



# 2009 Minerals Yearbook

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## ETHIOPIA

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# THE MINERAL INDUSTRY OF ETHIOPIA

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In 2009, Ethiopia played a significant role in the world's production of tantalum; the country's share of global tantalum mine production amounted to 6% (Papp, 2010). Other domestically significant mining and mineral processing operations included cement, crushed stone, dimension stone, and gold. Ethiopia was not a globally significant consumer of minerals.

## Minerals in the National Economy

In fiscal year 2007-08 (the latest year for which data were available), the manufacturing sector accounted for 4% of the gross domestic product, and mining and quarrying, 0.4%. Between 300,000 and 500,000 Ethiopians were estimated to be employed in artisanal mining activities (Organisation for Economic Cooperation and Development, 2009).

## Production

In fiscal year 2008-09, kaolin production increased by 177%; tantalum, by an estimated 84%; niobium (columbium), by an estimated 81%; feldspar, by an estimated 80%; quartz, by an estimated 76%; gold, by 41%; silver, by an estimated 36%; silica sand, by an estimated 28%; and cement, by an estimated 25%. Lignite mining started in fiscal year 2008-09. The output of most gemstones was estimated to have decreased by between 14% and 20% (Zenebe, 2009; Passive Component Industry Magazine, 2010).

## Structure of the Mineral Industry

Mugher Cement Enterprise and Messebo Building Materials Production S.C. were state owned; other cement plants were privately owned. Gold, marble, platinum, and silica sand mining companies were privately owned. The state-owned Ethiopian Mineral Development S.C. produced dolomite, feldspar, kaolin, niobium, quartz, and tantalum. Artisanal miners produced clay, crushed stone, diatomite, gemstones, gold, gypsum, salt, sand, and silica sand (table 2).

## Commodity Review

### Metals

**Gold and Platinum-Group Metals.**—Midroc Gold Mine plc (a subsidiary of Midroc Ethiopia plc) produced about 3,400 kilograms per year (kg/yr) of gold at the Lega Dembi Mine open pit mine in southern Ethiopia. Mining was expected to shut down in 2014 at the open pit because of the depletion of near-surface resources. In January 2010, Midroc planned to start underground mining at Lega Dembi that would extend the mine's life until 2021. Midroc planned to open the Sakaro underground mine, which was adjacent to Lega Dembi, in 2011.

Production at Sakaro was likely to be about 2,400 kg/yr from 2012 to 2014 and 1,800 kg/yr from 2015 to 2021. Midroc was also considering the development of the Werseti Mine, which could open in 2015 and produce nearly 3,500 kg/yr from 2016 to 2021. If all of Midroc's planned projects were to proceed, the company would produce about 6,000 kg/yr of gold from 2014 to 2021 (Midroc Gold Mine plc, 2009).

In February 2009, Nyota Minerals Ltd. (formerly Dwyka Resources Ltd.) of Australia acquired the Tulu Kapi and the Yubdo gold projects and the Yubdo platinum mine from Minerva Resources plc of the United Kingdom. In 2010, Nyota planned to spend \$3.6 million on exploration in Ethiopia, including \$2.6 million at Tulu Kapi. The company planned to complete resource estimates for Tulu Kapi and Yubdo in 2010. Stratex International plc of the United Kingdom discovered epithermal gold mineralization at the Megenta prospect in October 2009 (African Mining, 2010; Winter, 2010).

**Niobium (Columbium) and Tantalum.**—National exports of niobium and tantalum increased sharply in 2009; exports for the first half of the year amounted to 96,600 kilograms of columbite-tantalite. The increase was probably attributable to an expansion of the Kenticha Mine's capacity that was scheduled to be completed at the end of 2008. Kenticha was an open pit mine; the niobium and tantalum deposit was found in association with granitic pegmatites (Passive Component Industry Magazine, 2010).

### Industrial Minerals

**Cement.**—Ethiopia had seven operating cement plants with a total capacity of about 2.73 million metric tons per year (Mt/yr). Cement production increased to about 2.3 million metric tons (Mt) from 1.83 Mt in fiscal year 2008-09 because of the opening of new cement plants. Production increases were limited by power shortages; Mugher was shut down and Messebo's production was reduced by 60% from May to July 2009. Domestic cement demand was estimated to be between 3.5 Mt/yr and 5 Mt/yr. In early 2008, housing and infrastructure accounted for about 75% of cement consumption (International Cement Review, 2008; Alemayehu, 2009).

Mugher was engaged in an expansion of its plant's capacity to 2.3 Mt/yr from 900,000 metric tons per year (t/yr); the project was expected to be completed by June 2011. Messebo planned to increase the capacity of its plant at Mekele to 2.3 Mt/yr from 900,000 t/yr by September 2011. National Cement S.C. operated the 300,000-t/yr Dire Dawa plant; the company planned to open a new plant in Dire Dawa with a capacity of 900,000 t/yr by July 2010. In August 2008, Derba Midroc Cement plc started production at a new cement plant near Dejen with a capacity of about 90,000 t/yr. Derba Midroc planned to build another plant with a capacity of 2.3 Mt/yr at Derba by September 2011 (Zenebe, 2008; Access Capital S.C., 2009).

Habesha Cement Share Co. planned to complete a new plant at Holeta with a capacity of about 1.2 Mt/yr in late 2010; the cost was estimated to be about \$125 million. By November 2011, Ethio Cement plc planned to complete its new plant at Chanco with a capacity of about 860,000 t/yr. North Holdings Investment of the United States planned to start construction on a new plant with a capacity of 9 Mt/yr. The estimated capital cost of the project was about \$1.6 billion. About 60% of the plant's output was expected to be exported (Fekade, 2008; Access Capital S.C., 2009; Tsige, 2009).

**Potash.**—Allana Resources Inc. of Canada planned to start a drilling program at the Dallol potash deposits in the Danakil Depression in northeast Ethiopia. The company was also seeking investors to start a feasibility study in the second half of 2010. Inferred resources at Dallol were 105 Mt at a grade of 20.8% potassium chloride (KCl) (Allana Resources Inc., 2009, p. 3).

**Salt.**—About 20% of Ethiopians consumed iodized salt in early 2009; the Government planned to achieve universal access to iodized salt in 2010. National salt demand was estimated to be between 300,000 and 500,000 t/yr. The Afar and the Tigray Regions were the leading sources of Ethiopia's salt production (Girma, 2009).

**Silica.**—In May 2009, Ethiopia Hansom International Glass plc [a joint venture of CGC Overseas Construction Ltd. (CGCOC) of China and China-Africa Development Fund] started production at its new glass plant, which had a capacity of 42,000 t/yr. Dolomite, feldspar, limestone, and silica sand for use as raw materials were purchased domestically; soda ash was imported from China. In 2008, CGCOC signed an agreement with the Ministry of Mines and Energy to mine silica sand near Lemi in Amhara Region (Ayele, 2009).

### **Mineral Fuels**

**Coal.**—Lignite production started at Dilby in Oromia State in late 2008. By the end of October 2009, the joint-venture company Ethio-Pak Coal Mining plc produced about 20,000 metric tons (t) of coal. Derba-East Coal Mining plc also explored for coal in the Dilby-Moye basin. Derba Midroc, Messebo, Mugher, and National Cement planned to substitute coal for imported petroleum products (Zenebe, 2009).

**Petroleum.**—In 2009, Africa Oil Corp. of Canada purchased an 85% share of Blocks 2, 6, 7, and 8 in the onshore Ogaden Basin and a 50% share of the Adigala Block from Lundin Petroleum AB of Sweden. The company planned to start a drilling program by the second quarter of 2011. Petronas Carigali Overseas Sdn Bhd of Malaysia planned to start drilling at Blocks 11 and 15 in the Genale Basin (African Power Mining & Oil Review, 2009).

### **Outlook**

The production of coal, gold, silica sand, and silver is likely to increase in the near future. In the next few years,

demand for cement and steel products is expected to increase sharply because of Government plans to build new houses, hydroelectric dams, and roads. Cement production is likely to increase substantially to meet demand. By the end of 2011, cement production capacity could increase by about 8.1 Mt/yr. The production of gypsum and pumice is expected to increase because of increased demand from cement plants; output of other construction materials is also likely to increase. Expansions by cement producers will likely depend on the completion of new hydropower projects to alleviate power shortages. The outlook for niobium and tantalum will depend on world market conditions (Alemayehu, 2009).

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TABLE 1  
ETHIOPIA: PRODUCTION OF MINERAL COMMODITIES<sup>1,2</sup>

(Metric tons unless otherwise specified)

Commodity <sup>3</sup>		2005	2006	2007	2008	2009 <sup>e</sup>
Cement, hydraulic		1,568,624	1,731,000	1,625,560	1,834,000	2,300,000
Clays: <sup>4</sup>						
Brick <sup>e</sup>		120,000	120,000	130,000	130,000	140,000
Kaolin, China clay		3,726	1,641	1,400 <sup>e</sup>	1,275	3,534 <sup>5</sup>
Other clay <sup>e</sup>	cubic meters	33,000	33,000	50,000 <sup>5</sup>	180,000 <sup>5</sup>	180,000
Coal, lignite		--	--	--	--	15,000
Columbite-tantalite, ore and concentrate:						
Gross weight	kilograms	92,500	108,900	116,500	82,540	150,000
Nb content	do.	9,300	11,000	11,700	8,300	15,000
Ta content	do.	49,000	57,000	52,000	37,000	68,000
Diatomite <sup>e</sup>		420 <sup>5</sup>	-- <sup>5</sup>	--	--	--
Feldspar		445	478	459	424	760
Gemstones: <sup>6</sup>						
Amethyst	kilograms	1	43	20 <sup>e</sup>	11	9
Aquamarine <sup>e</sup>	do.	2	2 <sup>5</sup>	1	-- <sup>5</sup>	--
Emerald <sup>e</sup>	do.	1	-- <sup>5</sup>	1	2 <sup>5</sup>	2
Garnet <sup>e</sup>	do.	15	20 <sup>5</sup>	30	37 <sup>5</sup>	30
Opal	do.	496	516	522	482	390
Peridot	do.	--	4	8 <sup>e</sup>	11	9
Quartz <sup>e</sup>	do.	250	31 <sup>5</sup>	33	35	30 <sup>e</sup>
Sapphire	do.	1	--	-- <sup>e</sup>	--	--
Tourmaline <sup>e</sup>	do.	3	1 <sup>5</sup>	2	3 <sup>5</sup>	3
Gold, mine output, Au content <sup>6</sup>	do.	4,376	4,028	4,368	3,465	4,872 <sup>5</sup>
Gypsum and anhydrite, crude		34,729	38,809	29,886 <sup>r</sup>	32,989 <sup>r</sup>	36,000
Lime <sup>e</sup>		4,000 <sup>r</sup>	5,000 <sup>r</sup>	5,000 <sup>r</sup>	6,000 <sup>r</sup>	6,000
Platinum, mine output, Pt content	kilograms	--	4 <sup>e</sup>	5	10	10
Quartz		99	40	72	119	210
Salt, rock		87,354	218,000	240,000 <sup>e</sup>	260,000 <sup>e</sup>	281,000 <sup>5</sup>
Silver, mine output, Ag content	kilograms	886	902	707	1,026	1,400
Soda ash, natural		8,207	4,100 <sup>e</sup>	286	1,597	1,600
Steel: <sup>e</sup>						
Crude		60,000	60,000	110,000	110,000	110,000
Semimanufactured		110,000	110,000	200,000	200,000	200,000
Stone, sand and gravel: <sup>4</sup>						
Basalt:						
Construction stone		651,700	1,029,000	1,205,000	1,146,000	1,200,000
Other		52,900	57,700	61,000	61,000	66,000
Dolomite		2,148	12,812	5,653	81,889	89,000
Granite <sup>e</sup>	square meters	16,000	12,000	8,411 <sup>5</sup>	4,591 <sup>5</sup>	5,000
Ignimbrite	cubic meters	258,829	204,516	250,938	350,000	380,000
Limestone:						
Slab/tiles <sup>e</sup>	square meters	2,000	1,000	338 <sup>5</sup>	358 <sup>5</sup>	390
Other	thousand metric tons	1,635	1,750 <sup>e</sup>	1,900	1,900	2,000
Marble: <sup>e</sup>						
Slab/tiles	square meters	90,000	60,000	32,700 <sup>5</sup>	33,657 <sup>5</sup>	36,000
Terrazzo	do.	120,000	120,000	130,000	130,000	140,000
Block and other		22,000	22,000	23,000	23,000	25,000
Pumice		255,334	255,622	22,000	35,000	37,000
Rhyolite <sup>e</sup>		22,000	22,000	23,000	23,000	25,000
Sand	thousand metric tons	312	810	842	774	840
Sandstone <sup>e</sup>	do.	1,300	1,300	1,400	1,400	1,500
Scoria <sup>e</sup>		68,351 <sup>5</sup>	133,706 <sup>5</sup>	140,000	140,000	150,000
Silica sand <sup>e</sup>		5,100	5,700	6,302 <sup>5</sup>	6,546 <sup>5</sup>	8,400

<sup>e</sup>Estimated; estimated data are rounded to no more than three significant digits. <sup>r</sup>Revised. do. Ditto. -- Zero.

<sup>1</sup>Table includes data available through August 3, 2010.

<sup>2</sup>Data are for the Ethiopian Calendar Year ending July 7 of the year listed, except for steel.

<sup>3</sup>In addition to the commodities listed, sulfuric acid and talc reportedly were produced, but information is inadequate to estimate output.

<sup>4</sup>When reported as volume or pieces, conversions to metric tons are estimated.

<sup>5</sup>Reported figure.

<sup>6</sup>Does not include smuggled artisanal production.

TABLE 2  
ETHIOPIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2009

(Metric tons unless otherwise specified)

Commodity		Major operating companies	Location of main facilities	Annual capacity
Caustic soda		National Mining Corporation plc (Government owned)	Plant at Ziway	10,000.
Cement		Mugher Cement Enterprise (Government owned)	Plant at Mugher	900,000.
Do.		do.	Plant at Addis Ababa <sup>1</sup>	120,000.
Do.		Messebo Building Materials Production S.C. (Government owned)	Plant at Mekele	900,000.
Do.		National Cement S.C.	Plant at Dire Dawa	300,000.
Do.		Jema Cement plc	Plant In North Shoa Zone	240,000.
Do.		Abyssinia Cement plc	Plant at Chanco	150,000.
Do.		CGC Overseas Construction Ltd. (CGCOC)	Plant at Koka	150,000.
Do.		Derba Midroc Cement plc	Plant at Dejen	90,000.
Coal, lignite		Ethio-Pak Coal Mining plc	Mine at Dilby	20,000. <sup>e</sup>
Dolomite		Ethiopian Mineral Development S.C. (Government owned)	Mine at Soloka	8,000. <sup>2</sup>
Feldspar		do.	Kenticha Mine near Borena	8,000. <sup>2</sup>
Glass		Ethiopia Hansom International Glass plc [CGC Overseas Construction Ltd. (CGCOC) and China-Africa Development Fund]	Plant at Addis Ababa	42,000.
Do.		Addis Ababa Bottle and Glass S.C.	do.	8,000.
Gold		Midroc Gold Mine plc (subsidiary of Midroc Ethiopia plc)	Mine at Lega Dembi	1,500,000 ore processing.
Do.	kilograms	do.	do.	4,300 gold.
Kaolin		Ethiopian Mineral Development S.C.	Mine at Bamba Wuha	7,500.
Lime		Senkele Lime Factory	Plant at Ambo	6,000. <sup>e</sup>
Marble		Ethiopian Marble Industries	Mines at Harar and various sites in western Ethiopia	NA.
Do.	cubic meters	National Mining Corp. (subsidiary of Midroc Ethiopia plc)	Mines at Dalleti and Harar	10,000.
Do.	square meters	do.	Plant at Awash	250,000.
Do.		Saba Stones	Mine in Tigre Province	NA.
Niobium (columbium) and tantalum		Ethiopian Mineral Development S.C.	Kenticha Mine near Borena	90 tantalum; 20 niobium.
Platinum	kilograms	Nyota Minerals Ltd.	Mine at Yubdo	10. <sup>e</sup>
Quartz		Ethiopian Mineral Development S.C.	Kenticha Mine near Borena	8,000. <sup>2</sup>
Salt		Artisanal miners	Mine at Afdera Lake	NA.
Silica sand		CGC Overseas Construction Ltd. (CGCOC)	Mine near Lemi	180,000. <sup>e</sup>
Soda ash		National Mining Corporation plc	Mine at Lake Abiyata	20,000. <sup>e</sup>
Steel:				
Crude		Abyssinia Integrated Steel plc	Plant at Debre Zeit	150,000. <sup>e</sup>
Do.		Sheba Steel Mills plc	do.	20,000. <sup>e</sup>
Do.		Ethiopia Steel Smelting Enterprise (Government owned)	NA	7,000.
Semimanufactured		Abyssinia Integrated Steel plc	Plant at Debre Zeit	150,000.
Do.		Zuquala Steel Rolling Mill Enterprise (Government owned)	do.	36,000.
Do.		Wallia Steel Factory	NA	36,000.
Do.		Sheba Steel Mills plc	Plant at Debre Zeit	20,000.
Do.		Ethiopia Steel Smelting Enterprise	NA	7,000.
Galvanized		Akaki Metal Products Factory	Plant at Akaki	14,000.
Stone, crushed		CGC Overseas Construction Ltd. (CGCOC)	Plant at Addis Ababa	930,000. <sup>e</sup>
Sulfuric acid		Melkasa Aluminum Sulfate and Sulfuric Acid Factory	Plant at Melkasa	NA.

<sup>e</sup>Estimated. Do., do. Ditto. NA Not available.

<sup>1</sup>Not operating at the end of 2009.

<sup>2</sup>The combined capacity for the dolomite, feldspar, and quartz processing plant at the Kenticha Mine is 8,000 metric tons per year.