



Aspects of Chinese investment in the African resources sector

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Introduction to China-Africa relations

China's engagement with the African continent has increased impressively in the past decade. Even though China is not the African continent's largest stakeholder, the rapidly increasing engagement is evident in the huge number of Chinese migrants that have come to Africa in the wake of unprecedented trade and investment levels, as well as in increasing diplomatic and political interactions, which has taken most other commercial partners by surprise. All but four countries in Africa have adopted the 'One China'¹ policy stance; and in so doing opened the door for new or strengthened commercial dealings with China, including increasing investments into Africa's extractive industries.

This has been particularly evident since the turn of the century, with a clear shift in China's policy towards Africa elevating the continent in China's foreign policy objectives. As such, Africa has become a strategic focus² for Chinese outward bound and internationalizing companies, especially in the extractive industries. This planned shift in focus is based largely on geo-strategic and commercial needs and interests, rather than previous ideological ones.³

In this paper we will address the forms of Chinese commercial engagement in Africa, highlighting the most salient features, particularly as pertaining to Africa's mineral sector. We believe that in clarifying some misconceptions and unpacking the implications of the Chinese engagement model for African stakeholders, that this paper will lay the groundwork for further informed discussions and in-depth research of China-Africa relations, specifically in the commodities sector.

¹Countries that have pledged their support to the 'One China' policy acknowledged mainland China's claims of reunification with Taiwan; the four African nations that still recognise Taiwan's aid and economic assistance are Burkina Faso, The Gambia, Sao Tome and Principe, and Swaziland.

²This renewed focus also resulted in formalized platforms of engagement, such as the formation of the Forum on China-Africa Cooperation (FOCAC), a vehicle to coordinate China's foreign policy objectives in Africa, with four FOCAC summits held to date, which have 'become the institutional mechanism for China-Africa multilateral engagement' (Davies, 2010).

³Chinese engagement in Africa is not a new phenomenon, though arguably it is wrapped in the proverbial dragon skin. In the early years of African independence, the Cold War dynamics saw the USA and Russia vying against each other, and in so doing politically maneuvering to win favour with African nationals. At the same time, China cozied up to many African nations for its own political positioning, which proved instrumental in voting China into the United Nations Security Council in 1971. In return, large Chinese aid and investment packages were swiftly granted, particularly related to agriculture and infrastructure, with a case in point being the 1 870 km Tazara railway linking the Zambian Copperbelt region to the port of Dar es Salaam in Tanzania.

The rise of China and its relations to Africa's commodities sector

China has been among the fastest growing economies in the world, with a real GDP growth rate averaging near 10% over the 1980–2010 period (International Monetary Fund, 2011). With rapid rates of urbanization, and nearly half of its population expected to reach middle class consumer status (income between \$5-\$7 a day) by 2025, China's future growth prospects are exceptionally promising, despite the hiccup of the recent global financial crisis (GFC). China's increased competitiveness and its expanded presence in world markets has shifted the global production chain to Asia. Swift modernization and development, coupled with a deeper presence in global markets, has upped Beijing's demand for various resources as the industrial structure of the nation is further developed. China is the top consumer of key resources, consuming about 30% of global aluminium and copper resources, 40% of iron ore and lead, and more than 50% of coal; and is the second largest consumer of oil after the USA, importing about one quarter of its oil needs from Africa, in all exemplifying its vast build-up of capital stock.

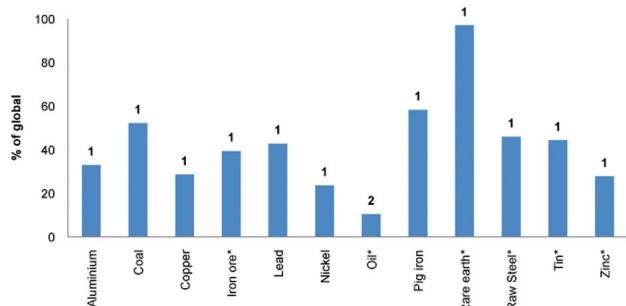
Increasing resource demand from China underpinned the upswing in commodity prices during the pre-crisis years, and most recently in the post-crisis period. Oil prices peaked at almost US\$150 per barrel in mid-2008. Similarly, all types of commodities (including ferrous and non-ferrous metals, as well as precious stones) experienced major upward trends in prices, and have resurged to near pre-crisis levels of late. For example, copper prices saw massive gains, increasing more than threefold since 2002 until the GFC. This increase resulted in miners rushing to capitalize on the swelling demand for alternative sources of raw materials, which led to large new capital injections into resource-rich but also undeveloped regions across Africa. Consequently, traditional investors as well as new emerging partners, including China, have made rapid inroads into Africa's extractive industries, particularly from a trade and investment perspective.

China's economic expansion, which has driven higher commodity prices, has significantly contributed to higher GDP growth rates, especially of resource-producing states; at least in the short term (Collier and Goderis, 2008). Sub-Saharan Africa recorded 6.23% growth over the 2003–2008

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Source: USGS, 2010; World Bank, 2010; World Coal Institute, 2010; World Steel Association, 2010

* Indicates 2009 figures

Figure 1—China's consumption of global resources (2008 and 2009)

period (IMF, 2011), following a similar upward growth trend to China. Since 2001, sub-Saharan Africa has increasingly become a supplier of resources to the Asian powerhouse. However, Collier and Gideris (2008) and Fraser and Lungu (2007) note that this commodity fuelled growth can be heavily misleading. In the long-term, rising commodity prices can implicate adverse effects on resource producers. This is especially the case if issues of governance, institutions, rent seeking, and lack of economic diversification are not addressed, and, if only primary commodities are exported as these are subject to volatile prices. This is important as the Sino-African trading relationship is heavily skewed towards resource-based trade and is yet to see more beneficiation and resource value addition. This thus begs the question if China will further perpetuate resource specialization in Africa or contribute to diversification. Commodity prices have historically been cyclical, and many countries have had to deal with the boom-bust scenarios, but may not necessarily have learnt from these.

Assessing the trading relationship

Trade between China and Africa has increased sharply in recent years, albeit from a relatively low base. From an amount of US\$10.6 billion in 2000, trading between the two partners reached an all-time high of US\$123.3 billion in 2010, representing an almost 12-fold increase according to Chinese data.⁴ Sino-Africa bilateral trade has grown to an almost even split. In 2010, China's imports from Africa were US\$63.5 billion while Chinese exports to Africa were US\$59.8 billion.⁵

The rate of growth in the overall trading relationship between China and Africa has exceeded that of Africa's traditional and long-established trading partners such as the

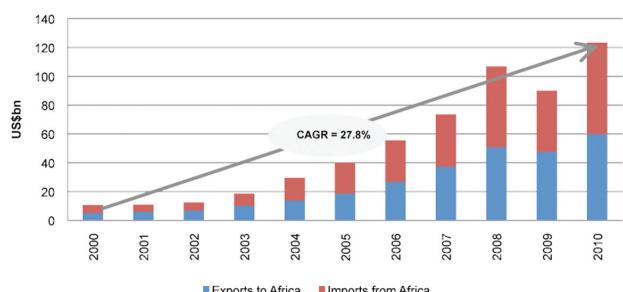
USA and EU countries. Sandrey and Edinger (2010) note that in the period 2000-2008, the growth rate in Africa's trade with China increased about twice as fast as that with the USA or the EU.

However, Africa's actual export trade basket with China is not that different from that with other nations. The absolute majority of exports to China are composed of raw minerals and metals. Based on 2010 data, which saw new highs in bilateral trade, over 93% of Africa's exports to China is based on metals, minerals, and petroleum products—a similar structure as Africa's exports to the USA and other partners (Sandrey and Edinger, 2011). The small remainder is in most part made up of timber, cotton, and primary agricultural products.

The trade basket is representative of Africa's comparative advantage as a resource-rich continent, that lacks adequate skilled labour, technological means, and equipment, as well as supporting infrastructure to lower high transaction costs needed for processing trade, and thus reflects the underdevelopment of supply-side value addition capacity. It also reflects China's buying power, massive demand, and industrial capabilities to offer basic and advanced goods in exchange for raw inputs. Six of China's top 10 trading partners in Africa in 2010 were oil producing countries. The other major trading partners are also large commodity producers, like South Africa (approximately 90% of exports were commodity based in 2009), Zambia (copper made up more than 90%) and the DRC (copper and cobalt constituted more than 90%). The major commodity export revenue earners included aluminium, cobalt, copper, chromium, diamonds, iron ore, manganese, and zinc.

As Africa's exports to China are mainly commodities, with petroleum, metals, and other mineral products constituting the bulk of merchandize exports, China's top African trading partners have been mineral-endowed economies. By 2010 the top exporters to China included Angola (US\$22.8 billion in exports, dominated by oil), South Africa (US\$11.4 billion), Sudan (US\$6.7 billion), Libya (US\$4.5 billion), and the Republic of the Congo (US\$3.2 billion). These five countries accounted for 76.46% of the continent's exports to China in 2010.

The import basket from Africa shows that nearly all the goods acquired from China fit this comparative advantage profile. However, by product categorization, it is a greater diversified basket of goods. Industrial products (used as an intermediary or final good) together with final textile products make up over 91% of imports—a similar structure of

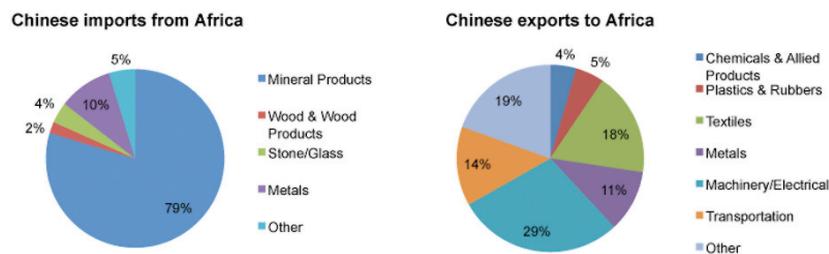


Source: China Customs data, authors' analysis

Figure 2—China's merchandise trade with Africa, US\$ billion (2000–2010)

⁴For issues with regards to the interpretation of China-Africa trade data, as published by China Customs, see Sandrey and Edinger (2011).
⁵This followed a deterioration in trade during 2009, spurred on by lower commodity prices, with exports from Africa to China down 24.3% in 2009, largely on account of a drop in oil prices. As noted by Sandrey and Edinger (2010) some of the losses in export values from Africa to China, on account of deflated resource prices were, however, mitigated by greater export volumes of some commodities, including for example copper exports from Zambia to China.

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Source: China Customs, World Trade Atlas; authors' analysis

Figure 3—Sector composition of China-Africa merchandise trade (2010)

trade fitting with China's exports to the rest of the world (Sandrey and Edinger, 2011). Africa's imports from China are relatively more diverse in terms of product classification and range from clothing and footwear to furniture, machinery, transport equipment, and electrical equipment, as well as construction-related inputs. China's major import partners in Africa include South Africa, Nigeria, Egypt, Liberia, and Algeria. Together these countries account for 53.36% of Africa's imports from China.

Trade may well be locked in ubiquitous comparative advantage interplay, and as long as Africa remains in catch-up mode with a serious lack of proficient skills and technological spillovers, the ever-present and inhibiting political risks will keep the trade basket as is in the medium term. Investments, however, especially in the minerals arena, offer a wider berth for China's engagement in Africa, one where African stakeholders can bargain for and gain more.

Assessing the investment relationship

One of the key drivers of the operations of Chinese enterprises in their internationalization process is strategic investment in securing natural resources (Davies, 2010). China has become a key global consumer of natural resources as a consequence of needing to meet national rapid urbanization and industrial growth targets. As a top consumer or producer of several commodities such as aluminium, coal, copper, lead, and nickel, a natural linkage with African countries, which have a comparative advantage in the production of many of these commodities, is evident. Therefore, China has taken a growing interest in the African mining sector, although, entering the sector as a latecomer and thus investing *inter alia* also in more risky environments and projects, given that a lot of accessible and economically viable resource deposits are already exploited by traditional players (Gill, 2008). Commodities that are of strategic and investment interest in China's African engagements are iron ore and steel, copper and cobalt, bauxite, uranium, and platinum.

Taking one step back and looking at Chinese investment globally, this has grown tremendously over the past decade since the ruling Politburo incorporated a 'Go Global' strategy in the late 1990s—an incentive-driven policy that encouraged Chinese firms (largely state-owned or state-aligned) to pursue strategic assets, to fuel China's growing economy and demand. Hence China is seeking out investment opportunities as wide as mergers and acquisitions, portfolio buy-ins, and large scale infrastructure-for-resource packaged loans—a number of which have a distinct minerals focus.

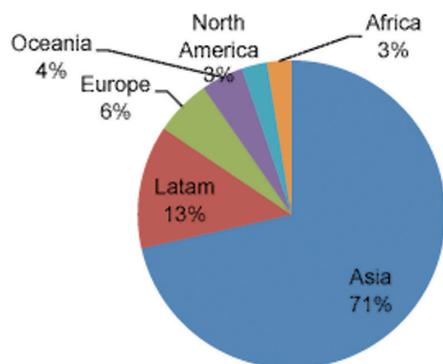
Consequently, China's total Outward Foreign Direct Investment (OFDI) increased to levels of US\$17.6 billion in 2006, US\$26.5 billion in 2007, US\$55.9 billion in 2008 and up to US\$56.5 billion in 2009 according to the Chinese Ministry of Commerce (MOFCOM, 2010). Much of this investment has been by state-owned enterprises, which have become known for their operational cost competitiveness, but more importantly deep pockets and government support to seek out assets and outbid other potential suitors. The most recent example illustrating this in the mining industry is Chinese Jinchuan Group's US\$1.32 billion bid for South African copper and cobalt miner Metorex, topping Brazilian Vale's bid by 22% in early July 2011 (Reuters, 2011).

The share of Chinese FDI received by Africa is, however, a small fraction of total OFDI from China, though it has been growing; from a menial US\$74.8 million in 2003 to US\$1.57 billion in 2007, China's FDI flows to Africa peaked at US\$5.49 billion in 2008,⁶ before dropping back to US\$1.44 billion in 2009. The FDI growth in flows has been supported by focused policies in China encouraging and assisting firms to invest in the continent. In the latter half of the past decade, the National Development and Reform Commission (NDRC)—the macroeconomic planning agency directly under the auspices of the State Council (China's highest decision-making body)—has published a number of reports and policy papers emphasising the significance of the African continent to China's growth story going forward, and explicitly encouraging and incentivizing Chinese enterprises to explore market opportunities on the African continent.

As a proportion of its global (official) investment in Africa, China's engagement is small (only about 3% of OFDI flows in 2009), yet as shown above, rapidly increasing from a low base. As noted by Sandrey and Edinger (2011), 'between 1979 and 2000 China's cumulative resource extraction investments on the continent amounted to US\$188 million'. Of late, China's entrance into Africa's resource sector has been increasing dramatically, with especially commitments announced on mega-investments in the continent's commodities to the value of several billions of dollars. Examples of recent mega-deals in the mining sector by Chinese enterprises include Jinchuan Enterprises' purchase of 51% South Africa's Wesizwe Platinum, Aluminium Corporation of China's (Chinalco) investment in

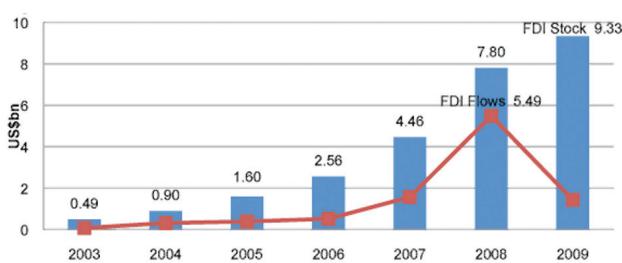
⁶This was skewed by ICBC's 20% purchase of South Africa's Standard Bank for a total of US\$5.5bn; which created an outlier effect.

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Source: MOFCOM, 2010; authors' analysis

Figure 4—Chinese FDI flows by region, % (2009)



Source: MOFCOM, 2010; authors' analysis

Figure 5—Chinese FDI stock and flows accumulation in Africa, US\$ billion (2003-2009)

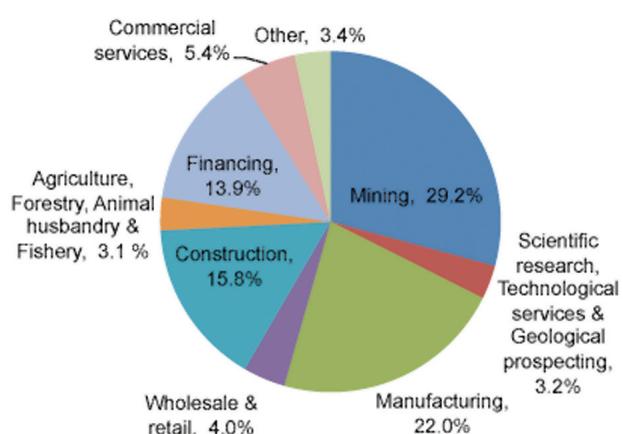
the bauxite deposit of Simandou in Guinea, China Non-Ferrous Metal Mining Corporation's (CNMC) continuous investment in Zambia's copper sector, as well as the US\$6 billion infrastructure-for-resources package deal signed with the Democratic Republic of Congo by the Sicomines consortium. There has also been growing exploration activity in the mining sectors of various countries in Africa by Chinese companies, including substantial iron ore prospecting activity in West Africa,⁷ as well as in other resources such as coal, uranium, and copper, with for example, Zhonghui Mining recently announcing it intended to spend US\$5 billion on copper exploration and development in Zambia alone.

According to figures from MOFCOM, which outline the composition of Chinese investment on the African continent, the mining sector (including oil and minerals) had the largest share of FDI stock in 2009 at 29.2%, followed by manufacturing (22%), construction (15.8%), and financing (13.9%). While disaggregated investment data is not readily available, this mining investment has also been concentrated in a number of countries. A key recipient of copper-related investment has been Zambia, where such investments make up almost 90% of Chinese total capital deployment in the country. The major Chinese state-owned enterprises (SOEs) with substantial interests in Zambia have been CNMC, a long-term player in the Zambian mining industry which owns the Chambishi and Luanshya copper and cobalt operations, and Jinchuan Mining Group's Munali nickel mine. Together with CNMC and Jinchuan, other existing and established

players in the sector—such as South African ARM (Africa Rainbow Minerals), Brazil's Vale, Canadian First Quantum—committed nearly US\$5 billion on capital expenditure for brownfield expansion in the next few years. Jointly these commitments are as much as new Chinese entrant Zhonghui Mining has alone pledged for exploration and mine development in the northwest and Copperbelt regions (Frontier Advisory, 2011).

During the recent GFC, the extractive mining industries were hit hardest of all, especially in Africa, where the dependence on foreign mining investment and commodity price movements is huge. In the wake of the ensuing commodity crash, many investors pulled out of Africa and left projects dormant. Undeveloped African economies are not diversified enough to stomach such a shock—hundreds of thousands of people in Africa were severely affected by the GFC, either losing jobs directly or indirectly put under financial strain via being dependents.

Most of the abandoned projects or unfulfilled investment promises came from Western players, who felt the greatest direct financial burden. Chinese stakeholders on the other hand, either honoured their African commitments or intensified them. Chinese SOEs ramped up their engagement by fishing out prized assets that were deemed too risky or financially too expensive by Western investors. In Zambia for instance, major Chinese miner Jinchuan acquired the Canadian mining company Albion and its operations in the midst of the GFC. Other Zambian mining stalwart CNMC kept up production and employment levels during the crisis, while making further acquisitions and consolidations (of the Luanshya Copper Mine). Similarly, Bosai Minerals Group bought the Awaso bauxite mine in Ghana. Officials from Chinese state-owned mining companies confirmed their promise to Africans at the time, stating that they would shoulder the political and social responsibility of their investments in the country.



Source: Ministry of Commerce, 2010; authors' analysis

Figure 6—Chinese FDI stock to Africa by sector (2009)

⁷This includes companies such as China National Geological and Mining Corporation (CGM), Sinosteel, China Minmetals, etc. exploring for opportunities in Cameroon, Côte d'Ivoire, Mauritania, and Sierra Leone.

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However, smaller Chinese operations and private players in the industry, such as in the DRC's copper and cobalt sector, including trading and smelting entities who lack government support and deep financial pockets, had to abandon operations temporarily, but returned to resume operations by the end of 2010 when the recovery in commodity prices was evident (Centre for Chinese Studies, 2010).

The top ten African country investment recipients constituted 76% of Chinese outward FDI stock in Africa, including mainly resource-endowed economies such as South Africa, Sudan, Nigeria, Zambia, and Algeria, as well as resource-poor economies such as for example Ethiopia. And an estimated 80% of China's global outward FDI originates from SOEs, which are financed by the state policy banks (Davies, 2010). In this regard, the Export-Import Bank of China (China EXIM Bank) and the China Development Bank (CDB)—now also through the China-Africa Development Fund (CADFund)—are the key players bankrolling large Chinese investment in Africa across sectors that mainly include extractive industries, construction and infrastructure. Increasingly also, the state-owned China Construction Bank has started to engage investors and assets alike.

Distinguishing Chinese engagement around the world is China's respect of sovereign autonomy, underlining a strict policy of non-interference in another nation's affairs—in stark contrast to Western reforms-for-funds policies. This double-edged sword has proved problematic in Africa, especially in case when a despotic ruler plunders strategic national resources and violates basic civil rights, while at the same time still receiving economic assistance from China as other countries opted for boycotts or embargoes.

Perhaps more telling is China's method of bequeathing economic assistance. Apart from ordinary trade flows and stock buildup, Chinese investments are not that easily defined, and are beyond the standard FDI protocols—which captures only a small share of Chinese engagement in Africa. China's economic assistance and investments can also be considered under an umbrella of concessional packages, whereby future offtake agreements are bartered for, exchanging rich African resources for Chinese capital, equipment, and skills used to roll out much-needed infrastructure projects. As such, Chinese capital financing infrastructure development and refurbishments is committed in return for mining rights and mineral concessions.

China EXIM Bank is alone in extending concessional loan packages as the concessional financing arm of the Chinese government; while CDB financing utilizes a combination of equity injections (through CADFund) and debt via a favoured state-owned company. In both cases, however, the use of Chinese contractors on construction projects related to mining activity (mine construction, supporting infrastructure linking to mining activity) or infrastructure projects (roads, bridges, ICT, etc) can be a prerequisite of the deal or a *de facto* outcome.

The Chinese government has very effectively utilized this packaged loan model of financing (including also grants) in several African countries, by directing significant amounts of capital to the acquisition of assets in strategic sectors. China EXIM Bank has, for example, provided concessional financing for infrastructure projects in Ghana, Angola,

Ethiopia, Nigeria, Republic of the Congo, Sudan, and Zimbabwe, in addition to also financing export buyers' credits, as well as construction and investment projects. These package deals can be viewed as financing models in which economic assistance is given to a recipient country, with the financing linked to the signing of a commodity offtake agreement, and infrastructure rollouts in the recipient country as a reciprocal part of the deal. The model has come to be known as the 'Angola Model' or 'China Model' in the wake of a US\$2 billion deal signed by China EXIM Bank with the Ministry of Finance in Angola in 2004. The recipient African partners desperately require power and transport infrastructure, managerial skills, and technological sharing, all of which this exemplifies. The resource offtake on the other hand, is a guarantee that effectively securitizes the loan and huge layouts of economic assistance from China. As chance would have it, African economies that are most in need of development assistance do not have the financial means to provide sufficient financial security, yet they do possess immense wealth in untapped resources, which is exactly where China comes in—through being able to deploy unprecedented sums of capital to build the proverbial 'bridge' of friendship,⁸ and at the same time secure a future supply of preciously demanded commodities and energy resources.

As disaggregated and comparative FDI figures are lacking, mergers and acquisition (M&A) activity is a good indicator to gauge the extend of China's interest in Africa, especially with respect to specific sectors, while also highlighting the country's relative size compared to other stakeholders seeking African assets. According to Ernst and Young (2011), acquisitions from emerging economies accounted for 43% (US\$49.4 billion) of total deal value in 2010. India in particular moved up the ranks from 14th place in 2009 to 7th in 2010, alone taking 5% of global deal value. And thus China's outbound M&A of US\$4.5 billion was marginally surpassed by India's US\$4.6 billion. Of the total emerging market M&A activity in 2010, African countries hardly feature, instead forming part of the 'Other' grouping. The only African country that records as a significant target was Guinea,⁹ accounting for 6% of the total. Broken down by acquiring emerging market country, the powerhouse newly industrialized countries of China (25%), Brazil (28%), India (11%), South Korea (11%), and Russia (8%) all feature prominently. Africa is again bracketed under the 17% of 'Other'.

Within Africa, it is interesting to note the key investors. Of Africa's 2010 M&A activity, only 13% of acquisitions were taken up by China, which is small compared to Brazil's 27% of the total. Overall, Africa's resource companies saw a 105% annual increase in dealmaking activity for 2010, with inbound deals up 223% (Ernst & Young, 2011). Iron ore and coal remained the two most popular commodities as

⁸Where other traditional partners of the continent perhaps focus their aid-related grants and loans on targets such as the UN Millennium Development Goals (MDGs) and health and other social indicators, rather than providing economic infrastructure (AEO, 2011).

⁹Two deals basically made up the total: Chinaalco's US\$1.35bn into the Simandou iron ore project, and Bellzone-CIF US\$2.7bn investment.

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steelmakers continued to position themselves aggressively in Africa. Hong Kong-based China International Fund (CIF) invested US\$2.7 billion into Australian company Bellzone's iron ore asset in Guinea. Iron ore alone made up 32% of target commodities in 2010, while coal was relatively small at 7%, yet remains a crucial growth sector going forward.

While mining investment is a key focus of Chinese investment in the continent, the top Chinese corporate deals (excluding concessional type projects) in Africa over the past few years show diversity between resources and infrastructure, as well as the manufacturing sector (Figure 7). The largest projects were geared towards strategic minerals—iron ore, bauxite, coal, copper, and platinum—followed by power generation. Reliable power supply is perhaps one of Africa's key challenges to the development of mining

operations and related value-added activity, coupled with the absence of other required supporting infrastructure, such as transport and water. China's presence in the power generation sector has been substantial. Reportedly, during 2001–2006 China EXIM Bank alone funded more than the aggregate investment of all official development assistance (ODA) flows and private participation in infrastructure in Africa's power sector (International Monetary Fund, 2008). Further research into Chinese financing reveals that great focus is placed on hydropower projects, with about US\$5.3 billion being directed towards this area by end 2006 (World Bank, 2008). This includes financing towards the construction of large-scale projects such as the 400 MW Bui Dam in Ghana, which will provide power to Ghana and surrounding countries, and for example US\$400 million

Country	Project Detail	Sector & Commodity	Value	Financing & Contractors Partners
Guinea	Kalia iron ore deposit	Mining - Iron ore	\$2.7bn	Australian Bellzone signs funding deal with China International Fund (CIF – a Hong Kong based investment company) to develop the mine.
Liberia	Bong Iron ore deposit: China Union (investment conglomerate) owns and develops the mine	Mining - Iron ore	\$2.68bn	Wuhan Iron and Steel Group Corp. (WISCO) bought 60% of China Union from the CADFund (who held 85%). 300m tonnes of low-grade ore expected as initial annual production.
Botswana	Morupule B: coal-fired power station expansion	Power - Coal	\$1.6bn	ICBC / Standard Bank, with China National Electric Equipment Corp. (CNEEC)
Sierra Leone	Tonkolili iron ore mine	Mining - Iron ore	\$1.5bn	Shandong Iron & Steel bought 25% stake in African Minerals' (AML) projects.
Guinea	Simandou iron ore project	Mining - Iron ore	\$1.35bn	Chinalco invests in a JV with Rio Tinto (47:53 JV split).
Ghana	Bauxite and alumina refinery	Mining - Bauxite	\$1.2bn	Financed via CDB as a JV between CADFund and Bosai Mineral Group of China (owns 80% of Ghana Bauxite Company).
South Africa	Wesizwe Platinum Frischgewaagd-Ledig deposit	Mining - Platinum	\$877m	\$227.5m as equity injection, \$650m via debt from China Development Bank - Jinchuan Group Co. together with CADFund will own 51%.
Zambia	Luanshya copper mine and the Chambishi smelter	Mining - Copper	\$600m	China Nonferrous Mining Company (CNMC)
Cameroon	Bus manufacturing factory (in Douala)	Manufacturing	\$500m	China National Machinery Import and Export Corporation (CMEC)
Ghana	Sunon Asogli Phase II - Gas fired Plant	Power - Gas	\$450m	Shenzhen Energy Investment (60%) & CADFund (40%). Sunon Asogli Power (Ghana) Ltd. is a JV between Shenzhen Energy Group and CADFund.
South Africa	Solar and renewable energy farm and product manufacturing plant	Renewable Energy - Solar	\$435m	Yingli Green Energy Solar (one of China's top three photovoltaic cell manufacturers). CADFund injection will be an initial \$40m; in cooperation with yet unnamed South African partner.
Sierra Leone	African Minerals (AML)	Mining - Iron ore	\$232m	China Railway Materials Commercial Corp. acquires 12.5% stake in AML.
South Africa	Cement factory	Cement	\$221m	45% equity injection and the rest via debt by Jidong Development Group with CADFund (51% stake) & Whiphold black owned (Womens Investment Portfolio Holdings) with Continental Cement the rest.
Nigeria	Container terminal	Port Infrastructure	\$154m	CADFund in a 40:60 JV with China Merchant Holdings. The JV acquired a 47.5% stake in the terminal.
Ghana	Upgrading Ghana's ICT network	Telecoms Infrastructure	\$120m	Huawei and Vodafone Ghana (\$120m for GSM upgrades alone), as well as MTN Ghana and Huawei.
Kenya	Jomo Kenyatta Airport modernization	Transport Infrastructure	\$113m	Kenyan airport authority, World Bank, European Investment Bank, French Development Agency, and China Wu Yi Co. Ltd. for phase 1; China National Aero-Technology International Engineering Corp. for phase 2.
South Africa	Automotive assembly plant	Manufacturing	\$100m	\$45m from CADFund (initial injection of \$24.3m) and First Automotive Works (FAW) Vehicle Manufacturer.
Niger	Somina uranium operation	Mining - Uranium	\$95m	A joint venture between China National Uranium Corporation and the Niger government.
Kenya	North Rift Fibre Optic project	ICT Infrastructure	\$80m	Kenyan government spending supported by World Bank; contractor is Zhongxing Telecommunication Equipment Company (ZTE).
Ethiopia	Leather factory	Manufacturing	\$67m	45% Financing from CADFund. Xinxiang Kuroda Mingliang Leather Co. owns 55%.

Source: Frontier Advisory (2011)

Figure 7—Top China-Africa corporate equity investment projects (2008-2010)

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towards the 360 MW Kariba North Bank hydro project in Zambia. Overall, more than 30 African countries have received Chinese funding towards hydropower projects and power stations (Edinger and Herman, 2009).

The Attractiveness of China in the African minerals industry

In contrast to the above corporate investments, which revolved around equity injections in line with official FDI and change in ownership, Figure 8 shows the largest investments and deals as financed by China EXIM Bank and CDB. Unpacking the DRC deal alluded to, one is able to best see the full extent and impact of Chinese capital in this form. Of the US\$6 billion package investment,¹⁰ half has been reserved for mine development and ancillary infrastructure, while the remaining funds are earmarked for development of social

infrastructure—in all building 6 718 km of road, 3 213 km of rail, 32 hospitals, 145 health care centres, two hydroelectric dams, 5 000 housing units, and two large modern universities.

The rapid and sustained investment by Chinese companies in the natural resources sectors of several African countries has been a cause for concern in certain quarters, particularly as the 'Angola Model' comes with seemingly 'no strings' attached to the investment. That is not entirely the

¹⁰At first it was announced at US\$9 billion, yet with the IMF stepping in with fierce objections, stating that the deal would allegedly worsen the DRC's ability to service its external debt obligations to the Paris Club of DAC donors, even though the terms of Chinese concessional loans are backed by rich copper and cobalt resources in the ground, the deal amount was revised (Centre for Chinese Studies, 2010).

Country	Project Detail	Sector & Commodity	Value	Financing & Contractors Partners
Ghana	Infrastructure development	Oil & gas, rail, road, power generation, and agriculture	\$12.87bn	Numerous Chinese SOEs together with Sovereign Wealth Funds and investor consortiums are involved. The facility will be drawn down on a project by project basis; IMF sanctioned the loan as "good for Ghana", and not contravening debt limitations. \$1.9bn earmarked for first phase of road improvements currently being deployed.
DRC	Infrastructure development	Transport, power, housing and social infrastructure	\$6bn	Concessional financing for copper and cobalt off-take operations and associated infrastructure development. China Railway and Engineering Corp. among others are the large SOE contractors involved.
Ghana	Oil & Gas acquisition of Kosmos Energy LLC	Oil & gas	\$5bn	China National Offshore Oil Corp. (CNOOC) & Ghana National Petroleum Corp. (GNPC) together entered the bid for Kosmos' assets, which include its stake in Jubilee field (240,000 bpd potential by 2015).
Niger	Oil and pipeline deal	Oil & gas	\$5bn	China National Petroleum Corp. (CNPC) signs a deal with Niger government. Plans to build a 20,000 bpd oil refinery (the first in Niger), which would pump oil from the Agadem block via 2,000km pipeline.
Ghana	Gas-to-petroleum processing plant	Oil & gas	\$3bn	Exim Bank market-priced loan facility.
DRC	Mining copper and cobalt in Katanga province	Mining - Copper	\$2.6bn	Sinohydro in private-public-partnership with state-owned Congo Mines Co. Gecamines.
Mozambique	Tete1.3GW Hydroelectric dam	Power - Hydro	\$2.4bn	Exim Bank market-priced loan facility.
Angola	Industrial equipment	Oil & gas - Machinery	\$2.1bn	Liaoning Huijin Tongda Chemicals signed JV with Sonangol (Angola's state petroleum parastatal). Agreement between Industrial and Commercial Bank of China (ICBC) and Ethiopian government. Not enough funding yet to cover the entire construction cost of the project, World Bank and AfDB have withheld funding re Environmental Impact Assessment (EIA) disputes. Construction by Italian hydropower developer Salini Costruttori. Generation equipment supplied by Dongfang Electric Corp.
Ethiopia	Gibe III –1.87GW Hydropower dam	Power - Hydro	\$1.75bn	Agreement between Industrial and Commercial Bank of China (ICBC) and Ethiopian government. Not enough funding yet to cover the entire construction cost of the project, World Bank and AfDB have withheld funding re Environmental Impact Assessment (EIA) disputes. Construction by Italian hydropower developer Salini Costruttori. Generation equipment supplied by Dongfang Electric Corp.
Botswana	Morupule B – 600MW coal-fired power station expansion	Power - Coal	\$1.6bn	ICBC / Standard Bank. China National Electric Equipment Corp. (CNEEC).
Uganda	Ayago North and South 530MW Hydropower project	Power - Hydro	\$900m	Exim Bank loan facility. CITIC and China Gezhouba Water and Power Group Company Limited.
Cameroon	Memve'le-200MW Hydropower dam	Power - Hydro	\$795m	Exim Bank together with Multinational African Development Bank financing. Sinohydro contracted.
Ghana	Bui – 400MW Hydropower dam	Power - Hydro	\$622m	\$263m concessional Exim loan, buyers credit of \$298.5m, with Ghana government contributing \$60m; an additional \$168m is sought from Exim Bank - expected April 2011. Sinohydro turnkey project.
South Africa	Chrome production Kariba South Bank 300MW Hydropower expansion (above existing (750MW)	Mining - Chrome	\$440m	Sinosteel additional investment. 60% shareholding in chrome-producing ASA Metals (with Limpopo Economic Development Enterprise holding, 40%).
Zimbabwe	Hydroelectric dam – 150MW Central Zongo	Power - Hydro	\$400m	China Exim Bank and CDB loan facility. Sinohydro and Zimbabwe Electricity Supply Authority.
DRC		Power - Hydro	\$367m	Exim Bank market-priced loan facility. Sinohydro contracted.

Source: Frontier Advisory (2011)

Figure 8—Top China-Africa investments backed by China EXIM Bank and CDB (2008-2011)

Aspects of Chinese investment in the African resources sector

case. Western multinationals (and other resource-seekers) being crowded out by Chinese competition—a combination of low cost, fast and efficient delivery—have in effect villainized China's engagement in Africa (Krause-Jackson, 2011). This criticism has, however, been hypocritical¹¹ as any developing economy coming from a low base needs infrastructure build-up and investment via economic assistance (as opposed to ineffectual aid hand-outs that perpetuate a status quo rather than seed commercial enablement) if it wishes to achieve working capital stock. The 'Angola Model' is in fact nothing new, and has been a reliable method for development used between Japan and China for instance during the 1960s,¹² while the Asia Development Bank extended its first concessional assistance package in 1969, and again in 1974 as a means of lending economic development support to its poorest members. The benefits of this engagement thus make China an attractive partner, financier, and investor in Africa's minerals sector.

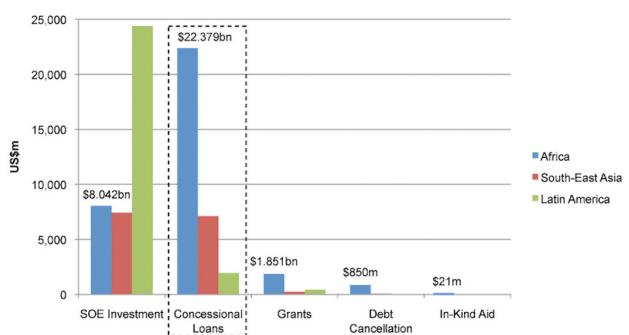
The antagonistic views of this model (which applies to large state-supported or state-aligned Chinese entities, rather than smaller entrepreneurs and private businesses) that needs taking heed of comes from African stakeholders themselves. The concerns are that the huge Chinese economic assistance and investment deals bring with them Chinese labourers, Chinese managers, Chinese technological means and equipment, all contracted by state-owned Chinese enterprises. This system of vertical integration offers powerful benefits to China, yet apart from the final infrastructure facility build (a mine, road, railroad, building, or power station), the spillovers of Chinese skills and capital is not yet taking place as hoped. We however caution these concerns; changes are afoot that demand Chinese firms pay over a percentage of the project costs into training and skills development of Africans, while tenders too are being offered by demanding a cap on Chinese contractors, labourers, and managers utilized in a project (Brautigam, 2010). This, however, will increasingly depend on how deals are negotiated—deals negotiated by host economies that should have the favour of not only African governments but the greater populace at heart by leveraging the resource endowments for socio-economic and development prospects.

The Chinese-funded special economic zones in Africa¹³ too are put forward as exemplary investments built on the fundamentals of technological sharing and positive spillovers, the likes of which need to create enabling commercial environments for local and foreign companies alike (Sandrey and Edinger, 2011; Pistorius, 2011). The first such zone—a multi-facility economic zone (MFEZ) announced in February 2007 is located in the mining area of Chambishi in Zambia. Officially named the Zambia-China Economic and Trade Cooperation Zone (ZCCZ), it looks to catalyse 'industrial and

economic development in the manufacturing sector for the purpose of enhancing both domestic and export orientated business' and will 'operate on the principle of value-addition'.¹⁴ It could potentially be a step forward in the right direction for Zambia's extractive industry to not only export the unprocessed mineral wealth but to benefit and increase the value-add to copper, and to reap the fruits of its mineral resources domestically.

Africa had a collective GDP of US\$1.6 trillion 2008, roughly the same as Brazil or Russia. It is crucial to note that natural resources directly account for only a quarter (24%) of GDP growth between 2000 through to 2008. Even though this is substantial for a single sector, the remaining three-quarters share comes from wholesale and retail trade, transportation, telecommunications, and manufacturing. The resource-rich commodity exporting countries in Africa grew 5.4% over the said period, while the non-commodity exporters grew marginally slower at 4.6% (Harvard Business Review, 2011). The argument that China's demand for commodities are skewing Africa's growth is a myth; if anything, the Chinese assistance and investment interests are reaching into every sector of the economy (including services and manufacturing), assisting non-commodity reliant countries like Kenya, Ethiopia and Rwanda to prosper and realize benefits from their engagement with the Asian giant.

As already noted, considering FDI alone, the level of Chinese engagement pales in comparison to all the noise and on-the-ground activity observed. However, FDI does not account for bartering loan agreements, such as concessional package deals, nor does it account for the grey area of Chinese development and economic assistance. China does not conform to the donor protocols of the official OECD Development Assistance Committee. China's version of economic assistance can for instance be viewed in light of its investments in infrastructure-for-resources deals, where the recipient African country takes on the debt via mortgaging its vast resource wealth, hence minimizing the direct financing burden, and bequeaths the offtake and development rights for resources. Arguably, Africa needs more economic assistance than foreign aid handouts that perpetuate a vicious cycle of indebtedness and lacks enabling private sector growth.



Source: Lum *et al.* (2009)

Figure 9—Chinese economic development assistance by Region (2002–2007)

¹¹Yet arguably increasingly looking to gear up and reposition their Africa-engagement and aid policies post the GFC.

¹²Japan extended China a US\$10 billion credit line in exchange for oil (Brautigam, 2010).

¹³These include established developments of zones in Zambia, Mauritius, Egypt, Nigeria, Ethiopia, and a number of other proposed zones.

¹⁴See Zambian Ministry of Commerce, Trade & Industry website

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According to the above figures, Africa received over US\$33 billion in development and economic assistance from China between 2002 through to 2007, which accounted for 44% of China's total foreign assistance. Concessional agreements made up the largest share to Africa at 67.5%. Since 2003, China is reported to have injected roughly US\$15 billion into Angola, the greater part of that going into the oil and gas sector, funded via a concessionary offtake package. This also includes the much politicized US\$6 billion concessional package offered to the DRC by the consortium of Chinese players—China EXIM Bank, and state-owned China Railway and Engineering Corp.—in a venture with local state mining company Gecamines (jointly the Chinese-Congolese joint venture, Sicomines). The most recent mega-deal of this nature offered by China's policy banks is a US\$12.87 billion collection of infrastructure-for-resource loans extended to Ghana (Mills, 2011).

Implications and conclusion

China's long-term demand for resources has driven commodity prices and reversed previously deteriorating terms of trade in African economies. This has paved the way for larger budgets, increased foreign exchange reserves, and improved current account balances of a number of African states. Given the cyclical nature of commodity prices, and that China's resource demand will pick up going forward—based partially on the fact that its own urbanization drive is irreversible—the next two decades could see a similar commodity price boom as experienced in the 2000s, which could result in an increasing intertwining of Chinese and African growth perspectives. This comes as Africa will increasingly be the supplier of the resource imports that the Chinese economy requires—and China's growth prospects will increasingly become more dependent upon African economies' abilities to supply raw materials, resulting in a mutual interdependence, what has been termed a 'new coupling' between China and Africa (Davies, 2009).

Chinese demand driving on commodity prices affords African mining producers the ability to attract capital into greater value addition to resource exports. Though of this benefit still accrues in most part to corporates, wider welfare contributions have been thwarted and undermined by the lack of governance and rent-seeking behaviour of many African governments. The resultant outcome has led to no (or little) re-investments of resource windfalls, and the mismanagement of precious assets. The key, to the development of what is perhaps Africa's most prominent comparative advantage, is for African resource-rich governments to create a policy framework that could increase value addition to both commodity exports, as well as the wider commercial sector.

In light of China being cash-flush and upholding a business-first ethos, economies in Africa can profit greatly by instilling enabling policies to attract greater investment involvement in the resource sector. Resource producers should now position themselves to best harvest and extract the highest returns from the next 'wave' of Chinese demand. Unfortunately, the nature of resource booms and the nature of resource-rich states' governments in Africa is such that there is little incentive to promote diversification, little reinvestment of resource rents into other sectors, and

generally no proper management of new wealth, hence discouraging the potential for real beneficiation and benefits. Resource producers have thus been unable to progress up the value chain, unable to process, beneficiate, and add significant value to their commodity exports (Eifert *et al.*, 2005).

Nervous of losing their previous advantage in Africa, European and American firms have increased their focus, investments, and interests in this sector, creating a new scramble for the continent amidst rising interests for strategic access to certain commodities by new emerging partners of the continent, especially China. Chinese capital, however, stands apart in being able to tap into an immense pool of foreign exchange reserves (currently over US\$3 trillion), as well as finding preferential borrowing rates and commercial terms from China's big banks, and policy support from key decision-making entities in China. The renminbi is on an appreciating run as China pushes for it to gain global reserve status. The outlook for a stronger Chinese currency and weaker US dollar would make foreign acquisitions more affordable, and greatly enhance and increase China's dominant trade position through cheaper African commodity imports.

Bilateral China-Africa trade is widely expected to reach or top the US\$300 billion mark by 2015, which more than doubles its current levels. On the back of these expectations, Beijing has made available the funds (including also sovereign wealth and commodity focused funds) and tasked its companies to make inroads into the African continent's mineral sector, seeking out strategic assets for exploration and development. Key deals have resulted in equity investments and offtake agreements related to copper, iron ore, platinum group metals (PGMs), chrome, and manganese to secure materials for China's steel, automotive, construction, and manufacturing industries. To date the focus has been in bringing brownfield projects (previously abandoned or loss-making) into production, though in some parts of Africa's mining sector, investment interests now are increasingly geared towards exploration activity and greenfield developments.

Chinese FDI in Africa is still small compared to its global engagement. Also, as it has come from a low base, there has been a rapid increase—yet, as noted, FDI only captures some of the investment flows. China's engagement does not always lead it to taking on a direct stake in mining assets, yet through offtake arrangements and concessional type loans, a greater state of development is brokered by African economies. The latter also gives traders of both Chinese and foreign companies the capacity to profit from African exports destined for China as a final market. The potential to further exacerbate the infamous Dutch Disease, whereby investment focus in a particular resource of a country inflates the currency to such an extent that it kills off competition in other tradable sectors from domestic players, and crowds out commercial means of unrelated domestic industries, will continue to be a challenge. With a sanctioned rent-seeking behaviour and mismanagement of assets, this problem will persist in Africa. It is, however, not particular to China, but an outcome of Africa's comparative advantage and the lack of positive spillovers and local business enablement of the private sector.

Aspects of Chinese investment in the African resources sector

The biggest opportunity and advantage for Africa represented by China's engagement in the mining sector is not only the continued demand and hence simultaneous rise in commodity prices, but the much needed supporting infrastructure. Even if the new infrastructure is only related to transporting commodities from mine to port, Africa will benefit greatly, as it today still has the highest transport cost per unit in the world due to its reliance on road transport infrastructure. There is increasing focus on building up the rail network to counter this, efficiently linking the continent via a coveted East-West corridor, connecting the resource-rich Copperbelt to various ports. China's risk appetite is also different to that of the traditional Western players, allowing it to venture into both relatively more unstable regions, as well as remote locations, and look towards developing previously untapped resources.

An increasing focus and pressure from African stakeholders will need to be placed on shaping the rules of engagement with resource-seeking partners such as China, as well as standards relating to the environment and labour, and general best practices with the right monitoring capacity by host economies. Previous and perhaps traditional partners in sectors such as mining (although sceptical of the approach implemented by Chinese companies) have themselves not shown the best track record in the continent. It is only fitting for African countries to become more demanding in their engagements with both traditional and emerging players on the continent and better leveraging their resource endowments—a trend which is already starting to emerge.

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This paper is dedicated to our late colleague and friend, Steven Ombati, who unexpectedly passed away on 8th June 2011. Steven was a phenomenal person who was loved by all who encountered him.

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