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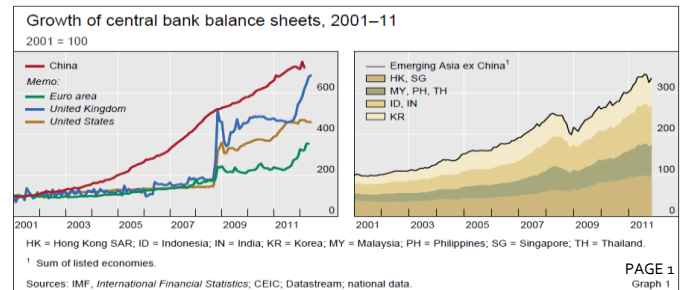
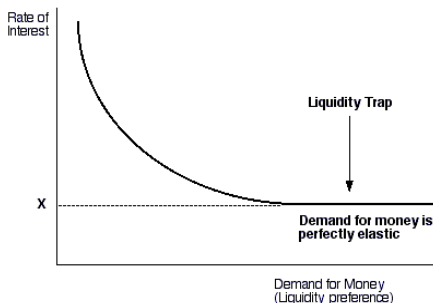
THE 2013 AFRICA NATURAL RESOURCES RISK FORECAST

By: Sebastian Spio-Garbrah, (chief frontier markets analyst, DaMina Advisors);
Davis Ensor, (former chief risk officer Chartis-AIG) & Darin Milmeister, (MD, Extract Capital LLC)

- OECD, Chinese industrial, yield curve and export data foretell a 2013 economic recession
- 10 week post-election, deadlocked, lame duck US Congressional session to accelerate economic slide
- Japanese exports to US, EU and China slowing; 2013 Asian demand for African commodities to fall
- November's 18th Chinese Communist Party Conference to endorse focus on domestic consumer growth
- 25% - 30% likely drop in 2013 Copper (to \$6,000/ Mt) and Iron Ore (to \$80/Mt) prices
- DR Congo, Zambia, Guinea, Mauritania, South Africa and Sierra Leone to suffer forex shortfalls
- South African Rand to weaken towards \$1 = 10 Rand by mid-2013 as mining sector chaos deepens
- Large, multi-billion dollar metals projects in Guinea, Liberia, Sierra Leone and Botswana at risk
- Gold prices to test \$1,600/oz lows in 2013 as US adopts fiscal austerity measures and dollar strengthens
- New low cost African gold producers: Burkina Faso, Senegal, Cote d'Ivoire and Liberia to enjoy boost
- Mining sector environment to remain relatively negative in South Africa, Ghana, Mali and Guinea
- 2013 average Crude oil prices to remain above \$85/barrel bolstering Nigeria, Angola, Algeria
- Algerian gas exports to Europe to fall as German and Polish industrial production falls
- Possible 2013 Middle East war - Turkey vs. Syria, or Israel v. Iran to deepen WTI-Brent price gap
- Any curtailments and mine cutbacks by BHP to impact mostly Australia; any Rio Tinto, Vale curtailments will affect Guinea, South Africa, Mozambique and Namibia.

Negative global macro environment to impact Africa via commodity prices

The anemic US economic recovery is hostage to the outcome and aftermath of next month's elections, while Japan and most of Europe are headed straight into an economic recession in 2013 in the absence of concerted and effective policy action, which seems unlikely. A renewed global economic slowdown will have a potentially devastating impact on industrial base metal and bulk commodity prices and the African nations that produce them. The IMF's October 8 global economic outlook remains overly optimistic; and wrongly assumes the success of a post-election US Congressional fiscal compromise, which is unlikely to be reached by the deadlocked, lame duck Congress especially if Mitt Romney narrowly wins the November presidential elections – an increasingly likely prospect. A US recession in 2013 seems almost inevitable. Fiscal policy paralysis in the 10 weeks between November 6 and the 20 January Inauguration Day will further accelerate the US economic slide. With both Japan and UK monetary policy increasingly ineffectual, the ECB constrained by law and tradition to increase its balance sheet cautiously, and any new Chinese stimulus likely to focus on increasing domestic consumption – and not imports, a 2013 recession seems inevitable. With the average OECD/GDP ratio at 99%, fiscal measures available to forestall the oncoming recession are also limited.



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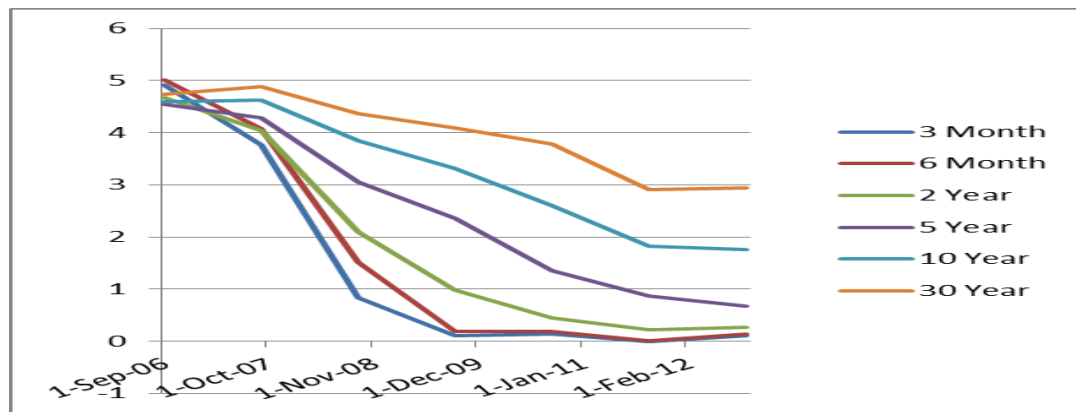
Major industrial commodity producers such as **BHP, Rio Tinto** and **Vale** will soon curtail production across many mines globally and delay some new multi-billion dollar developments. Smaller mining firms across Africa, especially those who produce just one industrial or base metal are equally vulnerable. Companies such as: **First Quantum, Nikanor, Metorex, Katanga Mining, Camec, Mwana Africa, Teal, Copper Resources, Africo Resources, Equinox** and **African Eagle** remain very vulnerable in 2013. Africa's major minerals exporters, such as Zambia, South Africa, Ghana, Guinea, Zimbabwe, Mauritania and DR Congo are at risk of a sharp fall in government forex revenues and a slide in their local currencies in 2013. South Africa remains particularly vulnerable owing to increased labor unrest and the fractured relationship between the ruling African National Congress (ANC) and the country's labor unions. The South African Rand is likely to test \$1:ZAR10 by mid-2013, as mining sector revenues falls sharply and FDI inflows drop to a trickle.

Africa's gold producers, especially the new producers without major legacy issues such as **Avocet Mining, Cluff, IAMGold, Barrick, Moto, Goldfields** and **RandGold** will benefit from the likely modest drop in 2013 gold prices. Legacy precious metal producers such as Anglo Gold Ashanti and Anglo American will continue to be dogged by South Africa's raging labor disputes. While an eventual 2013 US austerity budget will bolster the US dollar and curb a sharp gold price rise, structural demand by the world's increasingly wealthy classes for asset diversification and Middle East tensions will keep price support for gold around \$1,600 in 2013.

The highly unpopular Greek austerity regime may very well come to an end in early 2013, as the country officially exits the Euro zone. The rest of the Euro zone, now in a recession, will look to the less leveraged European Central Bank (ECB) for help. *(The ECB unlike the Fed, BOJ or BOE has until recently not dramatically expanded its balance sheet. However, with the prospect of recession now facing Germany and France, it will do so and depreciate the Euro against all major currencies).* The ECB is likely to seek to depreciate the Euro to about **\$1: 1.03 Euros** about a 20% fall from its current levels by mid-2013. West Africa's **CFA Franc**, pegged to the Euro, will also depreciate in tandem.

Crude oil prices will witness a further widening in the WTI-Brent differential spread in 2013, reflecting increased prospects for war in the Middle East. 2013 Brent prices are likely to remain above \$85 and give much comfort to African oil producers such as Nigeria, Equatorial Guinea and Angola. Algerian natural gas exports to Europe will drop as industrial production in Germany and Poland falls.

Indicative US Treasury Bill & Bond Rates since Sept 2006



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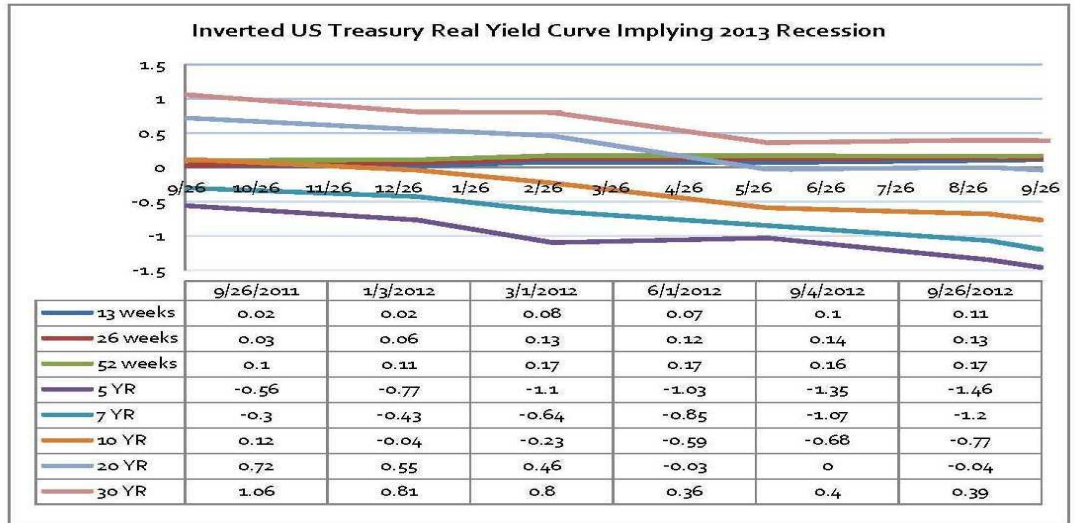
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Source: US Fed/DaMina Advisors

Despite the fact that the BOJ, US Fed, BOE and ECB have all dramatically expanded their balance sheets over the past four years – starting even before the September 2008 collapse of Lehman Brothers – and have thus significantly distorted the price structure of the global bond market- the US Treasury Yield Curve continues to serve as one of the best predictors of oncoming recession. Since March 2012, the real inflation adjusted rate of the 10-year bond has turned negative. In June, the rate on the 20-year bond also turned negative; and by the end of the year even the 30-year US Treasury Bond will generate negative returns. Even as this has occurred, short-term US Treasury bills have generated above zero returns and have thus inverted the traditional yield curve. All of these trends point to an oncoming recession in the US.

While during the last recession central banks and governments had ample resources to effect counter-cyclical monetary and fiscal policy, this time around most of the “bullets” have been expended. In 2008 and 2009 the **BRIC** countries (Brazil, Russia, India, China) and the **CIVETS** countries (Colombia, Indonesia, Vietnam, Egypt, Turkey and South Africa) witnessed strong GDP growth to offset the fall in aggregate demand in Europe, Japan and the US. This time round the BRIC and CIVETS are suffering too and will not offer much help to the sagging global economy. Brazil’s 2012 GDP growth is estimated at just over 2% and its current account deficit in 2013 is estimated at 83%, leaving it more vulnerable to global economic forces. Despite recent attempts to jumpstart the country’s domestic economic reform program, India is unlikely to meet its 2013 GDP growth forecast of 6.5%. 80-year old Prime Minister Manmohan Singh, who has served for 8 years, may very well step down in 2013. India’s current account deficit also continues to grow in double digits on an annual basis. Russia is likely to suffer in 2013 from any dampened demand for gas in Europe, particularly in Germany and Poland; and a fall in metal prices. While Russia will continue to benefit from geopolitical risk support for crude oil prices, weakening industrial demand in China, Poland and Germany and rising social welfare payments will see the country internally focused and unable to add much to global GDP growth in 2013. If Mitt Romney is elected president of the United States in November, tensions with Russia are likely to increase even further and undermine FDI inflows into the major Eurasian state.

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With the BRI of the BRIC countries expected to grow at only a modest pace in 2013, the big question remains about **Chinese growth** and its impact on the African commodity exporters. Will China be able to escape the global economic slowdown and somehow rescue the commodities market? The answer is not reassuring. China's economy is gradually moving away from its export-centric model to a more domestic consumption driven model. November's forthcoming 18th Congress of the Chinese Communist Party will confirm this dramatic shift. This shift towards more balanced internal growth and a focus on the Chinese consumer will have dramatic consequences for country's industrial demands. The country's current account surpluses are shrinking, exports are falling, internal consumption is rising and construction is cooling. A further revaluation of the Yuan to increase its value vis-a-vis the major global currencies is expected by 2013, partly to curb inflation fears and reduce the Yuan value of imports.

OECD Annual Projections - Current Account Balances

Country	2010	2011	2012	2013
Australia	(35,369,116,317)	(32,834,630,471)	(59,749,384,008)	(75,870,756,636)
Germany	196,197,480,693	204,620,141,087	187,483,233,979	199,539,513,208
Japan	196,083,636,799	120,409,278,924	93,886,584,676	116,327,831,449
United Kingdom	(75,158,334,622)	(46,338,939,040)	(52,279,585,368)	(25,270,973,928)
United States	(470,898,000,000)	(473,439,000,000)	(583,573,736,397)	(697,870,912,004)
Euro area (15 countries)	43,314,536,317	62,472,355,746	130,742,259,986	193,945,899,492
OECD - Total	(254,006,476,901)	(288,816,599,531)	(374,449,477,681)	(389,028,784,317)
Brazil	(47,323,000,000)	(52,611,000,000)	(67,759,410,022)	(86,929,106,901)
China	237,900,000,000	201,600,000,000	191,158,706,636	164,784,721,087
India	(51,371,079,650)	(59,315,765,133)	(48,280,662,606)	(61,718,386,739)
Russian Federation	70,257,000,000	98,832,000,000	129,101,894,046	99,778,610,573
South Africa	(10,188,875,101)	(13,604,935,857)	(18,328,542,897)	(23,565,907,564)
Dynamic Asian Economies	149,988,625,348	243,652,483,622	131,727,152,999	153,667,511,026
Other oil producers	234,016,623,550	391,640,104,289	455,555,057,258	458,900,087,068

Source: OECD

China's construction sector, the largest in the world, absorbing some 25% of fixed capital investments recently saw a significant change in sentiment. So, with the fall in total fixed capital investment to the lowest level in 6 years, it is no wonder that the China's construction sector is expected to decelerate markedly in 2013 and with it demand for African commodities. According to recent IMF estimates, 2013 will see China's total domestic aggregate demand fall to the lowest level in 6 years. Chinese banks, which helped fuel the property boom in the country, have seen a dramatic increase in domestic loan impairments and are now scaling back on financing new property investments – which adds to the decelerating demand for industrial metals from abroad. According to the IMF, Chinese banking sector debt rose by 122% from \$120bn in 2006 to over \$266bn now. The portion of Chinese local short-term bank debt owed to external banks increased from \$199bn in 2006 to over \$500bn now, an increase of over 151%. China's banks could, therefore, become vulnerable to any sudden changes in global currency alignments. With construction falling and Chinese banks leveraged, the oncoming 2013 recession will see a significant drop-off in Chinese demand for industrial commodities and crude oil even as demand for gold grows.

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China Business Tendency and Consumer Opinion Survey (MEI)									
				Country		China			
				Frequency		Quarterly			
				Time		Q1-2011	Q2-2011	Q3-2011	Q4-2011
Measure	Subject								
Balance, Seasonally adjusted	Construction industry	Employment	Future tendency			62.76	42.79	15.37	-18.73

Source: OECD

Beyond China, the CIVETS countries (Colombia, Indonesia, Vietnam, Egypt, Turkey and South Africa) face their own headwinds. **South Africa** and **Egypt**, for domestic political reasons, are not likely to add much to global demand for commodities. Both are next exporters of commodities.

In South Africa, recent labor clashes at several mines, as well as continued fears of mine nationalization, will keep mine production sluggish, FDI inflows low and 2013 GDP targets of 3.3% difficult to achieve. Egypt, despite a high GDP growth forecast of 8.3%, may also not achieve its target, as the new Islamist government takes actions disfavoring foreign investors and tourists. A possible war between Israel and Iran in 2013 will weaken further Egypt's economic upswing. Colombia's economic growth will be affected negatively by a US recession, while a slowdown in Japan and China will affect Vietnam and Indonesia, as well as Australia. Indonesian and Australian mines could be particularly hard hit.

Variable Total OECD central government debt % of GDP

Type Stocks: Outstanding amounts

Unit Percentage

Frequency Annual

Country	1997	2010	2011	2012	2013	% Change from '97
Australia	18.5	23.5	26.6	28.7	27.8	9.3
Canada	52.7	84	83.8	84.5	81.4	28.7
France	45.6	95.8	100.1	105.5	107.3	61.7
Germany	24.3	86.8	87.2	88.5	87.8	63.5
Greece	105.2	149.6	170	168	173.1	67.9
Italy	111	126.5	119.7	122.7	122.1	11.1
Japan	76.7	192.7	205.5	214.1	222.6	146
Spain	55.3	67.1	75.3	87.9	90.9	35.7
United Kingdom	52	81.9	97.9	104.2	108.2	56.2
United States	45.4	98.3	102.7	108.6	111.2	65.8
Euro area (15 countries)		93.058606	95.0717	99.1268	99.9459	
OECD - Total		98.671777	102.991	107.59	109.304	

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Of the major central banks, only the ECB and PBOC have the capacity to monetize any further amounts of large scale government debts. The Fed, BOE and BOJ are all dangerously close to losing their market credibility if any new major monetization programs are launched. The onset of inflation in several countries is proof that monetary policy tools have reached the maximum extent of their usefulness. Japan may see internal political turmoil, as its population demands more than negative returns on its savings. Italian, French and Spanish bonds are likely not to be spared by bond vigilantes, even after a 2013 Greek exit from the Euro. Making matters worse for many OECD countries will be the fact that very high youth unemployment rates will trigger many internal domestic political arguments and calls for more social spending, exacerbating the fiscal crisis; ultimately leading to protests and street violence, as scarce national revenues are rationed between social welfare payments, infrastructure improvements and interest on mounting debts.

What has happened on the streets of Madrid, Barcelona and Athens is a precursor to what will eventually come to the streets of Rome and Paris. The UK is blessed to have its own currency; which, as a secondary reserve currency, allows the BOE to create as much money as it wants. Even in the UK, it is clear that the limit to what the BOE can do to keep the country afloat is coming to an end. Japan, despite its stratospherically high Debt/GDP ratio, borrows mostly from domestic savers, and is more vulnerable to a change in domestic investor sentiment.

The Africa Picture

Africa's phenomenal GDP growth and low inflation rates over the past decade are set for change in 2013. African economies – such as Zambia, South Africa, DR Congo and Guinea – which are highly dependent on the mining sector are particularly vulnerable. Oil producers such as: Nigeria, Angola, Algeria, Equatorial Guinea, Gabon, Ghana, Cote d'Ivoire, Cameroon and Uganda will however benefit from a widening of the spread between Brent and WTI, as a war in the Middle East becomes increasingly likely in 2013. State stability in South Africa, Madagascar, and Guinea could be challenged, as laid-off miners attack facilities and pose a challenge to industrial peace. For African countries with upcoming elections such as Zimbabwe, Sierra Leone, Ghana, Kenya and Ethiopia, the global economic slowdown and a fall in government revenues and sliding domestic currencies will pose very serious political challenges for incumbents. Violent labor unrest and political paralysis in South Africa are set to increase.

The post conflict reconstructions of South Sudan, Liberia and Cote d'Ivoire will also likely stall under strain from negative external economic developments. For major mining sector players such as **Vale**, **Rio Tinto** and **BHP**, the fall in iron ore and copper prices will lead to curtailment and capacity cutbacks at several major mines particularly in Australia and Brazil for BHP and Vale; but also in several African countries, where major exploration activities have reached critical stages.

Guinea, Mozambique, Zambia, South Africa and DR Congo are particularly vulnerable. Major mining exploration projects in several critical African countries may also be delayed, as the cost of capital for mining projects rises and many mining companies undertake new internal NPV reassessments of these projects. Among ongoing African mining projects vulnerable to a significant fall in industrial metals prices are: **Hana Mining's** 1.8Mt Ghanazi copper project in Botswana; **Bellzone's** 185 MT iron ore Kalia project in Guinea; **African Aura Mining's** 405 MT iron ore Putu Range project in Liberia; and **London Mining's** 36 MT Marampa iron ore project in Sierra Leone.

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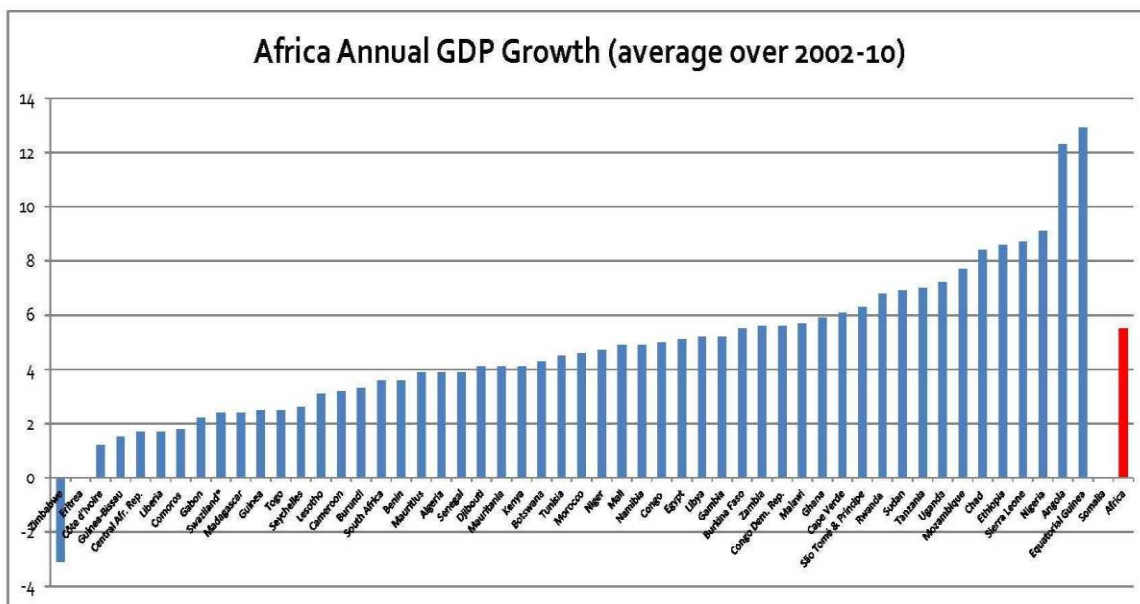
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Source: IMF/DaMina Advisors

Guinea's massive Simondou iron ore project (which has large players such as **Vale**, **Rio Tinto** and **Chalco involved**) may also witness funding delays if 2013 iron ore prices drop significantly, as we forecast. While Botswana's economy is more dependent on diamond production and prices (which like gold will not see steep price declines despite the global recession), recently war-torn Sierra Leone and Liberia cannot afford a significant pullback in mining sector FDI.

Guinea's government and state stability in particular will be extremely vulnerable to social and political upheaval if the major foreign mining companies – especially **Chalco** or **Vale** – pull out from the Simandou project. Already BHP has exited the country.

SELECTED SIGNIFICANT AFRICAN EXPLORATION ACTIVITY IN 2010

Country	Type ¹	Site	Commodity ²	Company	Resource ^{2,3}
Botswana	E	Ghanzi	Cu, Ag	Hana Mining Ltd.	1.8 Mt Cu, 61 Moz Ag (IF)
Burkina Faso	P	Belahouo	Au	Avocet Mining plc.	1.1 Moz Au (R)
Do.	E	Bombore	Au	Orezone Gold Corp.	1.6 Moz Au (D)
Do.	E	Goulagou	Au	Riverstone Resources Inc.	824,000 oz Au (D)
Do.	E	Kiaka	Au	Volta Resources Inc.	1.4 Moz Au (ID)
Egypt	P	Sukari	Au	Centramin Egypt Ltd.	9.1 Moz Au (R)
Ghana	E	Wa-Lawra	Au	Azumah Resources Ltd.	646,000 oz Au (ID)
Guinea	E	Kalia	Iron ore	Bellzone Mining Ltd.	185 Mt Fe (D)
Liberia	F	New Liberty	Au	African Aura Mining Inc.	1.4 Moz Au (T)
Do.	E	Putu Range	Iron ore	do.	405 Mt Fe (IF)
Mauritania	P	Tasiast	Au	Kinross Gold Corp.	5 Moz Au (R)
Senegal	F	Massawa	Au	Randgold Resources Inc.	1.6 Moz Au (R)
Sierra Leone	F	Marampa	Iron ore	London Mining plc.	36 Mt Fe (ID)

Do. Ditto.

¹E—Active exploration; F—Feasibility work ongoing/completed; P—Exploration related to existing producing operation.

²Abbreviations used in this table for commodities include the following: Ag—silver; Au—gold; Cu—copper; Fe—iron.

Abbreviations used in this table for units of measure include the following: Moz—million troy ounces; Mt—million metric tons; oz—troy ounces.

³Based on 2010 data reported from various sources; D—measured + indicated; ID—indicated; IF—inferred; R—proven + probable; T—total resource.

Resource data not verified by the U.S. Geological Survey.

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Global Industrial Commodity Prices									
	2009	2010	2011	11Q3	11Q4	12Q1	12Q2	Jul-12	Aug-12
Copper	5,165	7,538	8,824	8,983	7,511	8,325	7,870	7,584	7,510
Aluminum	1,669	2,173	2,401	2,400	2,095	2,181	1,979	1,876	1,843
Zinc	1,658	2,160	2,196	2,224	1,906	2,028	1,929	1,848	1,816
Lead	1,719	2,148	2,401	2,454	1,993	2,093	1,975	1,882	1,898
Iron Ore	80	147	168	176	141	142	140	128	108
Uranium	47	46	56	52	53	52	51	50	49
Tin	13,603	20,367	26,051	24,661	20,849	22,942	20,555	18,546	18,676
Nickel	14,672	21,810	22,909	22,030	18,386	19,654	17,155	16,128	15,704
U.K. Brent	61.9	79.6	111	112.5	109.3	118.5	108.9	103.1	113.3
West Texas Intermediate	61.7	79.4	95	89.7	94	102.9	93.4	87.9	94.1
Differential btn Brent and WTI	0.2	0.2	16	22.8	15.3	15.6	15.5	15.2	19.2
Australian coal, export markets	77	106	129.6	129.2	122.3	120	100.6	90.5	93.4
South African coal, export markets	64.6	91.4	116.3	116.7	106.8	105	93.5	87.3	87.3
Differential btn SA and OZ coal	12.4	14.6	13.3	12.5	15.5	15	7.1	3.2	6.1
Source: IMF									

Bauxite & Aluminum

On bauxite and aluminum, Guinea and Sierra Leone are the most vulnerable African producers in 2013. During the last two US recessions, 2000-2001 and 2007-2009, aluminum prices lagged in responding to the recession. However, because the oncoming recession is an industrial one, aluminum prices are likely to fall in tandem with those of other metal and mineral commodities. Aluminum prices have been falling since Q3 2011; and they are likely to fall from their current level of over \$1,800 per metric ton by over 11% in 2013 to some \$1,600 per metric ton, (2009 levels), if not lower, in 2013. With global aluminum stocks having risen steadily above 3.3 million tons in 2010 from just under 1.8 million in 2007 and rising even further, with the fall in global industrial demand, particularly in Europe and Asia, several major production cutbacks and curtailments at aluminum smelters will occur in 2013. In 2000, global aluminum consumption was almost 7 million tons, primary production was over 3 million tons, and stocks stood at under 2 million, while the industry employed almost 78,000 workers. Today, fewer than 25,000 work in the global aluminum industry and stocks have risen above 3 million; and production is just over 1.7 million. The industry has clearly mechanized and contracted from where it was just over a decade ago. The 2013 recession will accelerate these trends. **Vimetco** of Netherlands and **Alum** of Romania (who own Sierra Leone's 15,000 MT bauxite mine) remain at risk of severe cutbacks when aluminum and bulk bauxite prices fall in 2013. Bermuda-based **African Minerals'** Tonkolili iron project remains at risk of delays. **China's Bosai Group's** multibillion dollar refurbishment of Ghana's bauxite refinery and projected increase in Ghana's bauxite production are also likely to be delayed. Ghana and Sierra Leone have both increased mining sector taxes and fees, as well as environmental requirements; reducing the profitability of future mining projects. With an annual fall of about 10% - 13% fall in global bauxite and aluminum prices in 2013, Sierra Leone's new and Ghana's refurbished bauxite mines will be under enormous cost pressures. **Rusal**, which owns and operates Guinea's **Compagnie des Bauxites de Kindia (CBK)** and **Alumina Company of Guinea** bauxite mines is likely to balance fewer cutbacks at its North and South Urals bauxite production in Russia against larger cutbacks in Guinea. **Alcoa** and **Alcan**, which own Guinea's largest bauxite producer **Compagnie des Bauxites de Guinée (CBG)** are also likely to scale back, production in 2013.

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Guinea's government forex revenues from mining will fall further in 2013 with the Guinean franc suffering further erosion in value as mining sector revenues decline. The curtailments and cutbacks in Guinean bauxite and aluminum production may see increased labor strife at these mines and possibly lead to further deaths, as recently happened at **Vale's** Zogota mines. With legislative elections scheduled for 2013, the government of Guinean President Alpha Condé will not look kindly on these cut backs; and will move into a more confrontational posture vis-a-vis the mining sector. Already a contract review process and a new mining code promulgated in 2011 have caused many headaches for mining industry operators. BHP's 2012 pullout from Guinea notwithstanding, smaller miners are likely to pull back from Guinea in 2013, if current political, regulatory and global price trends continue.

AFRICA: HISTORIC AND PROJECTED BAUXITE MINE PRODUCTION, 2000–2017¹

(Thousand metric tons)

Country	2000	2005	2010	2013 ^e	2015 ^e	2017 ^e
Ghana	504	727	512	1,500	1,500	1,500
Guinea	15,700	14,600	15,100	15,000	27,000	37,000
Mozambique	8	10	11	11	11	11
Sierra Leone	--	--	1,090	1,100	6,100	11,100
Tanzania	--	2	130	130	130	130
Total	16,200	15,300	16,800	17,700	34,700	49,700

^eEstimated. -- Negligible or no production.

¹Estimated data and totals are rounded to no more than three significant digits.

AFRICA: HISTORIC AND PROJECTED ALUMINUM PRODUCTION, 2000–2017¹

(Thousand metric tons)

Country	2000	2005	2010	2013 ^e	2015 ^e	2017 ^e
Cameroon	86	87	60	60	60	60
Egypt	189	244	400	400	450	450
Ghana	137	--	--	120	550	700
Kenya ²	2	2	6	6	6	6
Mozambique	54	555	557	560	560	560
Nigeria	--	--	21	50	96	96
South Africa	673	846	807	810	810	810
Total	1,100	1,700	1,900	2,000	2,500	2,500

Source: ~~USGS~~

^eEstimated. -- Negligible or no production.

¹Estimated data and totals are rounded to no more than three significant digits.

²Kenya produced secondary refined aluminum; primary production in all other African aluminum-producing countries.

SOURCE: USGS

Ghana's expected increase in aluminum output in 2013 by China's **Bosai** is likely to be delayed as demand from China sags. In South Africa, a renewed deceleration in economic activity will see industrial production; car sales and construction demand decelerate, leading to excess aluminum inventories. Egypt's economy is forecast by the IMF to grow at over 8% in 2013. However, a possible military confrontation between Israel and Iran and the likely negative consequences of such an event on greater Middle East economic activity and FDI inflows will see Egypt's own domestic industrial demand likely slump and aluminum demand fall. Egypt's many aluminum producers including **Egyptalum** and smaller companies such as: **Al Saad Aluminum**, **Arab Aluminum**, **Egyptian Aluminum Products (Alumisr)**, **Egyptian Copper Co.** (a subsidiary of Metallurgical Industries), **General Metals** and **Helwan Company for Non-Ferrous Industries** are likely to witness industry consolidation, layoffs and labor agitation. **BHP's** Mozal aluminum smelter, which uses feed material from BHP's western Australian mines will, however, remain at capacity, as increased Australian taxes and regulations make it cheaper for BHP to produce aluminum in Mozambique for Asian markets than in Australia.

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Iron Ore & Steel

On iron ore, South Africa, Sierra Leone, Guinea and Mauritania remain at risk in 2013. In South Africa, a series of wildcat labor strikes threatens to bring the country's mining sector to a halt. A fall in global iron ore prices by 20% -25% in 2013, owing to a sharp fall in industrial production in China and Europe will hit South Africa's miners even more severely.

The Iron ore sector, like the aluminum sector, has also been gradually contracting since 2000. In 2000, worldwide iron ore production was over 63 million tons with apparent consumption at over 70 million tons – creating an excess demand of over 7 million tons. By 2010 worldwide production had fallen to less than 50 million tons, a drop of almost 30%. Apparent consumption had also dropped to just over 48 million tons according to the USGS, bringing the global iron ore market into near equilibrium. In 2013, apparent consumption is likely to fall to around 30 million, with production cuts lagging the drop in consumption and thereby occasioning at least 20%-25% drop in iron ore prices. South Africa's Kumba Mines (now owned by **Anglo American**) will see a cut back in production in 2013, as global iron ore prices fall toward \$80/ ton and labor strikes increases the cost of production. **Evrz's** iron ore operations in South Africa, like Rusal's bauxite operation in Guinea, will be cut back in order to accommodate fewer cutbacks at Evraz's Russian iron ore operations. Russian President Vladimir Putin has made it crystal clear to Russia's mining oligarchs that his government will not tolerate labor cutbacks on Russian production in order to accommodate fewer cuts backs at even more financially expensive operations outside Russia. Guinea and South Africa remain particularly vulnerable in this regard. South Africa's many iron ore and steel plants, many of which belong to **Xstrata, Renova, Anglo American** and **Arcelor Mittal** are also likely to witness production cut backs in 2013. South African steel production, which in 2000, was over 8 million metric tons annually, has now fallen to just over 6 million tons. In 2013 it will fall even further.

Sierra Leone's multibillion dollar Tonkoli iron ore project is likely to face further funding delays. In Mauritania, **Xstrata's** El Aouj iron ore mine will witness cutbacks in production as Xstrata moves to rebalance its entire global production portfolio in the wake of dropping metal prices. Guinea's large and complex multibillion dollar Simandou project will still remain unfulfilled, as partners (including **Vale, BSG** and **Rio Tinto**) continue to argue over the complex project. A persistent global recession beyond 2013 and a slide in iron ore prices, in addition to heightened regulatory uncertainties over Guinea's mining code, may lead other major players such as **Vale** to consider pulling out of Simandou. Already **BHP** has left the country.

AFRICA: HISTORIC AND PROJECTED IRON ORE MINE PRODUCTION, 2000–2017¹

(Fe content in thousand metric tons)							
Country	Average grade	2000	2005	2010	2013 ²	2015 ²	2017 ²
Algeria	50%	820	800	735	1,500	1,500	1,500
Egypt	55%	1,045	880	141	1,000	1,000	1,000
Gabon	64%	--	--	--	640	3,200	12,800
Guinea	58% to 65%	--	--	--	7,100	103,000	119,000
Kenya	54%	--	--	--	--	200	400
Mauritania	59% to 72%	7,500	7,000	7,500	8,500	10,000	10,000
Morocco	54%	4	4	24	25	25	25
Mozambique	68%	--	--	--	--	820	1,700
Nigeria	36%	9	20	18	--	50	50
Senegal	58%	--	--	--	--	--	4,350
Sierra Leone	59% to 65%	--	--	--	9,360	10,100	10,100
South Africa	62% to 65%	21,570	24,900	36,900	46,700	48,900	49,500
Tanzania	52%	--	--	--	--	200	1,100
Tunisia	54%	98	108	81	150	150	150
Uganda	61% to 67%	3	--	2	2	2	2
Zimbabwe ²	51%	225	185	--	--	100	200
Total		31,300	33,900	45,400	75,000	179,000	212,000

¹Estimated. -- Negligible or no production.

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²Average iron content for Zimbabwe prior to 1996 was 61%. Since 1996, the average grade has been 51%.

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Gold

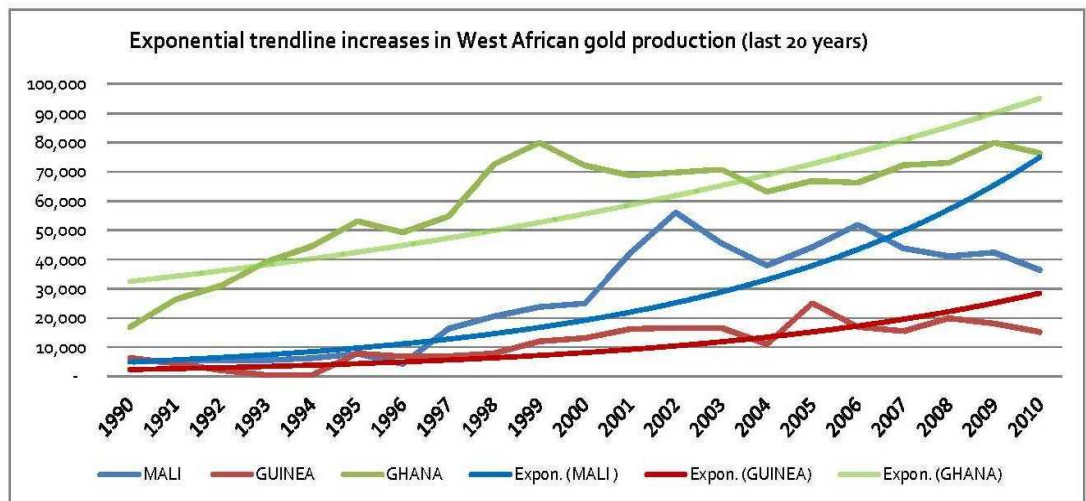
Africa's large gold producers – especially the new players such as Burkina Faso and Cote d'ivoire, and the older producers such as Ghana, Guinea, Mali, South Africa, Ethiopia and Tanzania stand to benefit from the oncoming 2013 recession. With the major central banks falling over each other to continue with 'quantitative easing' measures, the structural demand for gold will remain, even if there is a slight 10% reversal in prices in 2013, owing to a strengthening US dollar and weakened jewelry demand in Japan, US, and Europe.

A slide in gold prices of about 10% to about \$1,600/ oz in 2013 will be a more gentle decrease in percentage terms than the forecast drop in industrial and other metal commodities. An analysis of world gold production and price movements shows that while between 1901 and 1931 gold production surpassed the increase in prices, implying lower demand than supply, since the US de-linked the dollar from gold in 1974, gold prices have increased by dramatically more than production, implying a structural increase in demand.

Since 2001, these trends have accelerated, with total gold production in the past decade increasing by only 10%, but prices increasing at over 500%. With the ECB set to increase its balance sheet, even as the BOJ, Fed and BOE reach their natural limits of quantitative easing, gold prices are likely to continue their structural price climb, even if it falls by a modest 10% in 2013.

Major African gold producers, **Anglo Gold Ashanti, Goldfields, Harmony Gold, DRD, Newmont, Randgold, IAMGold and Avocet Mining**, among many other players, will see gold prices supported at over \$1,600 per ounce and renewed investor interest. An increasingly hardened regulatory posture and imposition of new fiscal terms by almost all of Africa's major gold-producing countries will cause some drop in formal production, while leading to an increase in artisanal and non-formal production.

Increasingly difficult operating environments in South Africa, Guinea, Mali and Ghana will see actual government revenues from the gold sector stagnate, as large mining companies redeploy capital to more profitable mines and the high fiscal requirements discourage new players from entering the sector.



Source: IMF/DaMina Advisors

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AFTER 2001 GOLD PRICE CHANGES DE-LINKS FROM PRODUCTION

Year	World gold production (metric tons)	Unit value (\$/ton)
1900	386	609,000
1901	395	610,000
1911	699	608,000
1921	498	662,000
1931	695	723,000
Change in gold prod '00 - '31 = 80%		
Change in gold price '00 - '31 = 19%		
1941	1,080	1,090,000
1951	883	1,120,000
1961	1,230	1,130,000
Change in gold prod '41 - '61 = 14%		
Change in gold price '41 - '61 = 4%		
1972	1,390	1,880,000
1973	1,350	3,150,000
1974	1,250	5,140,000
Change in gold prod '72 - '74 = -10%		
Change in gold price '72 - '74 = 173%		
1975	1,200	5,190,000
1976	1,210	4,030,000
1977	1,210	4,770,000
1978	1,210	6,220,000
1979	1,210	9,890,000
1980	1,220	19,700,000
2000	2,590	9,010,000
Change in gold prod '75 - '00 = 116%		
Change in gold price '75 - '00 = 74%		
2001	2,600	8,750,000
2002	2,550	10,000,000
2003	2,540	11,700,000
2004	2,420	13,200,000
2005	2,470	14,300,000
2006	2,370	19,500,000
2007	2,350	22,400,000
2008	2,280	28,100,000
2009	2,460	31,300,000
2010	2,560	39,500,000
2011	2,700	51,200,000
2012e	2,900	52,768,000
Change in gold prod '01 - '12 = 10%		Change in gold price '01 - '12 = 503%
Total Prod Change 1900 - 2012 = 651%		Total Price Change 1900 - 2012 = 8,565%
Source		
USGS/		
DaMina		
Advisors		

AFRICA: HISTORIC AND PROJECTED GOLD MINE PRODUCTION, 2000–2017¹

(Metal content in kilograms)

Country	2000	2005	2010	2013 ^e	2015 ^e	2017 ^e
Algeria	--	637	723	1,100	1,100	1,100
Benin ²	--	20	20	20	20	20
Botswana	4	2,709	1,800	1,800	1,700	1,600
Burkina Faso ³	625	1,397	24,104	36,500	46,900	51,800
Burundi	--	750	750	750	750	750
Cameroon ²	1,000	1,889	1,800	1,800	1,800	1,800
Central African Republic ⁴	15	15	60	4,000	6,400	6,400
Chad	120	150	100	50	50	500
Congo (Brazzaville)	10	120	150	150	150	150
Congo (Kinshasa)	69	7,200	3,500	8,000	23,800	26,100
Cote d'Ivoire ³	3,444	1,335	5,310	15,600	16,000	16,000
Egypt	--	--	4,607	6,200	6,200	6,200
Equatorial Guinea	500	200	200	200	200	200
Eritrea	264	25	35	3,900	8,000	3,900
Ethiopia	3,206	4,376	5,936	14,000	13,400	15,600
Gabon ²	70	300	300	300	300	300
Ghana ³	72,080	66,852	76,332 ³	87,800	103,000	106,000
Guinea ³	15,788	25,097	15,217	15,500	18,000	18,000
Kenya	1,243	616	2,000	2,100	2,100	2,100
Liberia ²	25	27	800	800	800	800
Madagascar	5	10	70	70	70	70
Mali ³	28,717	44,230	36,344	49,500	49,700	45,600
Mauritania	--	--	8,300	10,500	49,000	49,000
Morocco	505	1,786	650	650	650	650
Mozambique	23	63	80	80	80	80
Namibia	2,417	2,703	2,683	2,700	2,700	2,700
Niger	25	4,962	1,900	2,000	2,000	2,000
Nigeria	52	30	600	600	600	600
Rwanda	10	10	20	20	20	20
Senegal	550	600	4,381	11,800	21,600	24,700
Sierra Leone ⁴	--	53	270	300	6,500	6,500
South Africa	430,800	294,671	188,701	221,000	228,000	223,000
Sudan	5,774	3,625	26,317	31,600	32,500	29,700
Tanzania	15,060	47,270	39,448	48,600	51,600	56,300
Togo	--	6,179	13,000	13,000	13,000	13,000
Uganda	56	46	--	--	--	--
Zambia	600	440	3,400	3,500	3,500	4,000
Zimbabwe	22,069	14,024	9,100	10,000	20,000	20,000
Total	605,000	534,000	479,000	607,000	732,000	737,000

^eEstimated. -- Negligible or no production.

¹Estimated data and totals are rounded to no more than three significant digits.

²From artisanal mining.

³Excludes production from artisanal mining.

⁴From artisanal mining for the years 2000, 2005, and 2010 only.

Source: USGS

Copper & Cobalt

Copper and Cobalt prices are set to fall by probably 25% -30%. With Chinese demand for cobalt-heavy Japanese technological products falling, cobalt demand is set to fall in 2013. With the Chinese construction sector contracting, copper prices are also set to fall in 2013. African countries such as Zambia, DR Congo, Madagascar and Morocco will feel the impact. Madagascar is significantly vulnerable in this regard, because of the country's underlying political instability.

In DR Congo, a fall in government revenues from copper and cobalt exports may inhibit the central government's ability to quell the persistent rebellions in the eastern Kivu region bordering Rwanda. Since 2000, world copper prices have risen by almost 300%, with total production increasing by only 22%, and yet apparent consumption, according to the USGS, has actually fallen from over 3million tons to 1.7million tons, implying that a large measure of the rise in copper prices may have come from financial speculation. On the contrary, while cobalt consumption has remained fairly static over the past decade, production has increased by over 120%, and yet prices have increased by just over 30%, implying weaker overall demand and significantly less financial speculation. So between copper and cobalt prices in 2013, the price of copper is likely to remain more volatile than cobalt.

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While large players such as **Freeport McMoran, Vedanta First Quantum and Katanga Mining**, will be able to survive a 2013 recession with cutbacks in production in Africa and elsewhere, smaller mines such as **Anvil, Teal, Chemaf, Rubamin and Mawson West** may have to sell their assets to larger industry players. Zambia and DR Congo remain economically vulnerable in 2013. Uncertainties over Zambia's mining regulatory atmosphere and armed rebellion in eastern DR Congo pose added stresses to the mining sectors of both countries in 2012.

Year	Copper price(\$/t)	World total Copper production (tons)	Copper Consumption (tons)	Cobalt Apparent consumption	Cobalt Unit value (\$/ton)	Cobalt World mine production	Cobalt World refinery production
2000	1,940	13,200,000	3,020,000	11,700	29,700	39,300	36,000
2001	1,690	13,700,000	2,620,000	11,800	23,300	46,300	38,700
2002	1,670	13,600,000	2,370,000	9,830	17,100	53,700	40,800
2003	1,880	13,800,000	2,290,000	10,000	20,600	54,600	43,200
2004	2,950	14,700,000	2,410,000	9,950	43,400	60,300	48,500
2005	3,830	15,000,000	2,270,000	11,800	33,600	65,200	54,100
2006	6,940	15,100,000	2,110,000	11,000	30,700	70,000	53,800
2007	7,230	15,400,000	2,140,000	9,630	54,600	71,700	53,300
2008	7,040	15,400,000	2,020,000	10,100	68,400	76,400	57,300
2009	5,320	15,900,000	1,650,000	7,580	34,200	72,100	59,700
2010	7,680	16,100,000	1,760,000	10,300	39,700	89,500	76,400

Source: USGS

AFRICA: HISTORIC AND PROJECTED COBALT MINE PRODUCTION, 2000–2017¹

(Cobalt content in metric tons)

Country	2000	2005	2010	2013 ^e	2015 ^e	2017 ^e
Congo (Kinshasa)	10,000	24,500	61,000	95,700	105,000	116,000
Madagascar	--	--	700	4,900	5,600	5,600
Morocco	1,300	1,600	3,130	3,200	3,200	3,200
South Africa	580	620	400	1,000	1,000	1,000
Zambia	4,600	9,300	5,700	7,000	7,000	7,000
Zimbabwe	79	281	60	200	200	200
Total	16,600	36,300	71,000	112,000	122,000	133,000

^eEstimated. -- Negligible or no production.

¹Estimated data and totals are rounded to no more than three significant digits.

AFRICA: HISTORIC AND PROJECTED COPPER MINE PRODUCTION, 2000–2017¹

(Metal content in thousand metric tons)

Country	2000	2005	2010	2013 ^e	2015 ^e	2017 ^e
Botswana	35	31	28	28	30	30
Congo (Kinshasa)	31	97	440	777	947	991
Eritrea	--	--	--	70	70	17
Mauritania	--	--	37	37	40	40
Morocco	7	4	14	14	14	14
Namibia	6	10	--	7	7	7
South Africa	137	89	103	106	106	106
Tanzania ²	--	4	5	7	7	7
Zambia	249	447	820	900	1,000	1,600
Zimbabwe	2	3	5	6	6	6
Total	470	690	1,500	2,000	2,200	2,800

^eEstimated. -- Negligible or no production.

¹Estimated data and totals are rounded to no more than three significant digits.

²Copper contained in concentrates and dore.

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Coal

World coal prices differences between Australian coal, (in high demand in China) and South African coal, which has generally been exported to non-Asian destinations, will continue narrow as Chinese demand softens. Mozambique remains particularly vulnerable to a slowdown in global coal demand. Completion of **Vale's** and **Beacon Hill's** multibillion dollar coal Mozambique projects could be delayed if Asian coal demand falls significantly in 2013. South Africa's **Sasol** may also witness labor agitations if it tries to cut back on production.

AFRICA: HISTORIC AND PROJECTED SALABLE COAL PRODUCTION, 2000-2017¹

(Thousand metric tons)

Country	2000	2005	2010	2013 ^e	2015 ^e	2017 ^e
Botswana	947	985	780	800	800	800
Congo (Kinshasa)	--	120	120	120	120	120
Egypt	39	300	300	360	360	360
Ethiopia	--	--	20	20	20	20
Malawi	34	52	79	80	80	80
Morocco	31	(2)	--	--	--	--
Mozambique	16	3	50	15,700	31,000	42,000
Niger	158	182	225	230	230	230
Nigeria	12	8	450	500	500	750
South Africa	224,118	244,940	254,522	293,000	330,000	351,000
Swaziland	178	222	146	150	150	150
Tanzania	79	31	--	1,000	3,000	5,500
Zambia	168	240	200	300	300	300
Zimbabwe	3,809	2,891	2,400	4,000	4,000	4,000
Total	230,000	250,000	259,000	316,000	371,000	405,000

^eEstimated. -- Negligible or no production.

¹Estimated data and totals are rounded to no more than three significant digits.

²Less than 1 unit.

Source: USGS

Petroleum

Owing to the increased prospects for war in the Middle East in 2013 – highlighted by the September UN speeches by Israeli Prime Minister Benjamin Netanyahu and Iranian President Mahmoud Ahmadinejad, and recent skirmishes on the Syrian-Turkish border, oil prices will remain elevated above the fundamental equilibrium price level of almost \$80/ barrel for 2013. A war will, however, trigger a large temporary spike. The growing differential between UK Brent and WTI prices will continue, as the security risks surrounding Brent-based production increase, despite the oncoming 2013 recession.

Africa's largest petroleum producers, Nigeria, Angola and Algeria stand to benefit from any disruption of Middle Eastern supplies. Small petroleum producers such as Equatorial Guinea, Sudan, Gabon, Cameroon, Ghana, Cote, Chad and Uganda will continue to benefit from an overall strong petroleum price environment. New petroleum exploration in Guinea, Liberia, Mozambique, Kenya will therefore accelerate.

***ALL MINING DATA CONTAINED IN THIS REPORT IS SOURCED FROM US GEOLOGICAL SURVEY**