India	1,663	¹ 1,952	1,785	1,923	² 1,854
France	1,978	¹ 1,969	1,921	1,827	1,671
China ^e	1,500	1,500	1,500	1,500	1,500
Guyana ^e	2,425	2,312	1,844	1,681	² 953
Indonesia	1,008	1,052	1,249	1,203	770
United States	1,669	1,821	1,559	1,510	² 732
Total ²	¹ 78,557	¹ 83,511	86,690	83,408	73,184
Other	¹ 3,998	¹ 3,480	4,009	3,646	3,149
Grand total ²	¹ 82,555	¹ 86,991	90,699	87,054	76,333

^eEstimated. ^PPreliminary. ¹Revised.¹Table includes data available as of June 29, 1983.²Reported figure.³Includes bauxite equivalent of nepheline syenite concentrates and alunite ore (produced in the U.S.S.R. only).Table 13.—Leading world producers of aluminum¹

(Thousand metric tons)

Country	1978	1979	1980	1981	1982 ^P
United States	4,358	4,557	4,654	4,489	² 3,274
U.S.S.R. ^e	1,670	1,750	1,760	1,800	1,875
Canada	1,049	¹ 864	¹ 1,041	1,116	² 1,065
Germany, Federal Republic of	740	741	731	729	720
Norway	639	¹ 664	¹ 653	633	² 637
France	391	395	432	435	² 390
China ^e	360	360	360	360	370
Spain ^e	212	259	386	396	365
Australia	263	270	303	379	² 362
Japan	1,058	¹ 1,011	1,091	770	² 351
Brazil	186	238	260	257	300
Italy	270	269	¹ 271	270	270
Netherlands	261	258	¹ 258	262	² 261
Venezuela	¹ 74	228	327	314	244
United Kingdom	347	359	375	339	240
Yugoslavia	175	168	161	172	210
Romania	213	217	241	251	208
India	214	211	185	213	204
Total	¹ 12,480	¹ 12,819	¹ 13,489	13,185	11,346
Other	¹ 1,651	¹ 1,755	¹ 1,892	1,887	1,922
Grand total	¹ 14,131	¹ 14,574	¹ 15,381	15,072	13,268

^eEstimated. ^PPreliminary. ¹Revised.¹Table includes data available through May 18, 1983.²Reported figure.

Table 14.—Leading world producers of chromite¹

(Gross weight, thousand metric tons)

Country	1978	1979	1980	1981 ^P	1982 ^e
U.S.S.R. ^e	2,300	2,300	2,450	2,400	2,450
South Africa, Republic of	3,144	3,297	3,414	2,870	² 2,164
Albania ^e	990	1,015	¹ 1,080	1,140	1,200
Zimbabwe	478	542	552	536	425
Finland	407	435	341	412	400
Turkey	¹ 381	¹ 371	391	423	370
Philippines	540	556	496	439	355
India	266	¹ 310	321	336	340
Brazil	² 270	340	313	236	190
Total	¹ 8,776	¹ 9,166	9,358	8,792	7,894
Other	² 479	¹ 422	408	265	291
Grand total	¹ 9,255	¹ 9,588	9,766	9,057	8,185

^eEstimated. ^PPreliminary. ¹Revised.

¹Figures in this table generally conform to the data in the world production table for chromite in volume 1 of the Minerals Yearbook, but the figures for Brazil and for the U.S.S.R. do not because beginning with this year, the referenced table contains crude ore figures for these two countries and not figures representing marketable product as is the case for other countries covered by the table. To use these crude ore figures substantially (and erroneously) inflates the relative importance of these nations in terms of their importance as sources of chromium-bearing materials to the world. Table includes data available through June 8, 1983.

²Reported figure.Table 15.—Leading world producers of mine copper¹

(Cu content of ore, thousand metric tons)

Country	1978	1979	1980	1981 ^P	1982 ^e
Chile ²	¹ 1,034	¹ 1,063	1,068	1,081	³ 1,241
United States ²	¹ 1,358	1,444	1,181	1,538	³ 1,140
U.S.S.R. ^{e 2}	865	885	900	950	1,000
Canada ²	659	636	716	691	³ 606
Zambia ²	643	588	596	588	530
Zaire ²	424	400	459	505	495
Peru ²	366	391	367	342	³ 369
Poland	321	325	346	315	338
Philippines	¹ 264	298	305	302	280
Australia	222	238	244	226	³ 245
Mexico	87	107	175	230	³ 239
China ^e	200	200	200	200	200
South Africa, Republic of	206	191	201	209	189
Papua New Guinea	199	² 171	147	165	³ 170
Total	¹ 6,848	¹ 6,937	6,905	7,342	7,042
Other	² 756	¹ 738	758	833	921
Grand total	¹ 7,604	¹ 7,675	7,663	8,175	7,963

^eEstimated. ^PPreliminary. ¹Revised.¹Table includes data available through June 1, 1983.²Recoverable.³Reported figure.

Table 16.—Leading world producers of gold¹

(Thousand troy ounces)

Country	1978	1979	1980	1981 ^P	1982 ^e
South Africa, Republic of	22,649	22,617	21,669	² 21,121	² 21,355
U.S.S.R. ^e	8,000	8,160	8,300	8,425	8,550
Canada	1,785	1,644	1,627	1,673	² 2,008
United States	999	964	970	1,378	² 1,447
Brazil	301	319	1,300	1,200	1,447
Australia	648	597	548	568	² 881
Philippines	587	535	644	753	778
Papua New Guinea	751	630	452	540	564
Chile	102	111	220	400	547
Zimbabwe	399	388	368	371	420
Dominican Republic	343	353	370	408	400
Ghana	402	362	353	^e 330	330
Total	¹ 36,916	¹ 36,680	36,821	37,167	38,727
Other	² 2,141	² 2,127	2,376	4,058	3,986
Grand total	¹ 39,057	¹ 38,807	39,197	41,225	42,713

^eEstimated. ^PPreliminary. ¹Revised.¹Table includes data available through July 7, 1983.²Reported figure.Table 17.—Leading world producers of iron ore, iron ore concentrates, and iron ore agglomerates¹

(Thousand metric tons)

Country	1978	1979	1980	1981 ^P	1982 ^e
U.S.S.R.	¹ 246,398	241,739	244,714	242,417	243,400
Brazil	84,985	¹ 104,083	114,732	97,860	² 110,038
Australia	83,134	91,717	95,534	84,661	² 87,789
China ^e	70,000	75,000	75,000	70,000	70,000
India	38,837	¹ 39,859	41,936	41,353	² 40,902
United States	82,892	87,092	70,730	74,348	² 35,907
Canada	41,751	59,888	48,754	49,551	² 34,496
South Africa, Republic of	¹ 23,432	31,565	26,312	28,318	² 24,554
France	33,453	31,627	28,980	21,598	² 19,396
Liberia	17,989	18,345	18,187	19,704	² 18,165
Sweden	21,486	26,168	27,184	23,225	² 16,138
Venezuela	13,515	15,260	16,102	15,531	11,700
Spain	8,580	8,826	9,227	8,565	8,500
Mexico	5,333	6,061	7,631	8,020	² 8,159
Korea, North ^e	7,100	7,400	8,000	8,000	8,000
Mauritania	6,934	9,373	8,936	8,705	7,000
Chile	6,802	7,118	8,270	7,743	5,806
Total	¹ 792,621	¹ 861,121	850,229	809,599	749,950
Other	² 54,027	² 50,936	47,625	47,138	45,250
Grand total	¹ 846,648	¹ 912,057	897,854	856,737	795,200

^eEstimated. ^PPreliminary. ¹Revised.¹Table includes data available through June 29, 1983.²Reported figure.

Table 18.—Leading world producers of crude steel¹
(Thousand metric tons)

Country	1978	1979	1980	1981 ^P	1982 ^e
U.S.S.R	^r 151,453	149,099	147,941	148,444	147,780
Japan	102,105	111,748	111,395	101,675	² 99,548
United States	124,312	123,687	101,455	109,613	² 66,137
China	31,780	34,430	37,120	35,600	² 37,158
Germany, Federal Republic of	41,253	46,040	43,838	41,610	² 35,906
Italy	24,283	24,250	26,501	24,777	² 23,981
France	22,841	23,360	23,175	21,258	² 18,416
Czechoslovakia	15,294	14,817	15,225	15,270	² 14,992
Poland	19,251	19,218	19,485	15,719	² 14,500
United Kingdom	20,311	21,438	11,278	15,576	13,698
Spain	11,269	12,304	12,586	12,911	13,150
Romania	11,779	12,909	13,175	13,025	13,000
Brazil	12,107	13,893	15,339	13,230	² 12,999
Canada	14,899	16,078	15,887	14,811	² 12,610
Korea, Republic of	4,969	7,610	8,558	10,754	² 11,753
India	9,987	9,996	9,420	² 10,780	² 11,714
Belgium	12,601	13,442	12,320	12,286	² 9,888
South Africa, Republic of	7,902	8,868	9,068	9,004	² 8,271
German Democratic Republic	6,976	7,023	7,308	7,467	7,100
Mexico	6,776	7,117	7,156	7,605	² 7,060
Australia	7,589	8,125	7,593	7,635	² 6,370
Total	^r 659,737	^r 685,452	655,823	649,050	586,031
Other	^r 55,074	^r 59,420	58,184	56,158	54,981
Grand total	^r 714,811	^r 744,872	714,007	705,208	641,012

^eEstimated. ^PPreliminary. ^rRevised.

¹Steel ingots and castings. Table includes data available through June 1, 1983.

²Reported figure.

Table 19.—Leading world producers of mine lead¹
(Pb content of ore, thousand metric tons)

Country	1978	1979	1980	1981 ^P	1982 ^e
United States ²	530	526	550	446	³ 512
Australia	400	422	397	389	³ 465
U.S.S.R. ^e	410	^r 415	420	425	430
Canada	320	311	297	332	³ 341
Peru ²	183	174	177	193	205
China ^e	145	155	155	155	155
Mexico ²	171	174	146	157	³ 146
Yugoslavia	129	130	121	119	115
Morocco	100	116	115	116	110
Bulgaria ^e	117	116	106	100	100
Korea, North ^e	105	100	100	100	100
Total	2,610	^r 2,639	2,584	2,532	2,679
Other	^r 762	767	827	824	785
Grand total	^r 3,372	^r 3,406	3,411	3,356	3,464

^eEstimated. ^PPreliminary. ^rRevised.

¹Table includes data available through May 25, 1983.

²Recoverable.

³Reported figure.

Table 20.—Leading world producers of manganese ore¹

(Gross weight, thousand metric tons)

Country	1978	1979	1980	1981 ^P	1982 ^e
U.S.S.R.	9,057	10,244	9,750	9,150	9,200
South Africa, Republic of	4,317	5,182	5,695	5,089	² 5,216
China ^e	¹ 1,270	1,500	1,600	1,600	1,600
Gabon	1,710	2,300	2,147	1,488	² 1,512
India	1,619	1,755	1,645	1,526	² 1,448
Brazil	1,917	2,259	2,282	2,042	1,300
Australia	¹ 1,257	¹ 1,724	2,019	1,449	² 1,132
Mexico	523	493	447	578	² 509
Ghana	316	272	252	225	132
Morocco	126	136	131	110	94
Japan	104	88	80	87	82
Hungary	114	83	83	71	73
Total	¹ 22,330	¹ 26,036	26,131	23,365	22,298
Other	³ 312	¹ 238	233	178	138
Grand total	¹ 22,642	¹ 26,274	26,364	23,543	22,436

^eEstimated. ^PPreliminary. ¹Revised.¹Table includes data available through July 6, 1983.²Reported figure.Table 21.—Leading world producers of mine nickel¹

(Thousand metric tons)

Country	1978	1979	1980	1981 ^P	1982 ^e
U.S.S.R. ^e	149	151	154	158	170
Canada	128	126	185	160	² 89
Australia	82	70	74	74	² 82
New Caledonia	65	80	87	78	60
Cuba ^e	³ 38	¹ 31	37	39	36
Indonesia	31	31	31	31	25
South Africa, Republic of	29	30	26	26	² 22
Philippines	30	33	47	31	20
Total	¹ 547	¹ 552	641	597	508
Other	¹ 111	¹ 129	118	115	100
Grand total	¹ 658	¹ 681	759	712	608

^eEstimated. ^PPreliminary. ¹Revised.¹Table includes data available through Apr. 25, 1983.²Reported figure.Table 22.—Leading world producers of mine tin¹

(Sn content of ore, metric tons)

Country	1978	1979	1980	1981 ^P	1982 ^e
Malaysia	62,650	62,995	61,404	59,938	² 52,330
U.S.S.R. ^e	34,000	35,000	36,000	36,000	37,000
Indonesia	¹ 27,437	¹ 29,434	32,529	35,238	36,500
Bolivia	30,881	27,648	27,291	29,830	² 26,773
Thailand	30,186	33,962	33,685	31,474	26,000
China ^e	14,000	14,000	14,600	15,000	15,000
Australia	11,864	¹ 12,571	11,588	12,267	² 12,700
Brazil	6,341	7,005	6,930	8,297	9,500
United Kingdom	3,132	¹ 2,373	2,982	3,869	4,000
South Africa, Republic of	2,886	2,697	2,913	2,811	² 3,035
Nigeria	2,935	2,750	2,569	2,300	2,700
Zaire	4,390	3,879	3,159	2,468	2,240
Total	¹ 230,702	¹ 234,314	235,650	239,492	227,773
Other	10,406	10,993	11,614	13,083	13,336
Grand total	¹ 241,108	¹ 245,307	247,264	252,575	241,114

^eEstimated. ^PPreliminary. ¹Revised.¹Table includes data available through May 19, 1983.²Reported figure.

Table 23.—Leading world producers of mine zinc¹

(Zn content of ore, thousand metric tons)

Country	1978	1979	1980	1981 ^P	1982 ^e
Canada	1,067	1,100	895	911	² 1,033
U.S.S.R. ^e	770	770	785	790	795
Australia	473	² 529	495	518	² 665
Peru	403	432	488	499	² 541
United States	303	267	317	312	² 300
Japan	275	243	238	242	² 250
Mexico	245	246	238	212	² 232
Sweden	163	170	167	181	² 185
Ireland	176	212	229	117	167
Spain	147	143	183	182	167
China ^e	160	160	160	160	160
Poland ^e	194	183	188	147	145
Korea, North ^e	145	145	140	140	140
Brazil	59	98	105	97	101
South Africa, Republic of	65	54	79	87	² 92
Bulgaria	88	85	87	87	87
Germany, Federal Republic of	97	97	100	92	² 87
Yugoslavia	104	102	95	89	87
Greenland	82	87	52	78	77
Total	¹ 5,016	¹ 5,123	5,041	4,941	5,311
Other	¹ 838	¹ 749	716	716	736
Grand total	¹ 5,854	¹ 5,872	5,757	5,657	6,047

^eEstimated. ^PPreliminary. ¹Revised.¹Table includes data available through June 29, 1983.²Reported figure.Table 24.—Leading world producers of hydraulic cement¹

(Thousand metric tons)

Country	1978	1979	1980	1981 ^P	1982 ^e
U.S.S.R.	126,956	123,019	125,049	127,169	² 124,000
China	65,239	73,900	79,859	84,005	94,000
Japan	84,882	87,804	87,957	84,832	84,005
United States	77,546	77,931	69,589	66,163	² 59,014
Italy	38,232	39,289	41,772	41,553	² 42,000
Germany, Federal Republic of	35,303	36,664	35,546	² 33,029	² 32,024
Spain (including Canary Islands)	30,233	¹ 27,912	28,009	28,751	29,000
France	28,025	28,825	29,104	28,230	26,127
Brazil	22,280	24,874	27,193	28,500	25,400
India	19,560	18,264	17,700	20,761	22,498
Mexico	14,056	15,178	16,260	18,066	18,000
Korea, Republic of	15,133	16,413	15,631	15,617	17,887
Poland	21,700	19,176	18,443	14,225	16,040
Turkey	15,344	13,784	12,875	15,043	15,100
Romania	14,688	15,598	15,611	14,750	14,970
Greece	11,280	12,098	13,150	13,500	13,500
Taiwan	11,460	11,898	14,062	14,343	² 13,432
United Kingdom	15,916	16,140	14,808	12,828	12,973
German Democratic Republic	12,521	12,273	12,444	12,500	12,500
Total	¹ 660,354	¹ 671,040	675,062	673,865	672,470
Other	¹ 192,592	¹ 201,045	209,262	218,125	219,638
Grand total	¹ 852,946	¹ 872,085	884,324	891,990	892,108

^eEstimated. ^PPreliminary. ¹Revised.¹Table includes data available through June 8, 1983.²Reported figure.

Table 25.—Leading world producers of diamond¹

(Thousand carats)

Country	1978	1979	1980	1981 ^P	1982 ^e
U.S.S.R. ^e	10,550	10,700	10,850	10,600	10,600
South Africa, Republic of	7,727	8,384	8,520	9,526	² 9,154
Zaire	11,243	8,734	10,235	9,000	9,000
Botswana	2,799	4,394	5,101	4,961	² 7,769
China ^e	NA	NA	1,800	1,900	2,000
Angola	650	841	1,480	1,400	1,400
Brazil	620	620	667	1,089	1,150
Namibia	1,898	1,653	1,560	1,248	² 1,014
Ghana	1,423	1,253	1,258	836	² 680
Total	[†] 36,910	[†] 36,579	41,471	40,560	42,767
Other	[†] 2,713	[†] 2,851	2,406	1,997	2,399
Grand total	39,623	[†] 39,430	43,877	42,557	45,166

^eEstimated. ^PPreliminary. [†]Revised. NA Not available.¹Gem and industrial grades undifferentiated. Table includes data available through June 3, 1983.²Reported figure.Table 26.—Leading world producers of nitrogen in ammonia¹

(N content, thousand metric tons)

Country	1978	1979	1980	1981 ^P	1982 ^e
U.S.S.R.	11,300	[†] 12,200	12,600	12,900	13,100
United States	[†] 12,854	13,989	14,736	14,169	² 11,559
China ^e	[†] 7,637	[†] 8,821	9,990	9,860	10,257
India ³	2,220	2,256	2,221	3,193	3,650
Canada	1,926	1,981	1,996	2,181	2,509
Romania	2,257	[†] 2,385	2,248	2,200	2,150
France	[†] 2,017	2,150	2,085	2,000	2,000
Germany, Federal Republic of	1,955	2,161	2,044	1,961	2,000
Mexico	1,304	1,359	1,548	1,725	1,980
Netherlands	2,148	[†] 1,916	1,874	1,814	1,900
United Kingdom	1,600	1,666	1,633	1,780	1,780
Japan	[†] 2,368	[†] 2,328	2,110	1,833	1,670
Poland	1,611	1,525	1,543	1,389	1,300
German Democratic Republic	1,137	1,078	1,182	1,205	1,200
Italy	[†] 1,514	[†] 1,454	1,405	1,207	1,200
Total	[†] 53,848	[†] 57,219	59,215	59,417	58,255
Other	[†] 13,375	[†] 14,025	14,734	14,585	14,294
Grand total	[†] 67,223	[†] 71,244	73,949	74,002	72,549

^eEstimated. ^PPreliminary. [†]Revised.¹Table includes data available through May 25, 1983.²Reported figure.³Data given are for years beginning Apr. 1 of that stated.

Table 27.—Leading world producers of phosphate rock¹

(Thousand metric tons)

Country	1978	1979	1980	1981 ^P	1982 ^e
United States	50,037	51,611	54,415	53,624	² 37,414
U.S.S.R. ^e	¹ 23,900	¹ 24,400	¹ 25,300	¹ 25,600	26,100
Morocco ³	19,713	20,032	18,824	18,562	² 17,754
China ^e	¹ 4,695	¹ 8,517	¹ 10,726	¹ 11,500	12,500
Jordan	2,303	2,825	3,911	4,244	² 4,431
Tunisia	3,712	4,154	4,582	4,596	² 4,196
South Africa, Republic of	2,699	3,221	3,185	2,618	² 3,173
Togo	2,827	2,920	2,933	2,215	² 2,128
Total	¹ 109,886	¹ 117,680	123,876	122,959	107,696
Other	¹ 15,136	¹ 14,330	15,728	14,565	14,937
Grand total	¹ 125,022	¹ 132,010	139,604	137,524	122,633

^eEstimated. ^PPreliminary. ¹Revised.¹Includes only phosphate rock; Thomas slag and guano are excluded. Table includes data available through Apr. 13, 1983.²Reported figure.³Includes output from Western Sahara.Table 28.—Leading world producers of marketable potash¹(K₂O equivalent, thousand metric tons)

Country	1978	1979	1980	1981 ^P	1982 ^e
U.S.S.R.	8,193	6,635	8,064	8,449	9,000
Canada	6,340	7,074	7,532	6,549	² 5,196
German Democratic Republic	3,323	3,395	3,422	3,490	3,500
Germany, Federal Republic of	2,470	2,616	2,737	2,591	2,600
France	1,795	¹ 1,921	1,894	1,881	1,823
United States	2,253	2,225	2,239	2,156	² 1,784
Total	24,374	¹ 23,866	25,888	25,066	23,903
Other	¹ 1,748	¹ 1,902	1,967	1,980	2,827
Grand total	¹ 26,122	¹ 25,768	27,855	27,046	26,730

^eEstimated. ^PPreliminary. ¹Revised.¹Table includes data available through Apr. 20, 1983.²Reported figure.

Table 29.—Leading world producers of salt¹

(Thousand metric tons)

Country	1978	1979	1980	1981 ^P	1982 ^e
United States (including Puerto Rico) -----	^r 38,915	41,567	36,630	35,303	² 34,333
China -----	19,530	14,770	17,280	18,320	15,970
U.S.S.R. ^e -----	14,500	14,300	14,600	15,200	15,400
Germany, Federal Republic of -----	12,658	15,089	11,395	12,541	11,520
India -----	6,700	^r 7,035	8,010	8,923	9,980
Canada -----	6,452	6,881	7,029	7,240	² 8,074
Mexico -----	5,635	6,169	6,575	7,953	8,000
United Kingdom -----	7,310	7,819	7,155	6,720	6,900
France -----	6,283	8,057	^e 7,103	6,636	6,650
Australia -----	5,766	5,172	5,315	5,300	5,625
Romania -----	4,739	4,720	5,055	5,000	4,990
Italy -----	4,931	^e 5,669	5,267	4,564	4,540
Netherlands -----	2,939	3,951	3,464	3,578	4,400
Poland -----	4,393	4,429	4,534	4,271	4,260
Spain -----	3,369	^r 3,448	3,508	3,710	3,630
Brazil -----	3,299	^r 3,554	3,837	3,605	3,540
German Democratic Republic -----	2,741	^r 3,052	3,128	3,113	3,050
Turkey -----	^r 939	^r 1,063	1,169	1,320	1,360
Japan -----	1,073	^r 1,079	1,112	1,028	1,090
Argentina -----	700	620	1,004	938	910
Egypt -----	755	616	636	650	² 329
Bahamas -----	1,633	440	684	970	² 816
Pakistan -----	640	704	695	733	770
Colombia -----	837	752	338	715	720
Total -----	^r 156,737	^r 160,956	156,023	158,331	157,357
Other -----	^r 11,511	^r 12,473	12,374	12,021	11,339
Grand total -----	^r 168,248	173,429	168,397	170,352	168,696

^eEstimated. ^PPreliminary. ^rRevised.¹Table includes data available through June 15, 1983.²Reported figure.

Table 30.—Leading world producers of elemental sulfur¹
(Thousand metric tons)

Country	1979				1980				1981 ^P				1982 ^e				
	Native	From py-rites	Byprod-uct	Total	Native	From py-rites	Byprod-uct	Total	Native	From py-rites	Byprod-uct	Total	Native	From py-rites	Byprod-uct	Total	
U.S.S.R. ^e	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
United States	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Canada	36,357	400	5,844	12,101	36,390	322	5,154	11,866	36,348	307	5,480	12,145	34,210	285	4,977	49,787	
Poland	—	12	7,015	7,027	—	12	7,248	7,260	—	10	6,789	6,799	—	—	20	6,244	
Japan	24,830	—	365	5,195	25,185	—	350	5,585	24,773	—	—	5,123	24,920	—	—	350	5,270
China	—	300	2,591	2,891	—	311	2,473	2,784	—	293	2,280	2,573	—	—	—	2,200	2,476
France	—	200	3,900	2,000	200	1,700	300	2,200	200	1,800	300	2,300	200	1,800	—	300	2,300
Mexico	—	—	2,288	2,288	—	—	2,216	2,216	—	—	2,042	2,042	—	—	—	2,010	2,101
Germany, Federal Republic of	31,773	—	352	2,125	31,700	—	517	2,217	31,652	—	—	526	2,178	—	—	525	1,916
Spain	—	203	1,447	1,650	—	222	1,577	1,799	—	213	1,529	1,742	—	200	—	1,585	1,785
Saudi Arabia	—	1,091	133	1,224	—	1,096	140	1,236	—	1,118	150	1,268	—	1,100	—	138	1,238
South Africa, Republic of	1	—	125	126	1	—	460	461	—	—	600	600	—	—	—	700	700
Romania ^e	—	243	125	368	—	493	125	618	—	502	127	629	—	—	—	100	600
Italy	19	400	130	530	—	400	140	540	—	400	150	550	—	—	—	150	550
Yugoslavia	—	302	250	571	23	331	250	604	20	261	263	544	18	250	220	220	488
Finland	—	190	205	395	—	261	205	466	—	286	174	460	—	—	—	173	463
Sweden	—	151	293	444	—	144	277	421	—	184	264	448	—	—	—	264	448
Bulgaria ^e	—	282	166	448	—	249	170	419	—	249	170	419	—	—	—	170	419
German Democratic Republic	—	315	75	390	—	300	70	370	—	—	300	370	—	—	—	70	370
Belgium ^e	—	10	350	360	—	10	350	360	—	—	350	360	—	—	—	350	360
Norway	—	119	46	165	—	193	46	239	—	—	46	236	—	—	—	46	236
Korea, North ^e	—	255	10	265	—	250	10	260	—	—	225	10	235	—	—	10	210
Australia	—	29	151	180	—	29	151	180	—	—	151	181	—	—	—	157	187
Iraq	3550	—	40	580	3700	—	40	740	3145	—	40	185	—	—	—	40	140
United Kingdom	—	—	113	113	—	—	134	134	—	—	129	129	—	—	—	139	139
Chile	77	—	27	104	88	—	27	115	115	—	28	143	—	—	—	26	135

Portugal	151	1	152	155	2	157	135	2	137	130	2	132
India	r ²⁷	r ¹¹⁹	r ¹⁴⁶	34	e ¹²⁰	154	--	e ⁹⁶	119	--	25	105
Total	¹ 16,507	² 9,480	¹ 51,358	17,087	10,062	26,062	53,211	16,103	10,136	13,798	10,119	25,187
Other	¹ 147	² 323	¹ 1,827	148	326	1,324	1,798	136	303	134	312	1,110
Grand total	¹ 16,654	² 9,803	¹ 53,185	17,235	10,388	27,386	55,009	16,239	10,439	13,932	10,431	26,297

¹Estimated. ²Preliminary. ³Revised.

¹Includes all recorded production of sulfur, regardless of the form in which it is recovered. Thus, it includes elemental sulfur, whether mined by conventional methods or by the Frasch process, as well as (1) elemental sulfur and the S content of compounds such as H₂S, SO₂, and H₂SO₄, recovered as a principal product of pyrite mining and as a byproduct of the recovery of crude oil and natural gas and as a byproduct of petroleum refining, coal treatment, and metal smelting and/or refining; and (2) sulfur recovered from tar sands, spent oxides, and other miscellaneous sources. Table includes data available through May 25, 1983.

²Includes Frasch process sulfur as follows, in thousand metric tons: Poland: 1979—4,310, 1980—4,667, 1981—4,250, and 1982—4,428; the U.S.S.R. (estimated): 1979—800, 1980—800, 1981—800, and 1982—800; and total of individually listed countries and grand total: 1979—13,790, 1980—14,257, 1981—13,240, and 1982—10,929. The balance is mined elemental sulfur.

³Reported figure.

Table 31.—Leading world producers of coal (all grades)¹
(Million metric tons)

Country	1979			1980			1981 ^P			1982 ^P		
	Lignite	Bituminous and anthracite	Total	Lignite	Bituminous and anthracite	Total	Lignite	Bituminous and anthracite	Total	Lignite	Bituminous and anthracite	Total
United States	38	671	709	42	712	754	46	701	747	50	706	756
U.S.S.R.	165	554	719	163	553	716	160	544	704	2162	2566	2718
China	(²)	635	635	(³)	620	620	(³)	620	620	(³)	651	651
German Democratic Republic	256	—	256	258	—	258	267	—	267	271	—	271
Poland	38	201	239	37	193	230	36	163	199	227	2189	2271
Germany, Federal Republic of	131	86	217	130	87	217	131	88	219	227	289	2216
Australia	3	33	36	33	33	66	33	112	145	27	2119	2157
India	—	104	107	5	114	119	6	125	131	27	2128	2135
South Africa, Republic of	—	104	104	—	115	115	—	130	130	2100	140	140
Czechoslovakia	97	28	125	96	28	124	96	27	123	27	27	127
United Kingdom	—	121	121	—	130	130	—	127	127	—	125	125
Yugoslavia	42	(⁴)	42	47	(⁴)	47	52	(⁴)	52	254	(⁴)	54
Korea, North ^e	(³)	44	44	(³)	45	45	(³)	45	45	(³)	45	45
Canada	5	28	33	6	31	37	7	33	40	7	285	285
Romania	25	8	33	27	8	35	27	28	35	28	8	36
Bulgaria	28	(⁴)	28	31	(⁴)	31	30	30	30	282	(⁴)	282
Greece	24	—	24	23	—	23	27	—	27	27	—	27
Hungary	23	3	26	23	3	26	23	3	26	3	3	26
France	2	19	21	3	18	21	3	19	22	3	17	20
Total	910	2,689	3,599	924	2,742	3,666	944	2,745	3,689	967	2,888	3,805
Other	43	100	143	38	101	139	48	103	151	56	105	161
Grand total	953	2,789	3,742	962	2,843	3,805	992	2,848	3,840	1,023	2,943	3,966

^eEstimated. ^PPreliminary. ^RRevised.

¹Table includes data available through Sept. 30, 1983.

²Reported figure.

³Output small; included under "Bituminous and anthracite."

⁴Less than 1/2 unit.

Table 32.—Leading world producers of marketed natural gas¹

(Billion cubic feet)

Country	1978	1979	1980	1981 ^P	1982 ^e
United States.....	19,975	^R 20,470	20,380	20,180	² 18,530
U.S.S.R.	13,144	14,359	15,369	16,430	² 17,693
Netherlands	3,133	^R 3,407	3,267	3,240	3,000
Canada	3,128	3,335	3,068	2,399	² 2,447
Mexico	745	915	1,129	1,214	² 1,279
United Kingdom	1,382	1,410	1,317	1,321	² 1,263
Romania	1,212	1,161	1,199	^e 1,200	1,100
Norway	526	759	922	920	² 897
Indonesia	384	399	696	720	750
Germany, Federal Republic of	707	725	665	666	² 594
Venezuela	520	576	589	584	² 527
Italy	485	476	443	496	² 515
Algeria	490	^R 516	411	466	470
China	485	512	504	450	² 414
Australia	259	296	338	401	² 409
Saudi Arabia	335	^e 400	^e 450	^e 500	400
United Arab Emirates (Abu Dhabi and Dubai)	^R 124	^R 64	139	358	370
Brunei	^R 311	^R 307	345	343	338
Argentina	260	284	270	294	² 334
Pakistan	196	240	287	316	300
German Democratic Republic	302	^e 302	^e 302	^e 302	290
France	278	274	266	250	² 258
Hungary	259	230	217	212	² 240
Poland	282	259	224	205	195
Kuwait	221	334	260	196	158
Iran	687	500	^e 230	100	150
Total	^R 49,830	^R 52,510	53,287	53,763	52,921
Other	^R 1,527	^R 1,850	1,553	1,728	1,862
Grand total	^R 51,357	^R 54,360	54,840	55,491	54,783

^eEstimated. ^PPreliminary. ^RRevised.¹Comprises all gas collected and utilized as a fuel or as a chemical industry raw material as well as that used for gas lift in fields, including gas used in oilfields and/or gasfields as a fuel by producers, even though it is not actually sold. Excludes gas produced and subsequently vented, flared, or reinjected to reservoirs. Table includes data available through Sept. 30, 1983.²Reported figure.Table 33.—Leading world producers of natural gas liquids¹

(Million 42-gallon barrels)

Country ²	1978	1979	1980	1981 ^P	1982 ^e
United States.....	572	579	575	588	³ 566
U.S.S.R. ^e	119	^R 125	^R 127	134	145
Canada	104	123	115	120	³ 117
Saudi Arabia	91	100	105	140	100
Mexico	44	57	71	88	95
Algeria	32	34	34	^e 68	70
United Arab Emirates (Abu Dhabi, Dubai, Sharjah)	5	15	36	^e 40	55
Venezuela	22	25	22	20	³ 21
Kuwait	19	^R 46	35	22	16
Total	1,008	^R 1,104	1,120	1,220	1,185
Other	^R 82	^R 71	76	87	84
Grand total	^R 1,090	^R 1,175	1,196	1,307	1,269

^eEstimated. ^PPreliminary. ^RRevised.¹Every effort has been made to include only those natural gas liquids produced by natural gas processing plants and to exclude natural gas liquids obtained from field treatment facilities including wellhead separators, because the latter are normally blended with crude oil and thus are included in crude oil output statistics. In some cases, however, sources do not clearly specify whether data presented represent only output of natural gas processing plants or if they include field output. Thus, some of the figures may include field condensate. Table includes data available through Sept. 30, 1983.²In addition to the countries listed, China, Czechoslovakia, the German Democratic Republic, the Federal Republic of Germany, and Italy may also produce natural gas liquids in substantial quantities, but available information is inadequate to make reliable estimates of output levels.³Reported figure.

Table 34.—Leading world producers of crude oil¹
(Million 42-gallon barrels)

Country	1978	1979	1980	1981 ^P	1982 ^e
U.S.S.R. -----	4,201	4,304	4,434	4,475	² 4,506
United States -----	3,178	3,114	3,147	3,128	³ 3,165
Saudi Arabia ³ -----	3,030	3,479	3,614	3,580	² 3,309
Mexico -----	441	533	708	844	² 1,002
Iran -----	1,913	1,121	550	692	750
China -----	760	775	773	739	² 745
Venezuela -----	790	860	793	768	² 692
United Kingdom -----	389	562	586	655	² 611
Indonesia -----	¹ 599	580	577	585	² 488
Nigeria -----	¹ 692	¹ 840	753	525	472
Canada -----	478	545	523	468	462
United Arab Emirates -----	668	668	624	548	² 455
Libya -----	724	763	670	408	438
Iraq -----	953	1,252	969	^e 326	310
Kuwait ³ -----	778	913	609	411	² 301
Algeria -----	424	421	362	295	250
Egypt -----	176	180	227	234	² 246
Norway -----	127	140	182	175	² 183
Argentina -----	165	173	180	181	² 179
India -----	93	94	76	117	² 150
Australia -----	158	160	140	135	² 136
Oman -----	115	108	104	120	² 123
Qatar -----	177	185	173	146	² 120
Malaysia -----	79	103	101	94	98
Brazil -----	61	62	68	78	² 95
Romania -----	103	92	86	86	88
Ecuador -----	78	78	75	77	² 77
Peru -----	55	70	71	70	² 72
Trinidad and Tobago -----	84	78	78	69	² 65
Brunei -----	¹ 75	¹ 85	86	64	62
Syria -----	62	69	61	59	² 56
Gabon -----	76	71	64	54	² 56
Total -----	¹ 21,702	22,478	21,464	20,206	18,762
Other -----	¹ 388	² 429	436	458	462
Grand total -----	¹ 22,090	¹ 22,907	21,900	20,664	19,224

^eEstimated. ^PPreliminary. ¹Revised.

¹Table includes data available through Sept. 30, 1983.

²Reported figure.

³Includes the country's share of production from the Kuwait-Saudi Arabia Partitioned Zone.

Table 35.—Leading world producers of refined oil¹

(Million 42-gallon barrels)

Country	1978	1979	1980	1981 ^P	1982 ^e
United States (including Puerto Rico and Virgin Islands)	5,957	5,860	5,619	5,219	4,959
U.S.S.R.	3,412	3,513	3,620	3,708	3,783
Japan	1,688	1,696	1,611	1,464	² 1,337
Germany, Federal Republic of	788	953	875	795	² 733
France	928	978	881	720	² 617
Italy	865	885	721	654	609
Canada	664	712	694	696	² 589
United Kingdom	726	725	637	577	572
China ^e	600	470	470	450	450
Mexico	327	358	425	471	² 444
Brazil	400	418	405	^e 403	360
Spain (including Canary Islands)	351	355	367	358	333
Saudi Arabia ³	294	315	336	345	² 323
Venezuela	362	369	341	319	² 318
Singapore	250	264	262	312	² 305
Netherlands	427	470	400	363	² 263
India	196	203	191	225	235
Australia	226	232	227	230	² 224
Belgium	247	247	239	219	² 219
Netherlands Antilles	215	^r 209	214	218	207
Iran	249	^e 224	^e 218	100	200
Argentina	173	182	190	190	² 183
Korea, Republic of	174	189	183	183	² 178
Romania	175	182	182	^e 182	176
Algeria	57	58	83	^e 120	150
German Democratic Republic	139	142	144	143	144
Taiwan	109	107	113	122	² 121
South Africa, Republic of	106	105	108	116	116
Egypt	83	98	104	106	² 112
Greece	86	113	105	109	² 109
Yugoslavia	100	109	106	95	104
Czechoslovakia	119	125	123	120	103
Kuwait ³	^r 131	^r 151	123	102	² 102
Turkey	89	81	91	95	102
Poland	113	110	106	101	² 101
Indonesia	103	120	130	118	² 99
Sweden	^r 114	^r 123	133	100	95
Total	^r 21,043	^r 21,451	20,777	19,843	19,075
Other	^r 1,793	^r 1,889	1,852	1,790	1,777
Grand total	^r 22,836	^r 23,340	22,629	21,633	20,852

^eEstimated. ^PPreliminary. ^rRevised.¹Table includes data available through Sept. 30, 1983.²Reported figure.³Includes the country's share of production from the Kuwait-Saudi Arabia Partitioned Zone.

