

# HOW CAN AFRICA MAXIMISE ITS MINERAL WEALTH? DEVELOPMENT STRATEGIES AND CHINESE INVESTMENT IN AFRICA'S MINING SECTOR

JANA MUDRONOVA



OCTOBER  
2018

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SAIIA gratefully acknowledges the Swedish International Development Cooperation Agency (Sida) which generously supported this research.

**PROGRAMME HEAD** Steven Gruzd, [steven.gruzd@wits.ac.za](mailto:steven.gruzd@wits.ac.za)

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## **ABSTRACT**

Between 2005 and 2017 China invested \$58 billion in sub-Saharan African mining and energy sectors. Despite the commodity price downturn, China continues to be a leading investor in the global mining industry. Resource-rich countries still see mining (and increasing Chinese investments in the mining sector) as a panacea for the continent's lack of development. This paper explores government policies that aim to develop more value-added products linked to mineral exploration. The beneficiation of mineral resources has been embraced as a route to industrialisation by many governments and international organisations, including the AU and the UN. However, so far few African governments have managed to use their mineral reserves to boost comprehensive industrialisation. This paper outlines some of the factors holding back this development. It then provides a broad account of the opportunities and challenges facing African countries with respect to leveraging Chinese investments in mining for industrial development. It considers out the various routes open to African governments interested in expanding beyond the simple export of raw materials, and outlines arguments for and against a number of tools used by governments to boost industrialisation and add value to mineral exports. These include product space diversification, trade restrictions, local content requirements and fiscal policies. The paper shows that while the ambition to leverage African resources into industrialisation has been constant, and Chinese demand provides an opportunity to move forward, the path to industrialisation is not a simple one. Rather, each of the tools commonly used by African governments to add value comes with its own set of complications. The paper provides a resource for policymakers and populations for a clear-eyed conversation about the opportunities provided by Africa's mineral wealth.

## **ABOUT THE AUTHOR**

DR JANA MUDRONOVA is a Political Economist specialising in China–Africa relations, foreign investment and economic development. Her doctoral research focused on Chinese investments in South African chromite mining and the changing mining landscape.

**ABBREVIATIONS AND ACRONYMS**

AU	African Union
DRC	Democratic Republic of Congo
FDI	foreign direct investment
GVC	global value chain
UK	United Kingdom
UN	United Nations
US	United States

## INTRODUCTION

African countries have been both criticised for not taking advantage of the commodity super-cycle and condemned for falling victim to populist resource nationalism. Despite the increase in manufacturing production, exports and foreign direct investment (FDI) in manufacturing in recent years, the low level of export diversification shows that Africa remains dependent on commodities.<sup>1</sup> ‘Making the most of Africa’s commodities’ became a prominent theme of the first decade of the 21<sup>st</sup> century.<sup>2</sup> A report with the same title, published by the UN Economic Commission for Africa, argued for capitalising on the commodity price boom by embracing commodity-based industrialisation ‘as an engine of growth and economic transformation’.<sup>3</sup> The commodity price boom – driven by China’s growing demand for minerals – was concurrent with increasing foreign investment in Africa’s mining.<sup>4</sup> Resource-rich countries benefited from rising commodity exports, but did not succeed in structurally transforming their export product base or their terms of trade. As a result, these African countries continue to export low value-added bulk commodities and import value-added manufactured products at higher prices. A key question facing policymakers across the continent is how to leverage both growing investment and rising production in the extractive sector for greater export diversification competitiveness and overall economic growth.

This paper examines the policy instruments used by African governments to encourage the development of additional industries linked to their mining sectors. Early developmental economists such as Albert Hirschman were aware that developing countries lacked capital, education, investment and other types of capacity to spur economic activity. He argued that economic growth could be induced by using resources already available in these countries as inputs for other economic sectors (eg, using natural resources to spur adjacent industries, or agricultural commodities to produce processed food products). In addition to these downstream (also called forward) linkages, a country can develop upstream (or backward) linkages, which supply the sector with necessary inputs, and sidestream (or lateral) linkages, which create demand for infrastructure development, skills and technologies.

This paper will outline challenges and opportunities for resource-based industrialisation using examples of policy tools adopted on the continent. First, it will outline the trends in Chinese investment in African mining, with a specific emphasis on sub-Saharan Africa. Subsequently, the paper will interrogate how resource-based industrialisation can generate greater economic growth. It will focus on economic arguments for the linkages approach described above, as well as outlining its potential drawbacks. The section aims to gauge

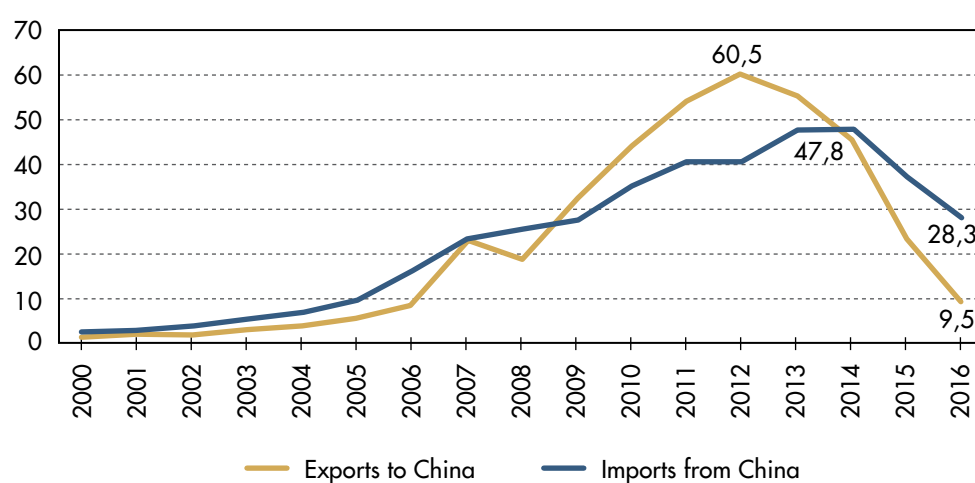
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- 1 UNECA (UN Economic Commission for Africa), *Transformative Industrial Policy for Africa*. Addis Ababa: UNECA, 2016.
  - 2 UNECA, *Making the Most of Africa’s Commodities: Industrializing for Growth, Jobs and Economic Transformation*. Addis Ababa: UNECA, 2013.
  - 3 *Ibid.*, p. 8.
  - 4 Humphreys D, *The Remaking of the Mining Industry*, 1<sup>st</sup> edition. London: Palgrave Macmillan, 2015.

the merit of the value chain approach in order to point out the limitations of this strategy. The third section will present specific policy tools used in the pursuit of resource-based industrialisation. It will focus on trade restriction policies, local content requirements, and fiscal and other policies. The fourth section will revisit the limitations of these instruments and suggest additional supportive policies necessary for successful industrialisation.

### CHINESE INVESTMENT IN AFRICA

China has been sub-Saharan Africa's largest import partner since 2006 and its largest export partner since 2012.<sup>5</sup> The country accounts for approximately 25% of sub-Saharan Africa's exports, the majority of which (approximately 70%) consist of fuel, metals and minerals.<sup>6</sup> Sub-Saharan Africa's imports from China are dominated by manufactured goods and machinery. These uneven trade relations put Africa in a disadvantageous position. The only time sub-Saharan Africa ran a trade surplus with China was at the tail end of the commodity price boom between 2009 and 2012. This period coincided with the global financial crisis, and at first shielded resource-rich economies from the contraction of the world economy. However, after the commodity price decline sub-Saharan Africa reverted to a negative balance of trade with China.

**FIGURE 1** SUB-SAHARAN AFRICA'S TRADE WITH CHINA, 2000–2016 (\$ BILLION)



Source: Author, from WITS World Bank Database, 2017, <https://wits.worldbank.org/>, accessed 10 October 2018

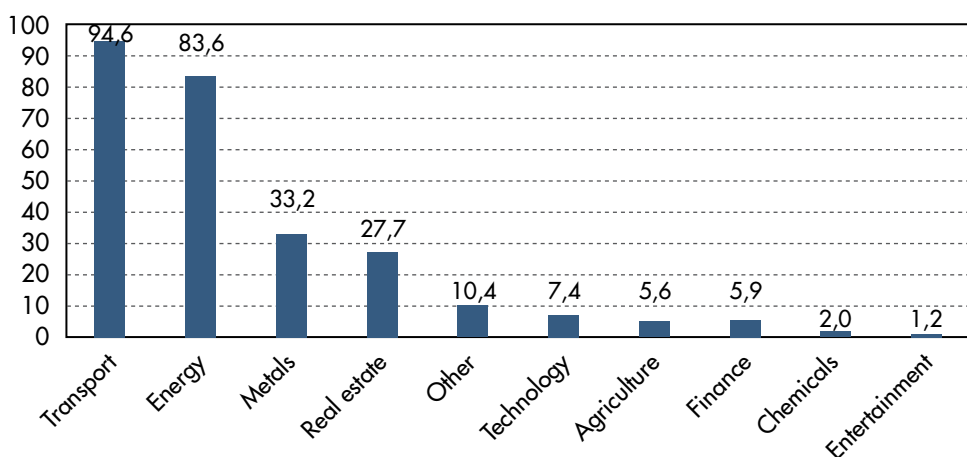
5 Almeida L, Chen W & O Williams, 'Q&A: Seven questions on China–Africa relations', *IMF Research Bulletin*, 18, 1, 2017, pp. 8–10.

6 *Ibid.*

In addition to being a crucial trade partner, China has also become an important source of FDI in Africa. According to the latest UN World Investment Report, in 2015 China was Africa’s fourth largest investor by FDI stock, behind the US, the UK and France.<sup>7</sup> Although the relationship receives a lot of attention, Africa accounts for only 3.2% of China’s overall investment stock in the world.<sup>8</sup>

Chinese outward FDI flows to Africa increased from \$2.7 billion in 2002 to \$123.1 billion in 2014.<sup>9</sup> Between 2006 and 2017, the largest proportion of Chinese investment in sub-Saharan Africa was in the transport sector, followed by energy and metals. The three sectors together accounted for 77.8% of the total investment.<sup>10</sup>

**FIGURE 2** CHINA’S INVESTMENT IN SUB-SAHARAN AFRICA BY SECTOR, 2006–2017 (\$ BILLION)



Note: Data includes projects above \$100 million

Source: AEI (American Enterprise Institute), ‘China Global Investment Tracker’, database, <http://www.aei.org/china-global-investment-tracker/>, accessed 20 July 2018

During this era, China invested approximately \$32.02 billion in metals, 36% of which went to the metals sector in the Democratic Republic of Congo (DRC) alone, with an

7 UNCTAD (UN Conference of Trade and Development), *World Investment Report 2017*. Geneva: UN, 2017, p. 44.

8 SAIS (China–Africa Research Initiative), *Chinese Global FDI Stock: Select Countries*. Washington DC: Johns Hopkins University, 2017.

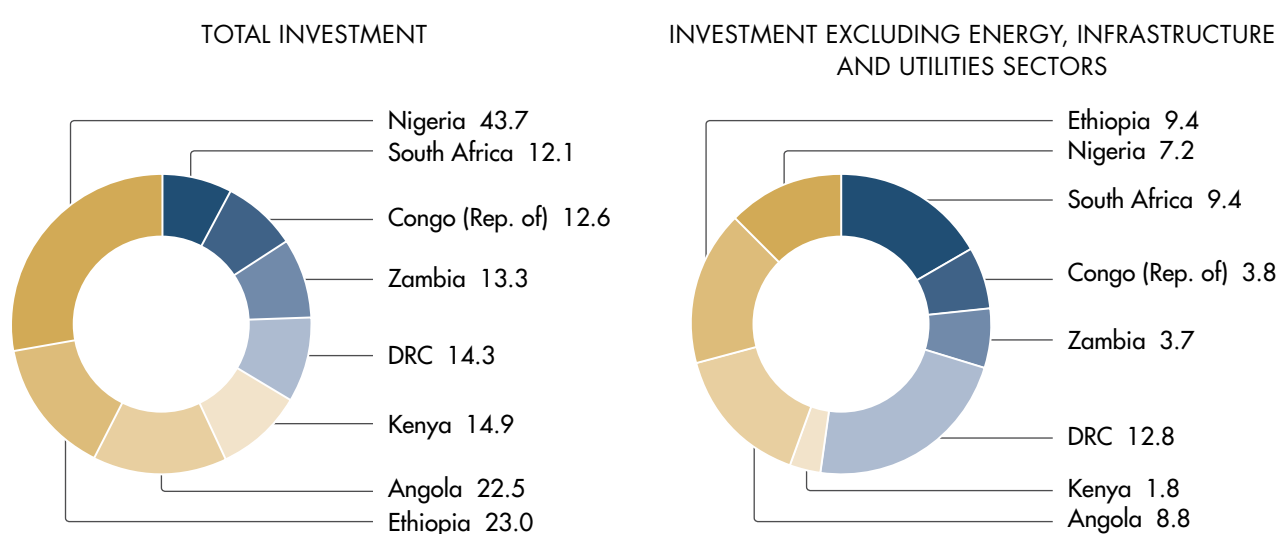
9 Wall R et al., *State of African Cities Report 2018: The Geography of African Investment*. New York/Nairobi: UN Press, 2018.

10 AEI (American Enterprise Institute), ‘China Global Investment Tracker’, database, <http://www.aei.org/china-global-investment-tracker/>, accessed 20 July 2018.

additional 13% to Sierra Leone and 10% to South Africa.<sup>11</sup> Over half of the investments in the metals sector were mergers and acquisitions, with greenfield investments making up the rest.

The largest recipient of Chinese investments in sub-Saharan Africa between 2006 and 2017 was Nigeria, followed by Ethiopia and Angola. When investments in energy, infrastructure and utilities are excluded, however, the DRC, South Africa and Ethiopia were the three biggest recipients of Chinese investments.

**FIGURE 3** GEOGRAPHICAL DISTRIBUTION OF CHINESE FDI IN AFRICA, 2006–2017 (\$ BILLION)



Source: AEI, 'China Global Investment Tracker', database, <http://www.aei.org/china-global-investment-tracker/>, accessed 20 July 2018

### LINKING COMMODITIES TO THE REST OF THE ECONOMY

On 20 November 2018 the UN celebrates the 28<sup>th</sup> 'Africa Industrialization Day'. The day commemorates the continent's commitment to industrialisation as a path to economic growth and prosperity.<sup>12</sup> However, economists and policymakers differ on how to achieve industrial development.

<sup>11</sup> *Ibid.*

<sup>12</sup> UN, 'Africa Industrialization Day 20 November', <http://www.un.org/en/events/africaday/>, accessed 20 June 2018.



The argument for industrialisation points to the potential positive spillovers from manufacturing, including greater productivity and efficiency, skills advancement and higher wages.<sup>13</sup> However, although there is broad agreement that industrialisation can lead to greater economic growth, the path to industrialisation is not clear. The early industrialisation literature has focused on the experiences of the UK, the US and Western Europe in the late 19<sup>th</sup> and early 20<sup>th</sup> century.<sup>14</sup> Later, scholars shifted their attention to the development of the newly industrialised economies of East Asia, and subsequently neo-developmentalists have analysed industrial development successes and failures in Latin America and sub-Saharan Africa. Yet, although all contemporary advanced economies developed through active industrial policies, their experiences vary greatly. While resource-scarce South Korea built its manufacturing sector by importing raw materials, Norway used its oil deposits to diversify its product and export base through boosting infrastructure, and skills and technology development (so-called sidestream linkages).<sup>15</sup>

The growth experiences of many developing countries in recent decades have countered the linear development path of advanced economies. Relatively rapid gross domestic product growth in sub-Saharan Africa has not led to greater manufacturing production.<sup>16</sup> Instead of the shift from agriculture to manufacturing (and later to services, as experienced by the Western economies), employment is shifting from the agricultural sector to services or commodity-based sectors, leaving manufacturing behind.<sup>17</sup>

While many African countries promoted industrial development in the decades after their independence, the realities of the oil price shocks in the late 1970s and the structural adjustment reforms of the 1990s changed the trajectory of their development. In the meantime, the new global trade environment, together with the globalisation of production networks and value chains, has changed the ways in which countries approach industrial development.<sup>18</sup>

The following section focuses on arguments for and against resource-based industrialisation, which resource-rich countries should consider when choosing their development path.

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13 UN, *Industrial Development for the 21st Century: Sustainable Development Perspectives*. New York: UN Press, 2007.

14 Nzau M, 'Africa's industrialization debate: A critical analysis', *The Journal of Language, Technology & Entrepreneurship in Africa*, 2010, 2, 1, pp. 146–165.

15 UNECA, 2016, *op. cit.*

16 Kaplan D, 'Linkage dynamics and natural resources: Diversification and catch-up', in Sampath PG & B Oyelaran-Oyeyinka (eds), *Sustainable Industrialization in Africa Toward a New Development Agenda*. London: Palgrave Macmillan, 2016, pp. 66–85.

17 Tregenna F, 'Characterising deindustrialisation: An analysis of changes in manufacturing employment and output internationally', *Cambridge Journal of Economics*, 33, 3, 2009, pp. 433–466.

18 UNECA, 2016, *op. cit.*

## RESOURCE-BASED INDUSTRIALISATION

The relationship between natural resource endowment and industrialisation has never been straightforward. The so-called resource curse or ‘Dutch disease’ is one expression of this complex relation.<sup>19</sup> ‘Dutch disease’ describes a hypothesised relationship between natural resource wealth and the rest of the economy. According to the concept, mineral or oil discovery can lead to the overvaluation of the national currency, which then diminishes the competitiveness of other sectors of the national economy in a way that draws investment away from manufacturing and services.<sup>20</sup>

However, despite the importance of exercising caution in terms of policy choices, there is widespread agreement that resource-rich countries cannot rely on mineral extraction and export only for development.<sup>21</sup> In the context of price volatility and a long-term, historical decline in commodity prices, proponents of resource-based industrialisation argue that creating forward (downstream), backward (upstream) or sidestream linkages is a first step to economic diversification and growth from mineral endowments.<sup>22</sup> Minerals can enable value-added activities along the value chain. The concept is rooted in the global value chain (GVC) literature, which highlights the geographical dispersion of production along a product value chain. In other words, for a country to successfully develop its industrial base, it has to ‘plug’ itself into a segment of the value chain. Creating backward and forward linkages along the chain will stimulate demand for inputs within the chain and each activity in the chain becomes a stepping stone towards further value addition.

With respect to a mineral value chain, forward linkages are realised through mineral processing, or beneficiation. Backward linkages refer to the development of capital goods and capital equipment used in exploration and extraction. Sidestream linkages refer to the development of new industries using the capabilities of the extractive industry, for example the development of geological and engineering services.<sup>23</sup> Successful development

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19 Fessehaie J & Z Rustomjee, ‘Resource-based industrialisation in Southern Africa: Domestic policies, corporate strategies and regional dynamics’, *Development Southern Africa*, 35, 2018, pp. 404–418.

20 Di John J, ‘The “Resource Curse”: Theory and Evidence’, ARI (Analyses of the Elcano Royal Institute) Paper, 172/2010, 15 December 2010, [https://www.files.ethz.ch/isn/125773/ARI172-2010\\_DiJohn\\_Resource\\_Course\\_Theory\\_Evidence\\_Africa\\_LatinAmerica.pdf](https://www.files.ethz.ch/isn/125773/ARI172-2010_DiJohn_Resource_Course_Theory_Evidence_Africa_LatinAmerica.pdf), accessed 1 October 2018.

21 Kaplan D, *op. cit.*

22 Downstream sectors refer to beneficiation and the manufacturing of products from the raw, extracted commodities. Upstream linkages relate to the manufacture and supply of capital goods, consumables and relevant services to the sector. Linkages into lateral (or sidestream) sectors include the development of infrastructure (energy, water, transport), skills and technologies. See Jourdan P, ‘Up- and Downstream Linkages in the Mineral Value Chain: Mineral Value Chain Opportunities’, Paper presented at TIPS (Trade and Industrial Policy Strategies) – Industrialisation and the Mining Economy, University of Johannesburg, June 2016.

23 Jourdan P, ‘Mineral value chains (MVCs) resource-based industrialisation?’, Minister’s IPAP (Industrial Policy Action Plan) Update Briefing, PCTI/201/CoB/PJ, 2013, <https://slideplayer.com/slide/6118900/>, accessed 1 October 2018; Walker M & P Jourdan, ‘Resource-based

of upstream and sidestream linkages has the potential for further diversification into information and communications technologies and the automotive, aircraft and electronics sectors, as in the case of successful advanced mineral economies such as Finland, Sweden and the US.<sup>24</sup>

These debates encouraged African countries to take advantage of the commodity super-cycle of the early 2000s. A positive sign at the time was that the increased investment in African mining led to an increase in exports of processed materials. However, despite the growth, the export of primary commodities outpaced the export of processed materials.<sup>25</sup> This experience suggests that resource-based industrialists' argument that the mere availability of natural resources can lead to greater industrialisation (and potentially greater employment) does not capture reality. This is because, as some authors point out, natural resource-based industries are 'enclave industries, which do not generate high employment, and do not automatically enhance productivity'.<sup>26</sup> In addition, creating linkages with other industrial sectors should not be taken as a given.<sup>27</sup> Despite the emphasis on growth through slotting into GVCs, the continent participates in only 2.2% of GVCs.<sup>28</sup> This low participation can be explained both by a lack of capabilities on the African side and by the characteristics of specific value chains. The combination of inadequate skills, productive capacity and infrastructure prevents countries from meeting the high competitiveness standards necessary to join GVCs.<sup>29</sup>

## PRODUCT SPACE DIVERSIFICATION

While increasing the volume of exports is an important issue, some also argue that increasing the variety of products produced is equally important for a country's economic

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sustainable development: An alternative approach to industrialisation in South Africa', *Minerals and Energy – Raw Materials Report*, 18, 3, 2003, pp. 25–43.

- 24 Jourdan P, 2016, *op. cit.*; Walker M, 'Resource-based industrialisation strategies: A comparative analysis of the South African and international experience', *South African Geographical Journal*, 83, 2, 2001, pp. 93–104; Walker M, 'Unpacking the Nature of Demand and Supply Relationships in the Mining Capital Goods and Services Cluster: The Case of PGMs', TIPS Annual Forum Papers, 2005, <http://www.tips.org.za/research-archive/annual-forum-papers/2005/item/407-unpacking-the-nature-of-demand-and-supply-relationships-in-the-mining-capital-goods-and-services-cluster-the-case-of-pgms>, accessed 11 October 2018.
- 25 Kaplan D, *op. cit.*
- 26 McMillan M, Rodrik D & I Verduzco-Gallo, 'Globalization, structural change, and productivity growth, with an update on Africa', *World Development*, 63, 2014, pp. 11–32.
- 27 Humphreys M, Sachs JD & JE Stiglitz (eds), *Escaping the Resource Curse*. New York: Columbia University Press, 2007.
- 28 AfDB (African Development Bank), *Industrialise Africa: Strategies, Policies, Institutions, and Financing*. Abidjan: AfDB, 2017, p. 45.
- 29 *Ibid.*

growth and structural transformation.<sup>30</sup> While producing more of the same product (for example, a mineral resource) can increase exports, producing more products diversifies a country's knowledge, skills, physical assets, intermediate inputs, infrastructure and regulatory development.

Yet, how should countries choose which additional products to manufacture? In contrast to resource-focused industrialists, authors such as Ricardo Hausmann argue that a country should focus on the development of products that have strong linkages in terms of capabilities and not necessarily input–output connections. For example, it might be easier for a country that produces gold ore to also start producing uranium ore, rather than turning that gold ore into gold jewellery, which would require additional equipment and technical capacity. In this approach, even if two products are closely linked in the value chain, the capabilities required for their production can differ greatly.<sup>31</sup> The degree to which production capacity for different products overlaps determines how close these products are in the product space.

The more diverse a country's capabilities, the more diverse the exports it can achieve.<sup>32</sup> The advantage of focusing on products that are close together in the product space is that these products share a set of capabilities. Countries whose exports are dominated by products with fewer linkages and that are therefore at the periphery of the product space, experience slower growth and slower structural transformation. Crucially, these countries are also more vulnerable to external shocks and recessions. This is because in times of recession, the capabilities developed to produce these products stand in isolation from other sectors, and cannot easily be adapted to make other products.<sup>33</sup>

In their review of South Africa's beneficiation efforts, Hausmann *et al.* warned against a preoccupation with downstream linkages and the processing of raw mineral resources at the expense of other lateral sectors that can lead to greater diversification.<sup>34</sup> Although downstream beneficiation can draw in a number of South African domestic inputs (such as minerals used in the refining process) it will also require different types of capital and human inputs.<sup>35</sup>

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- 30 For example, see the work of Hausmann R & CA Hidalgo, 'Country Diversification, Product Ubiquity, and Economic Divergence', HKS (Harvard Kennedy School) Faculty Research Working Paper, RWP10-045. Cambridge MA: Harvard University, November 2010; Hausmann R & CA Hidalgo, 'The network structure of economic output', *Journal of Economic Growth*, 16, 4, 2010, pp. 309–342; Hartmann D *et al.*, 'Linking economic complexity, institutions, and income inequality', *World Development*, 93, 2017, pp. 75–93.
- 31 Hausmann R *et al.*, 'How Should Uganda Grow?', HKS Faculty Research Paper Series, RWP14-004. Cambridge MA: Harvard University, February 2014.
- 32 Hausmann R & CA Hidalgo, *op. cit.*
- 33 *Ibid.*
- 34 Hausmann R, Klinger B & R Lawrence, 'Examining Beneficiation', HKS Faculty Research Working Paper, RWP08-030. Cambridge MA: Harvard University, 2008.
- 35 Harvey R, 'Mineral Rights, Rents and Resources in South Africa's Development Narrative', Occasional Paper, 224. Johannesburg: SAIIA (South African Institute of International Affairs), 2015.

Transportation costs used to play a much larger role in beneficiation. The drop in the cost of transporting goods, together with the availability of natural resources on global commodity markets, has diminished the importance of geographical proximity to natural resources.<sup>36</sup> This means that the rationale for developing forward linkages from raw materials in order to take advantage of geographical proximity is convincing only if the products developed from the raw materials draw on a similar set of capabilities offered by the country in question, rather than simply the material inputs, and if the technological complexity is higher.

Countries with rich natural resources should rather use the revenues from commodity exports (raw or processed) to diversify their exports. This should not be pursued through promoting downstream linkages (ie, beneficiation) but through developing sectors with similar technological requirements, factor intensities and other requisite capabilities. This was Hausmann's advice for Uganda when the country discovered oil in the Albertine Basin around 2010.<sup>37</sup>

Importantly, the export structures of resource-rich countries in sub-Saharan Africa barely changed between 1962 and 2007.<sup>38</sup> The countries continued to export the same products located on the periphery of the product space. On the other hand, both landlocked and coastal countries (excluding South Africa) achieved some, albeit limited, transition into new products. However, these also fall on the periphery of the product space. This lack of progress in export diversification and sophistication points to what the authors called a 'low-product trap'. To overcome this trap the countries will have to start producing more sophisticated products closer to the core, as focusing on nearby products that are still located on the periphery will not be sufficient. To make this jump, the development of human capital, including skills development and technology acquisition, is crucial.<sup>39</sup>

How are African countries responding to this challenge? The following section will focus onto the specific policy tools African countries use in their efforts to capture the higher value of their natural endowments.

### ATTEMPTS TO BUILD LINKAGES BY AFRICAN COUNTRIES

The commodity price boom in the early 2000s, coupled with the increased controversy surrounding Chinese investments in African countries, rising inequality and populism,

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36 Hausmann R, Rodrik D & C Sabel, 'Reconfiguring Industrial Policy: A Framework with an Application to South Africa', HKS Working Paper, RWP08-031. Cambridge MA: Harvard University, 2008.

37 Hausmann R *et al.*, 2014, *op. cit.*; Hausmann R & CA Hidalgo, 2010, *op. cit.*

38 Abdon A & J Felipe, 'The Product Space: What Does It Say About the Opportunities for Growth and Structural Transformation of Sub-Saharan Africa?' Working Paper, 670. Annandale-on-Hudson: Levy Economics Institute, 2011.

39 *Ibid.*

The lack of open tender systems and the perception that all infrastructure financed by China is repaid in oil or minerals have fed into the storyline of China dominating the continent

contributed to a new wave of resource nationalism across the continent.<sup>40</sup> As China's loans and aid gradually replaced financing from Western donors, including the World Bank and the International Monetary Fund, the governance and transparency of such finance were questioned.<sup>41</sup> The lack of open tender systems and the perception that all infrastructure financed by China is repaid in oil or minerals have fed into the storyline of China dominating the continent.

Resource nationalism encompasses a wide range of policy instruments that aim to limit ownership, production or export of natural resources in order to improve local returns from resource industries.<sup>42</sup> Since independence, African countries have adopted various strategies to capture rents from their natural resources, and the past 15 years have seen a renewed interest in this mechanism. Resource nationalism has been among the top 10 business risks facing mining and metals since 2008, as identified by the Ernst & Young survey.<sup>43</sup>

The concentration of several crucial minerals, such as cobalt, platinum, chrome and manganese, in sub-Saharan Africa increases the bargaining power of these governments and gives them the confidence to impose one-sided policy instruments. Policymakers argue that such tools will generate revenues and increase the country's ability to industrialise. First, policies that target ownership of natural resources aim to increase the participation of local entrepreneurs in an industry traditionally dominated by multinational corporations. Indigenisation is envisioned to bring broader societal benefits through opportunities trickling down from owners to the people.<sup>44</sup> Second, policies impacting the operations of extractives companies are expected to encourage forward linkages in the form of beneficiation and further processing of minerals in the country where extraction takes place. These policies can take the form of trade restrictions, such as export bans, or energy subsidies for local consumers of minerals (for example smelters). Third, fiscal policies, such as taxation and royalty payments, increase the state's share of profits from resource production.<sup>45</sup> Some countries use this additional revenue to correct the negative impacts of mining in affected regions (Bolivia, Ecuador) or earmark it for the development of chosen sectors or capabilities.

According to Bremmer and Johnston, the proliferation of resource nationalism in developing countries is also behind the rising prices of certain commodities, including

40 Burgess S & J Beilstein, 'This means war? China's scramble for minerals and resource nationalism in Southern Africa', *Contemporary Security Policy*, 34, 1, 2013, pp. 120–143.

41 Brautigam D, *The Dragon's Gift: The Real Story of China in Africa*. Oxford: Oxford University Press, 2009.

42 Wilson J, 'Understanding resource nationalism: Economic dynamics and political institutions', *Contemporary Politics*, 21, 4, 2015, pp. 399–416.

43 EY (Ernst & Young), *Top 10 Business Risks Facing Mining and Metals 2017–2018*, 2018, [https://www.ey.com/Publication/vwLUAssets/ey-top-10-business-risks-facing-mining-and-metals-2017-2018/\\$FILE/ey-top-10-business-risks-facing-mining-and-metals-2017-2018.pdf](https://www.ey.com/Publication/vwLUAssets/ey-top-10-business-risks-facing-mining-and-metals-2017-2018/$FILE/ey-top-10-business-risks-facing-mining-and-metals-2017-2018.pdf), accessed 1 October 2018.

44 Burgess S & J Beilstein, *op. cit.*

45 Wilson J, *op. cit.*

oil.<sup>46</sup> More important, however, is the negative consequences of resource nationalism for the industrial development of mineral-exporting countries. Resource nationalism can create investor uncertainty, as nationalisation in mining, more than in any other sector, signals the likelihood of the government's seeking 'to renege on contracts across all sectors of the economy'.<sup>47</sup> Moreover, imposing restrictive measures can also lead to a loss of investment in mining, in terms of both new exploration investment and capital investment necessary for expansion, and the upkeep and upgrading of existing mining operations. This can hinder a country's ability to acquire new technology or develop skills and other capabilities with the potential spill-over effects and lateral linkages mentioned earlier.<sup>48</sup>

The following sections will present some of the policy instruments recently adopted on the continent, with an emphasis on those aimed at boosting economic diversification.

### TRADE RESTRICTIONS

Export restriction policies include the imposition of quantitative measures, such as export taxes and quotas; export licensing; and other mechanisms that indirectly impact exports.<sup>49</sup> Policymakers often implement export restrictions when foreign demand raises the price of a raw material to the point where it is too expensive for domestic downstream producers to acquire for further processing. Another consideration is the fact that downstream products derived from mineral resources might generate higher added value than the export of the raw materials.<sup>50</sup>

When a country does not have a monopoly on a given commodity, the imposition of an export ban can sometimes lead to buyers switching to other supplier countries without trade restrictions, cancelling out the effectiveness of an export ban. For example, when India imposed a chromite ore export ban in 2007, China replaced its Indian imports with ore from Zimbabwe and South Africa. Later, when Zimbabwe also imposed an export ban, South Africa cornered the Chinese market.<sup>51</sup> The case study shows that local value addition policies could have a greater positive impact in countries that are monopoly suppliers of a given commodity.

Several other African countries have imposed export restrictions on raw materials: Gabon on the export of manganese, Zambia on copper, South Africa on lead (in both its raw and

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46 See, for example, Bremmer I & R Johnston, 'The rise and fall of resource nationalism', *The Survival*, 51, 2, 2009, pp. 149–158.

47 Andreasson S, 'Varieties of resource nationalism in sub-Saharan Africa's energy and minerals markets', *The Extractive Industries and Society*, 2, 2, 2015, pp. 310–319.

48 Bremmer I & R Johnston, *op. cit.*

49 Korinek J & J Kim, 'Export Restrictions on Strategic Raw Materials and Their Impact on Trade', Trade Policy Paper, 95. Paris: OECD (Organisation for Economic Co-operation and Development) Publishing, 2010.

50 *Ibid.*

51 *Ibid.*

semi-processed state) and unprocessed precious metals, Tanzania on gold and copper concentrates, and the DRC on copper and cobalt concentrates.

The Organisation for Economic Co-operation and Development's analysis of the impacts of trade restrictions in four African countries (Gabon, South Africa, Zambia and Zimbabwe) between 1992 and 2013 found that the measures did not promote downstream processing in any of the countries. In fact, Zambia's downstream copper industry and Zimbabwe's chromium industry suffered under the export tax. In the case of Gabon's manganese industry, there is no evidence that the limited beneficiation developed in the observed period was the result of the trade restrictions. This is because the availability and price of raw materials were not the only determinants of downstream linkages.<sup>52</sup>

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The development of forward linkages depends on more than a supply of raw commodities. It is greatly dependent on the country's water and energy supply, the availability of skills and the proximity of sales markets

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The development of forward linkages depends on more than a supply of raw commodities. It is greatly dependent on the country's water and energy supply, the availability of skills and the proximity of sales markets.<sup>53</sup> The most prominent example of the disconnect between downstream capabilities and trade restrictions is Zimbabwe. After the government's ban on the export of raw chrome ore, mining companies had trouble finding local processing facilities. This led to the bankruptcy and closure of several small and medium-sized miners. The situation was worsened by the lack of a dependable energy supply, which limited the capacity of ferrochrome furnaces.<sup>54</sup>

In Tanzania, the government adopted export restrictions on gold and copper concentrates. After the imposition of the export ban, the largest gold mining company, Acacia Mining, announced its intention to sell off its assets in the country in response to its suffering \$707 million in losses. Potential buyers included the Chinese companies Shandong Gold Mining and Zijin Mining.<sup>55</sup> These regulatory changes were coupled with regulations seeking to shift a part of the ownership of mineral rights to Tanzanian citizens and imposing higher royalty payments.<sup>56</sup> (The additional changes to local content requirements in Tanzania are covered in the following section.)

The DRC government has intended to increase the domestic refining of copper and cobalt since 2007. Plans to introduce an export ban on copper and cobalt ores and concentrates have been delayed several times.<sup>57</sup> After the ban was delayed again in January 2017 owing to power shortages, Sicomin, one of the country's largest copper producers, was banned

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52 Fliess B, Idsardi E & R Rossouw, 'Export Controls and Competitiveness in African Mining and Minerals Processing Industries', Trade Policy Paper, 204. Paris: OECD Publishing, 2017.

53 *Ibid.*

54 *Ibid.*

55 BMI Research, 'Tanzania: Regulatory pressure to weigh heavily on mining sector', *Mining Review Africa*, 27 March 2018, <https://www.miningreview.com/tanzania-regulatory-pressure-weigh-mining-sector/>, accessed 10 June 2018.

56 *Mining Review Africa*, 'Tanzania lays down the law on local participation in mining sector', 7 February 2018, <https://www.miningreview.com/tanzania-lays-law-local-participation-mining-sector/>, accessed 10 June 2018.

57 Roskill, 'Cobalt: DRC delays ban on exports ... again', 18 January 2017, <https://roskill.com/news/cobalt-drc-delays-ban-exportsagain>, accessed 10 June 2018.



from exporting raw material in September 2017. Sicomin's majority shareholders are China's Sinohydro Corp and China Railway Group Limited. The ban was, however, lifted a month later.<sup>58</sup>

Trade restrictions on mineral exports in Africa have not delivered the expected positive impacts on the development of value-added activities. Government plans to develop downstream processing facilities and linkages have been hampered by a lack of political commitment; energy and water shortages; and inadequate skills and capacity. Trade-restricting policies, however, do not occur in isolation and are often coupled with other regulatory measures, such as changes in fiscal regimes, ownership, local content requirements and licensing.

### LOCAL CONTENT REQUIREMENTS

Local content policies have become a popular tool to promote local industrial development, job creation, value addition and linkages creation. In general, such policies require companies to source a certain share of intermediate goods or services from local manufacturers, producers and providers. The economic argument behind the local content requirement is that local companies' increased participation in the provision of goods or services can deepen mining's linkages to the local economy, broaden the tax base, transfer skills and technology and give infant industries protected access to markets.<sup>59</sup>

Several African countries have adopted local content requirement policies. In 2010 Nigeria introduced a new set of regulations stipulating local content requirements in its oil and gas sector. Local content targets grew from 45% in 2007 to the goal of 80% by 2020. The policy has contributed to the successful development of backward linkages, specifically in engineering design (90% of which is locally procured), the manufacturing of valves and the building of subsea systems (60%) and the manufacturing of high voltage cables (45%).<sup>60</sup>

Ghana and Angola, both oil-producing countries, have also adopted local content policies aimed at local employment and the provision of goods and services. Although the share of Ghanaian companies awarded contracts to provide goods and services has increased to between 60% and 75%, these contracts represent only 5% of the total value of procurement contracts in the industry.<sup>61</sup> This is because local companies are

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Trade restrictions on mineral exports in Africa have not delivered the expected positive impacts on the development of value-added activities

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58 Reuters, 'Congo lifts ban on raw metal exports by Chinese joint venture', 11 October 2017, <https://www.reuters.com/article/us-congo-mining/congo-lifts-ban-on-raw-metal-exports-by-chinese-joint-venture-idUSKBN1CG260>, accessed 10 June 2018.

59 Weiss M, 'The Role of Local Content Policies in Manufacturing and Mining in Low- and Middle-income Countries', Department of Policy, Research and Statistics Working Paper, 19/2016. Geneva: UNIDO (UN Industrial Development Organization), 2016.

60 Fessehaie J & Z Rustomjee, *op. cit.*; Kaplan D, *op. cit.*; Ovadia J, 'Local content policies and petro-development in sub-Saharan Africa: A comparative analysis', *Resources Policy*, 49, 2016, pp. 20–30; Weiss M, *op. cit.*

61 Ovadia J, *op. cit.*

mostly contracted to provide low value-add services, such as catering, hospitality and freight.<sup>62</sup> Other oil-exporting countries with local content requirements are Kenya, Liberia, Mozambique, Tanzania and Uganda. However, countries differ in the degree to which they implement and monitor the regulations. For example, local content guidelines in the petroleum sectors in Liberia and Tanzania are not mandatory.

In addition to local content guidelines in the oil and gas sector, the Tanzanian government recently announced its intention to expand these regulations to the mineral sector. Mining companies would be required to conduct business with majority-owned banks in Tanzania as well as with local insurance brokers and law firms. This is to encourage greater local involvement in the services sector.<sup>63</sup>

Local content requirements contributed to the development of downstream linkages in diamond cutting and processing in Botswana. In addition to the requirements, the policy was coupled with targeted skills and technology transfer, in which localisation is a primary condition of work permits for foreigners.<sup>64</sup>

Similarly, Mozambique was able to leverage FDI in its aluminium sector to develop local industrial linkages in smelting. The specific objective of the regulations was to foster linkages between the foreign-owned aluminium smelting sector and the underdeveloped local small and medium enterprise sector.<sup>65</sup>

Sierra Leone, on the other hand, adopted a local content regime that is not specific to the extractive sector but applies to all sectors. However, owing to the commodity price slump coupled with the national crisis caused by the Ebola epidemic, the roll-out of the regulations has been delayed.<sup>66</sup>

Overall, the best practices with regard to local content requirements are those that stipulate mandatory targets that are achievable within the country's pre-existing economic linkages and structure. Moreover, strong, capable and independent institutions are necessary conditions for the successful implementation and monitoring of these measures.<sup>67</sup>

## FISCAL AND OTHER POLICIES

In addition to trade restriction policies and local content regulations, the mining sector in Africa is under increasing pressure as a result of changes in fiscal regimes. Fiscal policies, including taxation, royalties and other payments, are used to mobilise revenues

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62 *Ibid.*

63 BMI Research, *op. cit.*

64 Weiss M, *op. cit.*

65 *Ibid.*

66 Uongozi Institute, 'Extractives for Human Development: Maximizing Domestic Participation along the Value Chain', 2016, <http://uongozi.or.tz/wp-content/uploads/2017/07/Local-Content-FINAL-Online.pdf>, accessed 15 June 2018.

67 Ovadia J, *op. cit.*

from mineral and oil resources. At the same time, the mining industry is characterised by high initial investment requirements, high risk and generally a long project cycle. These determinants give the industry a reason to argue for more lenient fiscal regulations. The destructive and depleting nature of mining, coupled with the high monetary value of many commodities, incentivises governments to harness the benefits of natural resources by adopting a fiscal regime specifically designed for the extractive industry. This often consists of a mixture of fiscal tools, which include corporate income taxes, profit taxes and royalties.

Ghana's revision of its Minerals and Mining Act in 2006 did not amend the fiscal incentives given to mining companies under the old legislation. Many foreign companies thus retained their exemptions, creating almost a two-tier system in which some companies are exempted from the new tax regime and others are not.<sup>68</sup>

Various forms of taxation can be used, including corporate income tax and resource rent taxes. With regard to the former, different deductions can be designed to encourage linkages. For example, in South Africa a mining company can offset its beneficiation activities against a required ownership target.<sup>69</sup> Windfall taxes or resource rent taxes are designed to capture revenues from high profits, usually at the time of commodity price booms.<sup>70</sup>

In addition, bonuses are used by governments to receive a lump sum at a specific stage of a project, sometimes at the time of signing or when certain production targets are achieved.<sup>71</sup>

Royalty rates differ according to country, commodity and production method. For example, Zambia has introduced a new royalty regime in which open-pit mines are bound by higher royalty rates (20%) than underground operations (8%). Some royalty rates are imposed on adjusted revenue (DRC), some are calculated using gross sales value (Kenya) and others use turnover (Ghana). Most countries apply *ad valorem* royalties, based on a percentage of the value of the mineral.<sup>72</sup> Some countries have also introduced sliding

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68 Ramdoo I & S Bilal, 'Extractive Resources for Development: Trade, Fiscal and Industrial Considerations', Discussion Paper, 156. Maastricht: ECDPM (European Centre for Development Policy Management), 2014.

69 According to the current iteration of the Mining Charter, a company can offset up to 11% of its ownership requirements against the value of its levels of beneficiation. A current draft of the new Mining Charter has kept the beneficiation element, but without further details on the mechanism and its implementation. South Africa, Department of Mineral Resources, 'Reviewed Broad Based Black-Economic Empowerment Charter for the South African Mining and Minerals Industry 2016', *Government Gazette*, 581, 15 June 2017.

70 NRGi (Natural Resource Governance Institute), 'Fiscal Regime Design: What Revenues the Government Will Be Entitled to Collect', *NRGI Reader*, March 2015, [https://resourcegovernance.org/sites/default/files/nrgi\\_Fiscal-Regime-Design.pdf](https://resourcegovernance.org/sites/default/files/nrgi_Fiscal-Regime-Design.pdf), accessed 1 October 2018.

71 *Ibid.*

72 UNECA, 2016, *op. cit.*

scale royalty rates, which move with commodity prices. For example, Burkina Faso uses a pegged royalty rate for gold, which increases its revenues at times of high gold prices.<sup>73</sup>

Taxes and royalties tend to be collected by the central authority and form part of governments' general resource allocation. Some African countries have set up sovereign wealth funds following the successful examples of Norway and a few Gulf states. None of the funds, however, uses revenues from mineral or oil resources specifically for industrial development or for further industrial diversification of the economy.

Similarly, a few countries have established separate funds to earmark resource revenues to mitigate fluctuations in mineral sales revenue. Botswana, for example, set up three funds using the revenues of the diamond industry, aimed at stabilisation, debt servicing and local development.<sup>74</sup> In Ghana a proportion of royalties is paid to the Mineral Development Fund, which supports public mining agencies and funds research, training and special projects aimed at promoting the mining industry. However, as the fund also supplements the operating budget of the ministry, it is not clear how much of the mining revenue is used for broader economic and social development.<sup>75</sup>

State participation is also common and guarantees government involvement in both interests and obligations, as well as financial revenues from mining operations. In Ghana the government has a right of 10% free equity in all mining operations and therefore also receives dividends.<sup>76</sup> Cameroon and Burkina Faso also adopted a 10% free equity interest in mining operations.<sup>77</sup>

Although taxation is an important component of mineral policy, the average effective tax rate (a measurement of the tax rate paid by the project over its lifetime) does not necessarily affect the investment attractiveness of the country.<sup>78</sup> In the case of gold-endowed countries, a study that examined the relationship between taxation and investment attractiveness found that investors took the overall tax burden into account when making their investment decisions.<sup>79</sup>

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73 *Ibid.*

74 UNCTAD, *Diamond Exports from Botswana and Sierra Leone: The Role of Institutions in Mitigating the Impact of Commodity Dependence on Human Development*. Geneva: UNCTAD, 2017.

75 Ashiadey F, 'Improving the impact of mining royalties at the local level in Ghana', EITI (Extractive Industries Transparency Initiative), 18 September 2014, <https://eiti.org/blog/improving-impact-of-mining-royalties-at-local-level-in-ghana>, accessed 1 October 2018.

76 Ayee J *et al.*, 'Political Economy of the Mining Sector in Ghana', Policy Research Working Paper, 5730. Washington DC: World Bank, 2011.

77 Laporte B & C de Quatrebarbes, 'What Do We Know about Mineral Resource Rent Sharing in Africa?', ICTD (International Centre for Tax and Development) Working Paper, 39. Brighton: IDS (Institute of Development Studies), August 2015.

78 Trench A *et al.*, 'Evaluating the Attractiveness of Fiscal Regimes for New Gold Developments: African and South American Peer Country Comparisons'. Perth: CET (Centre for Exploration Targeting), May 2015.

79 *Ibid.*

At the same time, these fiscal reforms should be accompanied by clear decisions on how to best utilise the revenues. This could include capacitating government institutions (or different levels of government) to determine the best ways to spend the revenue, to monitor the spending and to increase transparency in both collecting and spending the revenue.<sup>80</sup>

### CREATING A SUPPORTIVE POLICY ENVIRONMENT

African countries have faced criticism both for their failure to take greater advantage of the commodity price boom in order to diversify their economies and for resorting to ‘populist’ resource nationalist rhetoric.

Resource nationalism on its own is not a panacea for resource dependency, unemployment and poverty. The economic policy tools described above have not delivered the necessary diversification of production and exports, owing to the lack of attention paid to initial conditions and pre-existing human capital and physical infrastructure. As Fliess *et al.* argued in the case of Zambia:<sup>81</sup>

Water and power are examples of factors unrelated to the supply of the raw material that can act as binding constraints on achievable production levels. It is difficult to see how the favourable terms of sourcing raw material brought about by export control measures can get production to respond when existing capacity is limited – or how the advantage of cheap local supply of the raw material can offset other major constraints on the operation and growth of the processing industries and their export performance.

The same limitations were observed in the export ban in Zimbabwe.<sup>82</sup> In South Africa, where some of the ferrochrome producers lobbied for the adoption of a similar ban, the government refused because downstream producers were facing an unprecedented rise in energy tariffs.<sup>83</sup> The availability of the raw material could not have offset the increasing costs faced by the downstream processing industry.

Physical infrastructure is an additional issue. Particularly in countries where mining takes place in remote areas, the availability and quality of roads and railway networks are major concerns. For example, critics point out that the recently announced local content requirement policy in Tanzania, which aims to create backward linkages between mining and service providers (particularly financial and legal institutions), might not be feasible owing to the lack of physical access to mines.<sup>84</sup>

In the long run, apart from infrastructure, complementary policies and well-developed institutions are necessary for successful industrialisation. First, political commitment

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Resource nationalism on its own is not a panacea for resource dependency, unemployment and poverty

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80 Ramdoo I & S Bilal, *op. cit.*

81 Fliess B, Idsardi E & R Rossouw, *op. cit.*, p. 33.

82 Korinek J & J Kim, *op. cit.*

83 Baloyi B, ‘Power, Policy-Making, and “Non-Decisions” in South Africa’s Chromite Sector’, MA thesis, University of the Witwatersrand, 2014.

84 BMI Research, *op. cit.*; *Mining Review Africa*, *op. cit.*

and leadership play a key role in determining the nature of a country's industrial path.<sup>85</sup> Examples of newly industrialised economies and new developmental states, such as Brazil, point to the importance of political determination and the ability to pursue a long-term strategy. Government agencies and departments pursuing this goal should be well integrated, designing and implementing policies in line with the government's overall economic strategy. A lack of coordination between different departments can prevent the successful creation of linkages. Building downstream, upstream and sidestream linkages requires the development of targeted skills and support for research and development.<sup>86</sup>

Second, the government should not formulate strategies to encourage linkages without reliable, accurate data. As argued earlier, mineral processing is water and energy intensive and the availability of raw materials does not offset inadequate infrastructure. The same applies to the availability of skills. A holistic set of policies focusing on identifying and fostering the skills demanded by downstream industry could prevent such skills shortages. Such policies should also prioritise governmental and social steps crucial for employment creation. All the segments of the mineral value chain that follow extraction are capital-intensive and require semi- and high-skilled labour. With increasing automation, the needs of the mining and mineral processing sectors will continue to shift away from low-skilled labour. This labour mismatch can also negatively impact a country's efforts to create backward linkages. Manufacturing, engineering and service provision require a different skill set than extraction.<sup>87</sup>

Third, downstream producers could encounter external pressures that increase the cost of processing. These include exchange rate fluctuations' rendering mineral processing uncompetitive, and the dominance of foreign mining companies uninterested in beneficiation.<sup>88</sup> A country's dependence on Chinese demand for natural resources can also put additional pressure on the government's efforts to create downstream linkages. This is because China's cost structure allows for cheaper processing of raw materials, and its industrial policies have led to excess smelting and refining capacity and compressed margins. Countries attempting to develop beneficiation capabilities have been outcompeted by China in terms of both scale and price.<sup>89</sup>

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85 Chang HJ, 'Is industrial policy necessary and feasible in Africa? Theoretical considerations and historical lessons', in Noman A & JE Stiglitz (eds), *Industrial Policy and Economic Transformation in Africa*. New York: Columbia University Press, 2015, pp. 30–53.

86 Fessehaie J, 'What determines the breadth and depth of Zambia's backward linkages to copper mining? The role of public policy and value chain dynamics', *Resources Policy*, 37, 2012, pp. 443–451; Fessehaie J & Z Rustumjee, *op. cit.*; Lebdioui A, 'Industrial Policies for Diversification and Resource-based Industrialization: Case Studies of Malaysia and Chile', Paper presented at UNCTAD: 10<sup>th</sup> Multi-year Expert Meeting on Commodities and Development, Geneva, 25–26 April 2018.

87 Lebdioui A, *op. cit.*; Kaplan D, *op. cit.*

88 Lebdioui A, *op. cit.*

89 Grynberg R & K Sekakela, 'Case Studies in Base Metal Processing and Beneficiation: Lessons from East Asia and the SADC Region', Research Report, 21. Johannesburg: SAIIA, January 2016.

Fourth, government focus on resource-based industrialisation should not detract from other avenues for potential sources of economic growth. Horizontal diversification or diversification into sectors that utilise similar capabilities has proven successful for resource-rich Malaysia.<sup>90</sup>

Lastly, creating linkages that lead to diversification, not only along the mineral value chain but also across capabilities, is crucial for countering the volatility of global commodity demand. Botswana's focus on its diamond processing industry has not helped the country to address the declining global demand for diamonds. The same applies to the development of backward linkages, unless they are coupled with linkages to other sectors and products.<sup>91</sup>

### CONCLUSION

Mining in sub-Saharan Africa has great potential to be a catalyst for economic growth, diversification and employment creation. Chinese investments in the sector can create additional stimuli for further exploration and extraction. However, neither mining nor Chinese investment can be treated as a panacea for the continent's lack of capacity. Additional policies targeting institutional bottlenecks, human capital development, technological capabilities and innovation will do more than resource nationalism to allow countries to realise their growth potential. The pursuit of backward and forward linkages cannot continue without urgently integrating these resource-based industrial policies into wider developmental strategies. Focusing on the development of backward and forward linkages connected only to mining does not help a country to overcome the volatility intrinsic to the sector. This means leveraging countries' natural endowments and foreign investments to build long-term capabilities that can be channelled into other sectors during commodity price downturns.

This can be achieved through the development of linkages, as well as through the pragmatic use of revenues from natural resources for the development of other capabilities. Many African countries have developed mechanisms to capture revenues from extractive industries. The next step, therefore, is to build and strengthen government capacity and coordination in order to strategically utilise these resources. African governments have been told to make the most of their natural resources too many times. Having realistic expectations about the benefits and shortcomings of resource-oriented development is crucial to achieve wider societal and political benefits from these endowments.

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90 Lebdoui A, *op. cit.*

91 Fessehaie J & Z Rustomjee, *op. cit.*

## **SAIIA'S FUNDING PROFILE**

SAIIA raises funds from governments, charitable foundations, companies and individual donors. Our work is currently being funded by, among others, the Bradlow Foundation, the UK's Department for International Development, the Konrad Adenauer Foundation, the Royal Norwegian Ministry of Foreign Affairs, the Swedish International Development Cooperation Agency, the World Bank, the Swiss Agency for Development and Cooperation, the Open Society Foundations, the Organisation for Economic Co-operation and Development, Oxfam South Africa and the Centre for International Governance and Innovation. SAIIA's corporate membership is drawn from the South African private sector and international businesses with an interest in Africa. In addition, SAIIA has a substantial number of international diplomatic and mainly South African institutional members.





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Jan Smuts House, East Campus, University of the Witwatersrand  
PO Box 31596, Braamfontein 2017, Johannesburg, South Africa  
Tel +27 (0)11 339-2021 • Fax +27 (0)11 339-2154  
[www.saiia.org.za](http://www.saiia.org.za) • [info@saiia.org.za](mailto:info@saiia.org.za)